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9. ABSTRACT

The twofold purpose of the workshop was (1) to allow CID members concerned with information activities to become familiar with each other's programs; and (2) to set up an organizational structure for an information network among various universities receiving support from AID. These workshop proceedings should be of interest to United States and foreign professionals engaged in agricultural development activities, including administrators, project leaders, research scientists, extension leaders, training specialists, information specialists, librarians, documentalists, engineers, and experiment station directors. The proceedings include presentations that describe the AID-supported programs at the CID universities (Colorado State, Utah State, University of California, Oregon State, University of Arizona), as well as the information sources and retrieval systems available at those universities. Also included are the results of a survey of user needs for particular forms of information, depending on their international location and professional specialty. The participants agreed that the Consortium for International Development Information Network (CIDNET) would be formed to facilitate exchange of information problems related to CID or AID-sponsored projects or information needs of persons in developing countries. CIDNET member universities agreed to exchange copies (in microfiche or computer printout form) of their serial holdings, and to publish an informational brochure on CIDNET services. Also agreed was that the University of California at Riverside would serve as the central contact point for persons interested in obtaining CIDNET Services.

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CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

**PROCEEDINGS OF A WORKSHOP
FOR THE DEVELOPMENT OF
CID INFORMATION NETWORK**

**Held Sept. 22 - 25, 1975
Tucson, Arizona**

**Proceedings prepared by
School of Renewable Natural Resources
University of Arizona
Tucson**

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PREFACE

The workshop to consider the development of an information network for the Consortium for International Development (CID) evolved from several experiences. One was a meeting held in Washington, D. C. under the leadership of the AID Agricultural Technical Assistance Bureau office.

During this October 1974 workshop it was shown that there was interest among the grantees and agencies in networking information services. Some of the institutions which participated in this workshop were linked together in the Consortium for International Development, and it seemed a logical extension of this linkage to investigate the possibilities of an information network which would provide a better exchange of information services between the CID universities. Subsequent discussion among the CID 211-d grant directors echoed this interest in an information network, and consequently a prospectus for a workshop on information networking among CID universities was written. Within the work plans for each CID university were allocated varying amounts of time for information service activities, and a specific activity identified was participation in a workshop to be held in Tucson in September.

This September 1975 workshop was under the sponsorship and direction of the Watershed Management 211-d grant at the University of Arizona. It was designed as a planning and investigatory workshop, to bring together various persons from each of the CID universities to discuss how the information programs at the CID universities could coordinate their activities and provide better and more efficient services. In preparation for the workshop, I visited four other campuses (University of California at Riverside, Oregon State University, Utah State University, and Colorado State University) during the summer of 1975. At this time ideas for possible network activities were discussed and a survey prepared for distribution to potential users, both in the United States and in other countries. Each of these five CID universities were given 50 copies of this survey for distribution, and completed surveys were returned during the workshop and discussed during one of the sessions. The combined results of this survey are presented in this proceedings.

The Workshop for the Development of the CID Information Network was designed in part as an informational meeting and in part as a working meeting, to develop some preliminary directions for the information network, if one were to be formed.

The workshop was divided into two sections. The first was presentations by each of the participating universities and other persons attending the workshop. Although some general suggestions were given, the contents of these presentations varied, since each of the CID universities is in a different stage of development and/or is offering different services. The papers presented in this proceedings are the reports submitted for the proceedings. Following each university's paper(s) is a special listing of (1) areas of expertise for each university, particularly related to the 211-d grants, and (2) a brief description of special services or bases or collections at that university.

Included in the proceedings are some additional special presentations which were given at the workshop. These were designed to answer various questions which came up during the preliminary visits in the summer to each of the campuses. For example, the overview paper on information sources and the review of user reactions to computer services were designed to help orient some of the participants to various computer-based information services in existence, since participants at the workshop did not have equal familiarity with such services.

The section on user needs has three parts. All were designed to provide some types of input into potential user needs for information services. Several graduate students from other countries who are currently attending the University of Arizona were asked to come and briefly discuss information problems in their own countries. A summarization of their comments is included in this proceedings. Dr. Dorothy Parker, who has considerable international library experience and has worked with the Ford Foundation and AID, presented some comments on information needs of the international user. Last, there are the tabulated results from the surveys which were circulated during the summer.

The last day and one-half of the workshop involved the formalization of the information network, the delineation of activities with which the network would first be involved, and some suggestions for future directions. Although this was valuable to the participants, a verbatim account of the discussion seemed of minimal use in the proceedings; therefore, only a summarization of the final outcomes are included here.

Included as a special Appendix to the Proceedings is a paper submitted by John L. Hafenrichter of the Division of Evaluation, Utilization and Technical Information, Technical Assistance Bureau, AID. Although he was unable to attend the workshop, he sent these comments prior to the workshop to each of the CID participating institutions.

In conclusion, I wish to express my appreciation to all of the participants, both for their active participation in all of the sessions and for their presentations.

Linda White

THE BEGINNINGS OF AN INFORMATION NETWORK

by D.B. Thorud and L.M. White

INTRODUCTION

The purpose of this workshop is twofold: (1) to let members who are concerned with information activities under various AID grants to meet and become familiar with each other and their respective programs, and (2) to set up an organizational structure for an information network among various universities receiving support from AID.

ORIGIN OF THE IDEA OF A NETWORK AMONG THE CID UNIVERSITIES

Last year in October several AID contract and grant recipients met at the invitation of the Washington office of Agriculture (Technical Assistance Bureau) to explore ways in which the dissemination of new information concerning agriculture could be accelerated.

Some of the recommendations for action that emerged from this workshop were:

- (1) development of a bibliographic service covering publications, reports, etc. produced under centrally-funded grants and contracts, in order to provide for research institutions of developing nations a current awareness service,
- (2) development of an awareness service covering dissertations presented at U.S. universities which treat the problems of developing countries, and
- (3) assuring the awareness of AID publications, reports, etc. by submitting references to these materials in well-known abstracting and indexing services, such as CAIN of the National Agricultural Library, the Water Resources Scientific Information Center's system, or other special bibliographic bases.

Based on this meeting and subsequent discussions among grant directors with AID encouragement, a definite interest in networking was identified. It was evident that grantees and agencies would like to be able to access other centers or agencies of expertise to help with information needs and requests, if a network of some kind were established.

WHAT IS A NETWORK?

According to the Oxford English Dictionary, the term "network" has been in existence since 1560, and confusion over exactly what this term means may well have been around since that time. "Network" seems to be a highly used term right now, with no uniform definition. It is considered by some to be a mode for sharing resources and linking otherwise incompatible procedures and formats of different systems and organizations

(Greenberger and Aronofsky 1973). Still another definition may be a cooperative system established by information centers and libraries which are brought together by common subject or geographic proximity to share information resources, human resources, equipment, and technology essential for providing effective information service (Miller 1973). Whatever definition you choose to follow, the following components will generally emerge: shared resources (the input from various aspects of the network); a management framework which links together products and resource centers, service centers and users; and the users themselves (Neumann 1973).

In the end, a network is set up to share resources and link together otherwise incompatible procedures and formats of different systems and organizations. Generally speaking, we are trying to expand services and share resources to provide a greater variety of services and faster service for users. We hope to avoid unnecessary duplication of efforts by the development of this network, although we do not necessarily intend to channel all parts of the network into identical modes.

TYPES OF APPROACHES BEING CONSIDERED

This summer Linda White visited four other campuses, Colorado, Utah, Oregon and Riverside, to become more familiar with the programs at each of these universities and to gather together some initial ideas on network priorities.

Suggestions which emerged are varied, and include items such as the following:

- access to bibliographic data bases which are already available, such as RECON (which includes Water Resources), CAIN, and BIOSIS (which covers Biological Abstracts);
- computer access to the special collections related to the AID grants at each of the universities;
- document copy distribution, through possibly a central location;
- translation services;
- provision of retrospective bibliographic searches, on request from a user;
- distribution of special annotated bibliographies, with document copy backup;
- selective dissemination of information services, stemming out of one of the computer bases; and
- a jointly produced newsletter, describing research and publications available for distribution.

This is only a partial list, and later on in the workshop we hope that additional suggestions will be made before we proceed to decide which services should be immediate goals and which should be developed later.

WHAT IS THE NEED FOR SUCH A NETWORK?

Based upon opinions expressed at the Washington workshop in October, 1974, ideas shared during the initial organization of this workshop, and questionnaire surveys which we have had a chance to review, there is a need for increased and more efficient information services.

Users of this information network will fall into two general groups: those located on the various CID and AID campuses, and those located in developing nations. Although certainly some information needs would be the same for both users, others will be different, primarily because campus users have more immediate access to a greater variety of library services and information services. As a result of this difference, we will be discussing the different needs of both user groups in more detail and somewhat separately, so that some of the particular information needs of both types can receive initial consideration.

For example, through our discussion and examination of the surveys, we may find that users in developing nations have a greater need for document supply services than do campus users.

In addition to the formal questionnaires received back from persons in various developing nations, several respondents supplemented the surveys with specific statements of interest in our proposed network, including, for example, a librarian in the International Institute of Tropical Agriculture in Nigeria, a project coordinator for the Council for Scientific and Industrial Research in Ghana, and a joint secretary to the Pakistan government on national engineering services.

In conclusion, it may be possible that we will identify more services than we can actually deliver with immediate resources. For that reason, it will be important for us to prioritize the activities. This is an operational-directed workshop, and we hope at the conclusion to decide not only on our priorities, but also to specifically delineate areas of responsibility, taking into account that we need to select two or three activities which can be delivered successfully. In this way our network users will be more satisfied and we will not be promising more services than our resources will permit.

REFERENCES

- Neumann, A.J. 1973. Review of network management problems and issues. U.S. National Bureau of Standards, NBS Technical Note 795. 68 p.
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- Miller, Elizabeth K. 1973. RUIN: A network for urban and regional studies libraries. Special Libraries 64: 498-504.

GENERAL COMMENTS

by G. L. Corey

I am pleased that you are having this workshop. I am further pleased that technical people and librarians are represented because we are not only interested in networking information; we are also interested, I hope, in quality of information.

I am not an information specialist so I'm not going to address that subject other than to indicate that the material Mr. Hafenrichter sent represents what AID is doing. Most of you have copies of his remarks and I'm hopeful the points he raises will be discussed at this workshop.

My experience over the last few years has led me to look at things from the user standpoint. If you are interested in getting information to users, then I as a user am interested in quality information. I hope that you will give consideration to the final user during your deliberations. I want to plead for a special user whom I feel we ignore too often. Congress has asked that we direct our work in agriculture to the rural poor, the underprivileged guy who doesn't have a lot of land and who's not producing very much food for the market. Certainly the material that the U.S. graduate student puts out is not usually reading material for that small farmer. He's often illiterate and doesn't understand technical jargon, so we're not really talking about him. I would like to think that a lot of the work that we do, whether we're talking about--research, extension, or networking--should be directed to the people who control the fate of this small farmer. Who is that? Certainly, it is the governments of the LDC's, and whoever might be helping them. So when we indicate that there are target users in LDCs, I hope we remember him. Often the results of our work, especially research, are written for other scientists and in that case the only target audience in the LDC is a fellow researcher in some laboratory. I plead with you to also think of that government person or planner who controls the fate of the farmer.

It is the strategy of the Soil and Water Division of TA/AGR to place heavy emphasis on state-of-the-art studies not only to identify key problems but also to facilitate solutions. The concept of what is meant by the state-of-the-art is not readily understood. It is much more than a state-of-the-literature, a state-of-the-research, or a state-of-the-science. It is the state at which any particular practice happens to be in at the moment. This includes the literature, the research, and more importantly the use or misuse of the practice throughout the developed and developing world.

The type of information resulting from a well done state-of-the-study is very valuable to planners and donor agencies. Many government planners, politicians, and technicians in LDCs are attempting to help the underprivileged in their country. They often do not have sufficient information. I believe we develop much good information in our grants and research contracts which is simply not getting into the proper hands.

Part of the problem lies in the fact that University researchers are judged by publications which receive peer review and are therefore written for peers. These scholarly efforts are worthwhile but, all too often, the only useful purpose they serve is as reference material for the next generation of scholarly effort.

I realize that my remarks have not been directed to the subject of this workshop; but certainly I feel that the quality of information we choose to distribute is worthy of some consideration. I look forward to participating in your discussions and hope that we will be able to coordinate some of our efforts to the benefit of the LDCs who should be the final users of most everything we are interested in.

THE CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

by Bruce H. Anderson

The Consortium for International Development is a legal, non-profit corporation strongly committed to and heavily involved in finding solutions to the world food problem. The member universities¹ individually and are now collectively participating in technical assistance and institution building projects in many parts of the world. Staff members have served as consultants to private enterprise, government agencies, multi-national donor agencies, and foundations. The Consortium has access to a large pool of experienced, knowledgeable staff whose expertise includes a wide spectrum, not only in agriculture, but in all disciplines important to total development.

The recent conference on World Food Problems, sponsored by FAO, highlights the concern to increase food production on a world wide basis. The Consortium anticipates an active involvement in participating in the struggle to provide sustenance and upgrade the quality of life. It further anticipates long range involvement and continuing commitments will be required before substantial progress can be achieved.

The Consortium is governed by a Board of Trustees (Appendix #1) duly appointed by the presidents of each member university. The Board of Trustees sets policy and provides guidelines for the consortium and meets at least twice each year to review progress and consider future activities.

The management and operation of the consortium is provided by an Executive Director, duly appointed by the Board of Trustees. The implementation of policy, contracts, and other activities is the responsibility of the Executive Director and his staff. Special committees and working groups are appointed as needed to provide technical expertise in selected areas.

HISTORICAL DEVELOPMENTS

In 1967, four major universities of western United States of America, with a cumulative total of over 400 years of successful experience in grappling with problems of agricultural research and development, united to create a consortium utilizing the expertise of each member university.

Their activities in total water management for agricultural production began a century ago, and much that is known and that has been put into practice in agricultural development came from these institutions. Today these same universities remain in the forefront in the search for new

¹Members are Oregon State University, University of California, Oregon State University, Texas Tech University, University of Arizona, and Utah State University.

knowledge and its implementation for the betterment of mankind. The four universities originally involved in the Consortium include Colorado State University, University of Arizona, University of California (at Davis and Riverside), and Utah State University. The premise behind the establishment of CID is that the total resources and competence of the Consortium exceeds the total resources and competence of any member university standing alone, or even the sum of all four working separately. The CID mechanism can offer more to technical assistance and development programs wherever and however these programs are carried out than would be available from any individual university, and perhaps more than would be available from any other source.

In September 1972 CID became a legal, non-profit corporation and reaffirmed its commitment to work in the many fields associated with the development of food and fiber throughout the world. The corporate status permits CID to accept grants, enter into contracts, and otherwise do business in any of the areas of interest in which the member universities are especially qualified. The expertise available through CID covers a wide range of activities and is actually as broad as the total competence of all of its members.

CID EXPERTISE

CID can provide expertise in many areas including, but not limited to the following:

Water Resources Development and Management

- Water conveyance systems
- Flood control
- Sediment and erosion control
- Pollution control of land and water systems
- Water law
- Water control institutions
- Irrigation and drainage systems
- Hydrology and meteorology systems
- Remote sensing and monitoring systems
- Computer programming and planning for water resource systems

Agriculture Development

- Crop production systems
- On-farm water management
- Farm irrigation and drainage systems
- Livestock, nutrition and management
- Rain-fed agriculture production
- Irrigated agriculture production

Agriculture Sector Analysis and Planning

- Basic data collection
- Program and data analysis
- Factor and production marketing
- Project evaluation
- Sectoral performance analysis
- Project formulation

Weather Modification

- Cloud seeding

Research

Research programs in areas of CID competence including the sciences, natural resources, agricultural crops and practices, human and social areas, especially their adaptation to developing country environments.

Training

CID can undertake training programs of many kinds including: degree or non-degree programs, short courses, seminars, conferences, symposia, student and professor exchange programs. Training programs can be handled both on and off campus.

General

Through the CID mechanism it is possible to tap all of the expertise of each member university thus providing a very wide range of technical professional competence.

CID PHILOSOPHY

The Consortium members are concerned with assisting the orderly development, management, and use of the limited resources of the world. It is concerned with providing a better way of life to the peoples of the world through the search for knowledge and its application to relevant problems. Increasing world food supplies through better management of the water and soil and many other factors affecting production provides a constant, urgent challenge to the abilities and collective strength of CID. It is, therefore, interested in working in its capacity as a non-profit corporation to facilitate development programs at home and abroad.

CID RESOURCES

CID's access to the combined faculties of its member universities provides strength in numbers of qualified personnel and an assurance of adequate backstopping support. Many of the staff have worked abroad in both long and short term assignments and have served as consultants

to governments, consulting firms, and private businesses. They are in demand both at home and abroad. Staff experience includes program design development and implementation as well as traditional research and teaching capability.

Linkages through personal as well as institutional and business contacts provide ready access to talent, knowledge, and experience outside the University as needed. Many private firms and businesses utilize the expertise of the consortium members in their activities, thus providing additional breadth in the potential resources accessible to the consortium.

The experience of the member universities in the broad field of natural resource development and especially in soil and water management has been established and accumulated in a century of progressive research and teaching. These universities have pioneered much that is associated with the development, conservation, and efficient use of natural resources, and thousands of students from around the world have gained graduate degrees through study at CID universities.

The research capability of the universities is measured in terms of eminently qualified competent staff supported by extensive modern laboratories provided with the latest in hydraulic, electronic, and other equipment. Consortium members are currently involved, both at home and abroad, in research programs oriented to a better use of our basic resources for food production.

The libraries of the member universities continue to grow, and as specialized bibliographies are assembled or organized, the utility of the library material is constantly increasing. Additionally, more efficient storage and retrieval systems are under study for implementation at all CID universities and the development of an information network is being considered during this workshop.

TECHNICAL ASSISTANCE

In education, institution building, and technical training in natural resource management, the resources of CID are preeminent. Accordingly, CID is organized to enable it to aggressively seek assignments in these fields in furtherance of whatever technical assistance program is encompassed in this country's foreign assistance effort. The CID member universities have proven their ability to work collectively and are finding means to make the resources of CID accessible for technical assistance and developmental programs whenever the need for these resources exist.

CID PROJECTS

Since June 1969 the Consortium has concentrated its efforts on improving teaching capability and research competence, development of increased capacity for consulting and service, and further involvement in international programs of technical assistance with developing countries.

Members of the faculty at CID universities frequently assist private corporations, government agencies, and foreign countries as consultants in solving a wide variety of complex problems. Often this consulting work will develop into new research studies.

The first AID grants to CID members began in 1969 and are on a continuing basis. The purpose of the grants is to enhance the competence of the three grant recipient universities in the general field of water management for agriculture from the watershed to the farm. The University of Arizona received a grant in watershed management with special emphasis on the science and methodology of applying systems analysis techniques to problems of less developed countries. Colorado State University received a grant in the optimum utilization of water resources, with special emphasis on water delivery and removal systems and relevant institutional development. Utah State University received a grant in on-farm water management for increased agricultural production. Recently AID grants were made to two other CID members. The University of California (Riverside) received a grant in moisture conservation and use with low summer rainfall, and Oregon State University received a grant in moisture conservation and use when the supply comes in low winter amounts. In addition to the 211(d) grants indicated above, research contracts were established between AID and Colorado State University and Utah State University. Colorado State University contracted to do work in Pakistan in water conveyance systems and institutions and Utah State University contracted to do research in on-farm water management, mainly in South America.

IRAN

A four-year contract between CID and the Ministry of Cooperation and Rural Affairs of the Government of Iran began in 1974. The technical assistance and consulting services are in the area of developing and increasing the agricultural production of cooperatives in dry land farming and in animal protein. Training of farm corporation managers and other experts is also part of the program.

OWRT

Another contract currently underway is between the Consortium and the Office of Water Research and Technology of the Department of the Interior. The research grant is entitled "Water Production Functions and Predicted Irrigation Programs for Principal Crops as Required for Water Resources Planning and Increased Water Use Efficiency." The work is researching two crops, alfalfa and corn, under monitored and controlled conditions.

BOLIVIA

CID has signed a major contract to provide technical assistance and research to Bolivia, involving 11 professionals for seven years, 1975-1982. Research on oil seed crops, forages, and small grains will be conducted. The work also includes agricultural planning and extension service development.

AFRICA

CID is also currently involved in contract agreements with USAID to supply three- and five-man teams to Kenya, a four-man team to Upper Volta and a four-man team to Cameroon.

Appendix #1

OFFICERS OF THE CONSORTIUM

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Dr. Bruce H. Anderson	Executive Director

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APPENDIX #2

EXAMPLES OF INTERNATIONAL INVOLVEMENT BY CID AND ITS MEMBER INSTITUTIONS

<u>Country</u>	<u>Host Agency</u>	<u>Period</u>	<u>Activity</u>
No Specific Country Involved	USAID	1969 to present	This CID contract assigns specific areas of research to each member university including watershed management, water delivery and removal systems, dryland agriculture, and on-farm management.
Iran	Government of Iran	1974 to 1978	The technical assistance and consulting services are in the area of developing and increasing the agricultural production of cooperatives in dry land farming and increase of proteins.
No Specific Country	U.S. Department of Interior		Research in water production functions and predicted irrigation programs for principal crops as required for water resources planning and increased water use efficiency.
Bolivia Brazil Chile Colombia Venezuela	USAID in Collaboration with appropriate national development agencies	1968 to present	Research in agricultural responses to water management in the wet-dry climatic zones of South and Central America. Many of these activities are associated with increased food production through the improvement of water management practices.

<u>Country</u>	<u>Host Agency</u>	<u>Period</u>	<u>Activity</u>
Bolivia	USAID	1965 to 1975	This long range program has been successful with increased improvement in the quality of sheep and cereals in Bolivia. Involved were: Extension Forage Production Livestock Production Education and Training Cereals Production Water Use Banking and Credit Community Development Animal Breeding Entomology Agricultural Sector Analysis Agriculture Marketing
Colombia	Colombian Agrarian Reform Institute	1969 to 1971	Development of a training, demonstration and research program for farmers, technicians and professionals involved in 20 irrigation projects. Land survey techniques and soil classification for irrigation and development have been considered in some of the courses.
Brazil	USAID	1965 to 1968	To establish small and medium sized industries in Rio Grande do Norte, Brazil. The industries were financed by an all Brazilian stockholder's group. Also, to develop competence in the University of Rio Grande do Norte in industrial development.
Latin America, Headquarters in Venezuela	Organization of American States and Venezuela	1964 to 1972	Administration of the Inter-American Center for the Integral Development of Land and Water Resources (CIDIAT). Activities included national and international training courses for professionals, plus irrigated agricultural research. Emphasis was to strengthen resource development institutions within Latin America. Over 1800 professionals received advanced training during USU's involvement.

<u>Country</u>	<u>Host Agency</u>	<u>Period</u>	<u>Activity</u>
Iran	Ministry of Agriculture	1951 to 1954	Technical assistance in Agricultural Engineering, Veterinary Science, Horticulture, Rural Construction, Irrigation, Livestock Improvement, Extension Work.
Iran	Ministry of Agriculture	1954 to 1958	Plant Science, Agricultural Engineering.
Iran	Ministry of Agriculture	1958 to 1961	Technical assistance for Agricultural Engineering in: Education Demonstration Land Evaluation and Surveys Research Irrigation Drainage Farm Machinery Operations, Maintenance and Repair Farm Machinery Cooperation.
Iran	University of Tehran	1958 to 1963	Contract provided eight advisors to the Karadj College of Agriculture.
Iran	Government of Iran	1973 to 1977	This program is administered through the International Sheep and Goat Institute. Its major purpose is to develop sheep and goats which will most efficiently provide more and better meat, milk, fiber, and recreation for the benefit of man.
Iraq	USTCA	1952-1959	Assistance to Iraqi Ministry of Agriculture and Iraq College of Agriculture.

<u>Country</u>	<u>Host Agency</u>	<u>Period</u>	<u>Activity</u>
Brazil	USAID	1963-1973	<p>Technical assistance to improve agricultural resources in order to raise standard of living for the rural population. Considerable emphasis was placed on participant training in the agricultural sector. Fifty faculty members participated in the project in fields including:</p> <ul style="list-style-type: none"> Agricultural Economics Agricultural Engineering Extension and Training Vocational Agriculture Forage crops Range Management Others
Turkey	USAID	1971-1974	Assistance in agricultural policy development and implementation.

COLORADO STATE UNIVERSITY PRESENTATION
PART 1

by

Marjorie Rhoades
Engineering Sciences Librarian, CSU

Preparing this presentation has been an interesting assignment--my colleague, Barbara Burke, and I learned a number of things about our own campus. We have brought slides to share our campus with you, to give you a birds-eye view of our strengths and weaknesses.

To take the bitter before the sweet, let me briefly answer the questions in the memo of August 20th.

Question 1. What information services are available?

Answer. Virtually none. We use (not through the library) the University of Arizona's data base in Water Resources. We have access to Medline which isn't too helpful to engineers. Until the end of December, we have a grant that allows agronomists only to query CAIN. That's all--and it's not enough.

Question 2. What services would you be able to extend to other universities, for a charge or for free? What services could you provide to international users?

Answer. We, at this time, can offer only normal reference services, inter-library loan, etc. If we were funded we could supply documents, articles, etc. to an international group. On a one-shot or occasional basis, we could supply it now if the need justifies.

Question 3. If you have a special collection that is related to the 211-d grants, how is it accessed (i.e., manually or through a computer)?

Answer. Special collection? Yes and no. Our library collection of a million volumes is rich in AID related materials--it simply would require re-packaging to qualify as "special". There is considerably more pertinent material in our collection than in many segregated but small groups of materials. While our customary access is manual, the collection is equipped with IBM cards because of our computerized circulation system and special computer runs could be made that would collect and segregate, bibliographically, the specialized materials buried in the larger collection. For over a hundred years we have collected everything that looked, smelled or acted like water. We still collect extensively in all the water-related fields as well as many other specialties that support the research fields of our faculty and graduate students.

Question 4. What are your normal information requests?

Answer. Most requests never get to the library but are addressed to a special researcher, a professor who may or may not use the library. Many of the questions that come to our attention are of a different character such as a request for a literature search, rather than fairly short

requests for names of specialists or recommendations of publication. Our professors do a lot of this. We would like to do more.

Question 5. If you have special past publications or special products as part of your information services, bring them along for distribution or bring A-Y material illustrating them.

Answer. You will see a number of our specialized publication in the second part of our slide presentation.

Now let me show you our campus with emphasis on our computer capabilities.

SLIDE 1: Long view, Colorado State University, Morgan Library Building.

This is the Colorado State University Library, the Morgan Library Building. You are facing south. The building is L-shaped and the glassfronted taller section to your left is the east wing; the long low masonry portion is the north wing. We have been in the building about thirteen (13) years and are now approaching our millionth volume. We are a land grant school and have collected heavily in the fields of agriculture, irrigation, hydraulic engineering, hydrology, crops, etc. for over a hundred years. We are overcrowded in the main facility on campus and now have about 50,000 volumes in a storage warehouse five miles away.

SLIDE 2: View of 1st floor, CSU Library, showing card catalog, reference area and auto-tutorial device.

You have now entered the building and, looking southeast, can see the card catalog, the reference area and, at the right of the slide, one of our auto-tutorial devices. These teach, on a self help basis, such basics as "how to use periodical indexes".

SLIDE 3-6. Schematics of building.

These schematics, which appear in some of our orientation leaflets, will give you a quick look at the arrangement of the collection. The basement holds mostly social science materials, the reserve desk, interlibrary loan, and newspapers. However, many of the materials that are water-related appear in the GB 651's and HD 1694's which are housed on the basement level. I forgot to tell you that most of the collection is classified by the Library of Congress classification system. We still have a few volumes in the old Dewey system which is being phased out, as well as a large documents collection (arranged by the Superintendent of Documents system) which does not appear in the card catalog and is located by use of the Monthly Catalog.

First floor holds General Reference, the card catalog, the loan desk, general and humanities materials plus the special collections area at the far end of the north wing. Second floor holds the Science Reference area, offices of the Science Librarians, science and technology materials, and the documents collection.

Third floor contains the folio (tall) science and technology materials, faculty carrels, and the upper level (somewhat like a double-decker truck trailer) contains some materials that are lesser-used but which we felt should remain in the building rather than be sent to storage. Such things as older Agriculture Experiment Station materials are housed there as well as older runs of science and engineering journals.

SLIDE 7. Serials Book Catalog (SBC)--Computer printout version.

About ten years ago work started on computerizing our serial holdings. The first system was a disaster and had to be scrapped. A new man came in as Research and Development Librarian and started from scratch. Design of the new system started in 1968 and we in the Library got our first keypunch in February of 1970. All of our serials (i.e., all of the magazines, journals, conferences in series--almost anything that comes out periodically whether at equal intervals or in random timing), which number about 15,000 currently received, appear in this computer printout (you'll note it takes six volumes to hold this much data) as well as the historical file of ceased titles, changed titles, cross references, etc. The first few times it was full of errors, human and machine, but has now been cleaned up to the point that it is quite respectable. There are more than 20,000 entries in all.

SLIDE 8. Closeup of SBC entry.

As you can see by this closeup of a typical entry, a lot of information is neatly packaged here. The first line gives you the title of the journal, or in this case "American Society of Civil Engineers, Irrigation and Hydraulics Division, Journal", which is the official entry. Official publications of societies are (usually) entered under the society's name--thus Journal of the Atmospheric Sciences would appear under "Journal" while Journal of the American Chemical Society would appear under "American". The second line gives you the call number which, basically, is the address at which this particular title lives on our shelves. The third line gives you our holdings, in other words with what volume and year our collection started. Move on down a few lines and you come to the notation that "Current issues are found on or beneath the slanted shelves." which is your clue that all issues are not in the call number sequence, but are shelved alphabetically by title or official entry, on the display shelves.

SLIDE 9. View of printed SBC.

We also have this file available in printed form for easy reference throughout the building, in professor's offices, off-campus users, and in the two branch libraries. It is also on microfiche and is used in this form primarily by our technical processing people.

SLIDE 10. Overall view of circulation system component machines.

Our second project in automation was the design and implementation of the automated circulation system. This not only keeps track of who has borrowed what (student I.D.'s coded by their Social Security numbers) but gives us management data on what portion of the collection is actually circulating, patterns of use, etc.

SLIDE 11. Closeup of C dek. (Mohawk Data Science Corp. Model 4401C)

Our first C Dek was leased in December, 1971, and delivered in July, 1972. The first book was checked out in September, 1972. We now have four C Deks in use.

SLIDE 12. View of Multiplexer (MDS 3216)

Data punched into the C Deks goes onto magnetic tape and, each evening, is delivered to the computer center. Each morning we have a printout of the Daily Activity Record (DAR) which shows all books, journals, etc. checked out, gone to the bindery, lost and being searched, etc. Our code for lost books is the James Bond "007" which is rather an appropriate note.

SLIDE 13. Tattle-tape System (3 M) - view of gates.

We now leave the building. Be sure you check out all library books or this gate will lock, bells will ring loudly, and you'll be very embarrassed. This system, hopefully, will cut our stolen books down to a minimum. Like most large libraries, we find that books tend to grow legs and walk out of the building unless some sort of surveillance is given at the exits. This is simpler for the students as they don't have to stop and unload their backpacks, briefcases, etc. and seems to be working very well.

SLIDE 14. Slide-rule hanging on a wall with a RIP sign.

This gem hangs in an engineer's office and illustrates nicely the chief function of computers on our campus. Most use is as a sophisticated slide rule, manipulating vast files of numerical data.

SLIDE 15. Dr. Al Barnes, specialist in photogrammetry, at an interactive terminal. (Texas Instruments TXI Silent 700)

We have the use of an interactive system involving computers at University of Wyoming and at Colorado School of Mines. Unfortunately, they are overcrowded and rarely available without a long wait. Hence the resigned look. This professor refers to the system as "That dinosaur."

SLIDE 16-19. Hewlett Packard system (Mass Memory, Terminal, Plotter)

Much more useful in his field of photogrammetry is this Hewlett Packard system. We're looking at \$32,000 here.

SLIDES 20-23. Interactive lab at the Computer Center.

We now move to the Interactive lab at the Computer Center. Here, available to students and others, are a number of interactive terminals. Six are Texas Instrument Silent 700's, four with cassette tape read and write units and two without. There's also a Hazeltine 1000 (unplugged) which has probably been replaced by the Hazeltine 2000 you see here, a Digi-log 33 and an Omnitec Teleray 3300.

SLIDES 24-26. Automated Data Entry Station (ADES) and entry point in Computer Center.

We have five Automated Data Entry Stations (ADES) available for use with our own computer. This ADE Station houses an IBM 29 Card Punch, a CDC 224-2 Card Reader, a CDC Display CRT, a CDC 222 Line Printer and a Houston Complot Plotter. The CSU system is batch, not interactive, and the ADE Station data enters the Computer Center here.

SLIDES 27-34. Computer Center.

Our computer is a CDC 6400 and is used to capacity. We see here an overall view. Here's an operator entering a card deck. This is the display console where the batch jobs are controlled, the four tape drives, and tapes on their way back to the tape storage area. Finally, one of the line printers. This completes your tour of the main campus. Let us move now to the Foothills Campus.

SLIDE 35. Map of Fort Collins showing relative distance and location of the main campus of Colorado State University and the Foothills Campus.

The Engineering Research Center where much of the Engineering work on our campus is housed is five miles from the main campus. My colleague, Barbara Burke, is in charge of the Engineering Sciences Branch Library there and she will be your guide for the rest of this presentation.

**COLORADO STATE UNIVERSITY PRESENTATION
PART 2**

Barbara Burke

SLIDE 36: Long view, Engineering Research Center.

Five miles from the main campus, the growing Foothills Campus of the University provides facilities for graduate research in the sciences. Nestled against the foothills at the base of one of the earth dams of Horsetooth Reservoir, part of the Big Thompson water project, is the Engineering Research Center.

SLIDE 37: Close view, Engineering Research Center.

Graduate students and faculty of the College of Engineering have offices and laboratories here.

SLIDE 38: Hydro Machinery Laboratory.

One of the major laboratories is the Hydro Machinery Laboratory, which has several flumes of various sizes for use in the study of river mechanics and hydraulic research, including irrigation engineering. The large volume of water needed for this laboratory is taken directly from the nearby reservoir.

SLIDE 39: Large flume with project.

This large flume, lovingly referred to as "the sandbox," is used for a wide range of projects, but most often to model an existing river with shoreline and buildings in order to correct flooding or other control problems.

SLIDE 40: Fluid Dynamics and Diffusion Laboratory.

Other major facilities here include the Fluid Dynamics and Diffusion Laboratory which houses three large wind tunnels, including the only meteorological wind tunnel in the world.

SLIDE 41: Solar House.

Another part of the facilities is the Solar Energy Applications Laboratory, which is building an environmental village of solar heated and cooled houses, with two occupied and one being completed.

SLIDE 42: Engineering Sciences Branch Library.

In the Engineering Research Center is a small branch of the CSU Libraries, the Engineering Sciences Branch Library. Planned as a current, working collection to support the on-going research of the Center, the Branch has about 30,000 items, including documents, and about 200 periodicals are received regularly. Much of the material there is on water, since that is the main thrust of research at the Center. Incorporated into the Branch collection is a gift collection of river and sedimentation materials donated by E. W. Lane, a civil engineer with a long and distinguished career in hydraulic engineering and sediment control who spent several years after retirement on the faculty of the College of Engineering at CSU. His collection includes some rare, unique, or obscure materials as well as a very basic collection in his areas of interest.

SLIDE 43: Unprocessed materials.

The Branch has been officially part of the CSU Libraries for just a short time, and still has a substantial number of unprocessed materials, many on water, which have not yet been processed because copies are not in the Morgan Library. As these are cataloged some unusual or obscure materials will undoubtedly be uncovered. These are received as gifts from faculty or on exchange or as gifts from other research institutions.

SLIDE 44: Delft File.

The Branch receives two sets of the Delft Hydraulics Laboratory Documentation Data File on 4 x 6 cards and duplicates cards as needed to file completely with cards under each category number.

SLIDE 45: Civil Engineering Report.

Specialized CSU materials available include the various series published by the Engineering Reports, Civil Engineering Papers, etc.

SLIDE 46: Theses catalog.

These, plus theses, are indexed in the Catalog of Research Reports, Papers, Bulletins, and Theses, College of Engineering. A separate catalog of theses including all colleges of the University is also available.

SLIDE 47: Hydrology paper, Catalog, Monograph.

Also published are monographs not part of a numbered series, such as this one on "Exclusion and Ejection of Sediment from Canals."

SLIDE 48: WRP Catalog.

Dr. Yevjevich, Professor-in-Charge of the Hydrology and Water Resources program, has an independent publishing operation producing Hydrology Papers and other publications on hydrology. The company is called Water Resources Publications and is not connected with CSU, although he and most of the authors are CSU faculty or students.

SLIDES 49 - 50: Two slides of WRP books.

Some examples of these publications are shown.

SLIDE 51: Environmental Resources Center publications.

Another group in the University producing water materials is the Colorado Water Resources Research Institute, also known as the Environmental Resources Center. Here are examples of their publications.

SLIDE 52: Environmental Resources Center list.

They receive many publications from other institutions in exchange for their own, which they donate to the Morgan Library, and periodically a list of these is issued as "now available in the library."

SLIDE 53: AIT Theses.

CSU has the only collection of Asian Institute of Technology theses in the U. S. We have two sets, one in the Morgan Library and one in the Branch. Some of these are water related.

SLIDE 54: Elwood Mead books.

In the Special Collections department of Morgan Library some older water materials are housed, many as part of a newly established Elwood Mead collection.

SLIDE 55: DATA 100 system (4).

The Engineering Research Center is one of the sites of an ADES, Automated Data Entry Station, which is connected to the Computer Center. The system here is the DATA 100, with a control console, card reader, printer, and plotter.

SLIDE 56: Keypunches.

There are four IBM 029 keypunches in the same room. All of this equipment is available for use by any student or staff member who needs it.

SLIDE 57: Remote Terminal.

Until recently they also had this remote terminal, Texas Instruments ASR Model 733 Silent 700 with cassette tape drive, similar to those available in the Interactive Lab.

SLIDE 58: Mountains.

This concludes our CSU remarks. We would welcome questions at any time.

Editor's appendix to Colorado State University presentations:

The CSU librarians found out after returning home that preliminary groundwork had been set up to provide access to the SDC bases. In October, CSU did host a one-day training session for searching the SDC bases.

COLORADO STATE UNIVERSITY AREAS OF EXPERTISE

Primary Areas Under 211-d

Irrigation water delivery and removal

Watershed management

On-farm water management

Waterlogging and salinity control

Sediment control

Irrigation pumping plants

Erosion control

Water law

Other Areas

Atmospheric sciences

Fluid mechanics

Wind engineering

Remote sensing

Solar energy

Agriculture

Forestry

Range science

Food technology

Veterinary medicine

UTAH STATE UNIVERSITY PRESENTATION
CID INFORMATION NETWORK WORKSHOP

by Donnie Thompson

We at Utah State University have access to linkage with Lockheed (DIALOGUE which includes ERIC and CAIN), Systems Development Corporation (a fairly recent system which goes back to 1970 and contains an engineering index), Utah Natural Resources and Land Use Information System (about 9,000 entries current to date), and Utah Publications Retrieval System (recently developed--1,000 entries to date with fiche copies available on all entries). These last two systems were not designed to search large areas; however, they are fast. We have one terminal available on Utah State University Campus, located in the Engineering Building. Also there are 6 teletypes and 2 portable Silent 700 Texas Instruments, accessible 24 hours. Plus the Burroughs 6700 Time Share is also readily accessible. In addition we are tied in with the University of Utah to a Univac 1108 computer.

The services we are able to extend to other university centers and to international users primarily are shipping, upon request, our water bibliography, and extra copies of reports written by staff members. These are free of charge for the xerox copies of theses or dissertations.

We have various organizations through which we are exchanging information. For example:

Domestic:

Water Management Consortium (CID): Colorado State University, University of Arizona, University of California, and Utah State University

Soil Consortium

AID

Professional Societies - American Society of Agricultural Engineers, Irrigation and Drainage Division of American Society of Civil Engineers, and American Society of Agronomy.

International:

International Research Centers (our linkages with the centers are weak at present)

FAO (We regularly exchange publications and have personal discussion with staff).

Host Countries:

AID Missions

Chile: Instituto de Investigaciones Agropecuarias, Office of Agricultural Planification (ODEPA), ENDESA, SAG

Peru: Universidad Nacional Agraria at La Molina, Ministry of Agriculture (MOA); Direccion General de Aguas

El Salvador: DGORD - National Irrigation and Drainage Department,
CENTA - Agriculture Research Department, National Agriculture College of San Andres

Brazil: Universidade Federal Da Paraiba, SUVALE, SUDANE, EMBRAPA

Colombia: ICA, INCORA

SPECIFIC EXAMPLES OF NETWORKING ACTIVITY

A study of water laws and institutions is a specific component of our research contract. In the following display, we have attempted to show the nature of the activities, the cooperation, and provisions for information dissemination and utilization.

INFORMATION MATERIAL AVAILABLE AT UTAH STATE

Collection Enrichment:

Water Management Library. (Holdings are listed in water bibliography).

*Micro-fiche Water Law Library

South American Collection of basic data on water resources, soils, climate and economics

Translation - Spanish Versions

Medias de Aguas en Canales por Medio del Aforador "Sin Cuello"
by Jose Alfaro (staff member)

La Legislacion de Aguas en los Paises del Grupo Andino by
David Daines (staff member)

Irrigation System Evaluation and Improvement by John L. Merriam,
Jack Keller, Spanish version prepared by Dr. Jose Alfaro.

Bibliographic Compilation

Bibliography of Water Management 211(d)-5, USU

Considerable time and expense have been invested in this publication, giving us several large copies for distribution. The Bibliography is updated through "Land Use" which mostly covers Utah. We have kept the 3 original computer reels produced for the Burroughs Computer and written in "Cobol" computer language. Although these reels are not compatible with terminals, we can get an on-line through the main campus library. Approximate cost for reproducing these 3 reels would be \$150.00.

JSU Water Management "flier" (advertising the library)

Literature Search:

"State of Art: Water Management of Heavy Soils" by R. W. Miller, K. Unhanand, H. B. Peterson

Water Law collection micro-fiche library

Educational Material:

Seminar Papers:

Costa Rica Seminario de Riego y Drenaje a Nivel Parcelario para los Países Centroamericanos y Panama, FAO, AID

Metodos y Practicas del Riego por Gravedad by Kern Stutler

Dranaje Como Medio de Control del Agua by E. C. Olsen

Requerimientos de Agua de los Cultivos by G. Hargreaves
(staff member)

Riego por Aspersion by Jose Alfaro

Texts and Handbooks:

Irrigation System Evaluation and Improvement by John L. Merriam, Jack Keller, Jose Alfaro

Irrigation Fundamentals by G. E. Stringham

Sprinkler and Drip Irrigation text by Jack Keller

Water Legislation in the Andean Pact Countries by David R. Daines

Design of Low-head Hydraulic Structures by K. Unhanand

****"Water Legislation" perhaps is one of our most significant publications in our department. It is written in both Spanish and English versions and fliers have been sent to various Spanish and English institutions advertising this particular publication.**

Leaflets:

El Sifon Automatico by Charles Burt, USU; Ing. Gregorio Benjamin Vides, A. Lopex, CENTA; Ing. Jaime Antonio Cea, DGORD.

On-farm Water Distribution Structures by K. Unhanand, H. B. Peterson.

Task Order Reports:

Sprinkler Leaching Program for Very Saline Virgin Desert Soils on the La Joya Irrigation Project, Peru (Programa de Levado por Aspersión en Suelos Deserticos Virgenes Muy Salinos del Proyecto de Irrigacion La Joya, Peru) by E. C. Olsen.

A Demonstration Program for improving Irrigation Practices in Nepal by Wayne D. Criddle.

Research Needs for On-Farm Water Management, Task Order #3, for USAID, Dean Peterson, editor.

Normally we get requests for copies of these reports which, for the most part, we send out free of charge.

UTAH STATE UNIVERSITY AREAS OF EXPERTISE

Primary Areas Under 211-d

Irrigation engineering

Irrigation science

Water law

Irrigated soils

Other Areas

Crop sciences

Range management

Water resource economics

SPECIALIZED SYSTEMS AT UTAH STATE UNIVERSITY
AVAILABLE TO CIDNET MEMBERS

Utah Natural Resources and Land Use Information System

Scope: A tape file containing bibliographic references to published and unpublished resource management information from federal, state, local, and private planning agencies. Information deals primarily with Utah. Locations of publications are edited. All documents are indexed by keyword, geographic area, author and title. Files may be accessed on line using a special string search program called "SEARCH." Full text searching is available; however, no abstracts are included in the system. The file officially began in 1973 and includes about 9,000 entries as of October 1975. Entries are both current and retrospective. The file grows by about 500 items per year. This system uses COBOL language and a Burroughs 6700 computer.

Product: On-line response and computer printouts of bibliographic information.

Cost: Information not available.

Contact: Robert D. Woolley
Reference & Extension Librarian
Utah State University
Logan, Utah 84322

**SPECIALIZED SYSTEMS AT UTAH STATE UNIVERSITY
AVAILABLE TO CIDNET MEMBERS**

Utah Publications Retrieval System (UPRS)

Scope: A tape file containing bibliographic references to all official publications of state and local government in Utah. Files may be accessed on-line using a special string search program called "SEARCH." The file officially began as of January 1975, however, many publications from former years are included. All documents cited are available on microfiche or microfilm from the state archivist. Documents are indexed by keyword, Library of Congress subject heading, author, title, geographic area, and issuing agency. Full text searching is available; however, no abstracts are included in the system. The file grows by about 1200 entries per year. This system uses COBOL language and a Burroughs 6700 computer.

Product: On-line response and computer printouts of bibliographic information.

Cost: Information not available.

Contact: Robert D. Woolley
Reference & Extension Librarian
Utah State University
Logan, Utah 84322

**MOISTURE UTILIZATION IN SEMIARID TROPICS: SUMMER ANNUAL AGRICULTURE PROJECT
INFORMATIONAL RESOURCES TEAM**

by

**Gretchen Dihoff
Project Librarian**

The MUSAT:sra Project has been in existence since July, 1974; the Information Center which is one of its primary outputs has been in full progress since February, 1975. The research aims of the Project are technical agriculture problems related to moisture conservation and use in the semiarid tropical regions of developing countries with low summer rainfall. The geographic focus is the Sahel region of West Africa. The Information Center collects and enters on a bibliographic data base material to support this research, as well as material dealing with the general topic of agriculture in the semiarid tropics, and material dealing with any aspect of the Sahel region.

The Information Center is basically an integral part of the UCR library complex. Material that is purchased or otherwise acquired is destined to become part of the UCR collection, and thus most of it passes through regular channels of acquisition and cataloging. At the present time, however, a portion of the material--mostly reports, reprints, maps and items needed for immediate use either by Project members or the Project Librarian--are processed and housed in the Project Reading Room. This Reading Room collection will, at the end of the Project term, be incorporated into the main body of the UCR collection. All material, including journal articles, reports, maps, monographs, etc., are entered onto a bibliographic data base. This data base is programmed on TRIM (Technique for Report Index Management). The data base is indexed by author, title, subject, geographic location, source, and, where appropriate, organization or affiliation of the sponsor of the research reported. (See Appendix #1, Sample of TRIM pages and Exhibit #1, TRIM subject and geographic indexes.)

The MUSAT:sra data base currently contains 2500 entries, with approximately 3000 more in preparation. A total of 7000 entries is estimated. In historical perspective, the MUSAT:sra data base developed in this way: During the period from the approval of the grant (July, 1974) to the end of January, 1975, the Project Director, Dr. Glen H. Cannell, worked closely with a committee of UCR library staff to plan the Library's contribution to the Project. Recruitment got underway for a Project Librarian, and various indexes and abstracting services were scanned for relevant material. Budgetary considerations were settled, and, probably most important, the use of the TRIM program for the data base was decided.

In late January, 1975, the Project Librarian, Gretchen Dihoff, began work. The tasks at hand were various: (1) to scan the holdings of selected journals in the UCR collections for relevant articles; (2) to devise a workable subject heading thesaurus; (3) to obtain sufficient maps and descriptive background material for orientation of a study group planning to

travel to West Africa in the spring; (4) to begin making contacts for a worldwide network of linkages and to compile a directory of specialists both in dryland agriculture and in African agricultural development; (5) to set up with the appropriate departments of the Science Libraries of UCR systems and procedures for ordering, receiving and cataloging of materials; and (6) to set up the Project Reading Room.

A high level library assistant was hired full time to help expedite these tasks. The person hired had worked part time for the Project in its early stages, and was familiar both with computer applications of bibliographic data bases and with standard library and bibliographic procedures. A number of student assistants were also hired. These people began, on a part time basis, to scan journals selected by the Project Librarian in conjunction with the Project Director. It proved virtually impossible to find student assistants who combined subject background with other necessary skills and available hours, so the assistants were given a list of topics and place names to scan for, and instructed to err on the side of citing too much rather than to risk missing important items. The citations were made on 5 x 8 index cards printed with a form to guide bibliographic style. These cards underwent several revisions until they reached the present form, which seems to give the greatest uniformity in bibliographic style, no matter who is writing the citations. (See Appendix #2, TRIM bibliography citation cards.)

While this task was underway, the several hundred items which had already been cited for inclusion in the MUSAT:sra data base were scanned by the Project Librarian, and keywords recorded. These words were then edited into a thesaurus. (See Exhibit #2, the MUSAT:sra Thesaurus.) This thesaurus has proven adequate to the task, with a number of revisions. It is still undergoing revision until the MUSAT:sra data base is close to completion.

During this period a massive mailing was undertaken, using address lists from Patricia Paylore's Arid-Lands Research Institutes: A World Directory, the files of the Land Tenure Center Library at the University of Wisconsin, and others. (See Appendix #3, sample form letters.) These letters were written in English and French. Response to this mailing came quickly and led to further contacts, as well as bringing large numbers of catalogs, bibliographies and publication lists. Acquisitions requests began to grow, leading to progress in task (5), setting up satisfactory procedures and systems for acquisitions and cataloging. After several shake-down trials, we have worked these out to fairly smooth routines. A major problem was the need to deal with a large number of foreign dealers, mainly dealers in Third World countries with attendant language and other problems. The Sciences Acquisitions Department has been extremely helpful and resourceful in dealing with these problems.

From the beginning, and continuing into the present time, the Project Reading Room has also been the Project Work Room, where a great deal of the processing takes place: editing of citation cards, carding of selections from bibliographies, typing of various kinds, sorting of cards to be searched, binding and labelling of material to be housed in the Reading

Room. It has evolved into a useable and pleasant Reading Room as well, with all reprints and reports housed there neatly bound in either manilla folders or black binders, sheet maps stored in flat map cases, and a simple but effective check-out system. Space may become a problem in the future, but for now there is sufficient room and table and chair space for both the Project staff and the users of the Reading Room.

Over the summer two full-time translators were hired who translated a number of articles from French to English. They also compiled a glossary of terms used in charts and maps, as well as common technical terms, which will be reproduced as a ready reference tool for any researcher using our material.

Over 150 journals held in the UCR collections were scanned - in most cases for the entire holdings - and relevant articles cited. This part of the project is now complete, although new journal titles are suggested from time to time, and current issues are scanned regularly. New entries are now much more likely to come from citations in other bibliographies or from items received as gifts or exchanges as a result of our linkages to other organizations. These linkages are in the process of being transformed into a directory. This directory will, like the bibliographic data base, be computerized using the TRIM program. (See Appendix #4, directory entry card.) Progress on this is slow, since it must be fit into the more immediate work of data base building, acquisitions and other tasks (not the least of which is writing reports for AID). However, a greater deterrent to speed in completing the directory is the desire for completeness and uniformity of entry, which will involve still more information gathering, and essentially another thesaurus to be written. It is expected to have a firm beginning on the directory by the first part of 1976, however, and progress from that point should be more rapid.

This historical overview brings us to present day routines. Each entry onto the data base follows a definite pattern. In the case of citations from scanned journals, the cards were turned in to the Project Librarian, who checked them for selection, and in the early stages submitted her selections to the Project Director for approval. The cards were then routed to the Library Assistant, Pat Copeland, who edited the cards for uniform bibliographic style. She, or a student assistant, checked out the volume of the journal, and routed the journal and the cards back to the Project Librarian for subject headings. The cards thus completed are stamped with an accession number (if this was not done during the editing process), and all the information typed onto input sheets. (See Appendix #5, input sheet.) This extra step actually saves time and effort at the keypunching stage, and ensures greater accuracy in keypunching. The typed input sheets are sent to the Library Systems Department keypunchers in batches of 50 entries; when ten such batches have been keypunched, they are put on the computer, and an updated printout is obtained. To save paper, only every other update prints the full merged indexes. On the alternate updates, only the new material is printed out.

The process is similar for other kinds of entries. Bibliographies and catalogs are checked for selection by the Project Librarian. The marked entries are checked against the existing data base files, then carded by

student assistants. The cards are turned over to student searchers who check the public catalogs of the three UCR libraries, and the standard searching tools, as appropriate. Citations of journal articles not found in the UCR collection are submitted for interlibrary loan requests; monographs are ordered, or requested on interlibrary loan if they are out of print or otherwise unavailable. Most items obtained on interlibrary loan are copied, although in a few cases the location is cited in the body of the data base entry. So far only two or three such off-campus locations are cited. The rest of the 2500 entries can be found on the UCR campus.

Items in this process which are located in the UCR public catalogs are checked out, and proceed through the system outlined above. As interlibrary loan items or acquisition items are received, they are channelled to us. All acquisitions are checked in by Sciences acquisitions. If they are slated to be catalogued, the items are routed to the Catalog Department, the appropriate slips filed with the location noted as AID office, and the items themselves are routed to the Project office. These items are then entered onto the data base in the manner of those described above. Unsolicited gifts are passed to the Library Assistant for carding, and then move through the same process. Journals which are received "for office use" and housed in the Project Reading Room are given one accession number, with an open holdings statement. (See Appendix #6, sample journal holding card.)

Items housed in the Project Reading Room are bound and labeled and card pockets and date due slips are attached. (See Exhibit #3, samples of bound Reading Room copies.) Duplicates are stored for future needs, and several boxes have been set up to hold miscellaneous materials which do not circulate (city maps of Ouagadougou, for instance, obtained at much trouble by the travel team in West Africa.) Items in the Reading Room can be checked out for lengths of time at the discretion of the borrower until an item is recalled for another user.

In conclusion, the following information is given to provide workshop participants with a general idea of time requirements for input to TRIM.

UCR (MUSAT:sra) STATISTICS (for Input of 100 Entries)

Selection from bibliography (by project librarian)	2 hours
Checking against existing TRIM files (by student assistants)	4- 5 hours
Carding (by student or library assistants)	4- 5 hours
Searching public catalogs in UCR Library (by student assistants)	8-10 hours
Searching NUC, NST, etc. (by student assistants)	20-24 hours
Editing cards (by library assistant III)	3- 4 hours

Gathering materials (by student assistants)	2- 6 hours
Assigning subject headings (by project librarian)	4- 5 hours
Typing input sheets (by library assistant or student)	2- 3 hours
TOTAL PRIOR TO KEYPUNCHING	49-64 hours

AUTHOR INDEX (PERSONAL & CORPORATE)

ENTRY NO.

- SPENDLOVE, E. 02642
 REVEGETATING A FLOOD PLAIN TO SAVE WATER. SPENDLOVE, E. WEST
 FARM LIFE 52(11):6 1950 BH 3150 FLOODPLAIN DEVELOPMENT
 WATER CONSERVATION U.S.
- SPRAGUE, G.F. 02712
 THE DEVELOPMENT OF HYBRID CORN TECHNOLOGY IN THE UNITED STATES
 & SELECTED COUNTRIES. SPRAGUE, G.F. U.S.A.I.D. TECH SER BULL
 16 1975 BH 3150 CORN AGRICULTURAL RESEARCH CROP VARIETIES
 U.S.
- SPRAGUE, G.F. 00443
 A MAJOR CEREALS PROJECT TO IMPROVE MAIZE, SORGHUM & MILLET PROD
 UCTION IN AFRICA. EBERHART, S.A. SPRAGUE, G.F. AGRON J 65:36
 5-373 1973 S22.A7 BIO-AG LIB. BH 3150 SORGHUM MILLET
 CURN AFRICA
- SPRAGUE, H.B. 02713
 CHARACTERISTICS OF ECONOMICALLY IMPORTANT FOOD & FORAGE LEGUMES
 & FORAGE GRASSES FOR THE TROPICS & SUBTROPICS. SPRAGUE, H.B.
 U.S.A.I.D. TECH SER BULL 14 1975 BH 3150 LEGUMES FOOD PRODU
 CTION FORAGE CROPS
- SPRAGUE, H.B. 02711
 THE CONTRIBUTION OF LEGUMES TO CONTINUOUSLY PRODUCTIVE AGRICULT
 URAL SYSTEMS FOR THE TROPICS & SUBTROPICS. SPRAGUE, H.B.
 U.S.A.I.D. TECH SER BULL 12 1975 BH 3150 LEGUMES CONTINUOUS
 CRIPPING
- SPRAGUE, H.B. 02714
 SEEDED FORAGES FOR GRAZING & FOR HARVESTED FEEDS IN TROPICS &
 SUBTROPICS. SPRAGUE, H.B. U.S.A.I.D. TECH SER BULL 13 1975
 BH 33150 RANGE MANAGEMENT FORAGE CROPS
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 SOIL MAP OF CENTRAL CASAMANCE (SENEGAL) <CARTE PEDOLOGIQUE DE
 MOYENNE CASAMANCE, SENEGAL>. BALDENSPERGER, J. STAIMESSE,
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- STOCKINGER, K. 02300
 USEFULNESS OF RIDGE CULTIVATION IN NIGERIAN AGRICULTURE. KOW
 AL, J. STOCKINGER, K. SAMARU RES BULL 208 1974 BH 3150
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- SWANSON, N.P. 02908
 EVALUATION OF MULCHES FOR WATER EROSION CONTROL. SWANSON, N.P.
 DEDRICK, A.R. TRANS ASAL 8:438-440 1965 S671.A452 BIO-AG
 LIB. MULCHES WIND EROSION EROSION CONTROL

TITLE INDEX

ENTRY NO.

- ROOTS. 02841
 ROOTS. SAMPSON, H.C. EMPIRE COTTON GROWING REV 16:165-170
 1939 BH 3150 ROOT SYSTEMS WEST AFRICA
- RUNOFF PREDICTION FROM POINT RAINFALL DATA BY APPLICATION OF 02892
 RUNOFF PREDICTION FROM POINT RAINFALL DATA BY APPLICATION OF
 THE DIGITAL COMPUTER. PALMER, D.B. JOHNSON, H.P. TRANS ASAE
 7:424-426 1964 S671.A452 BIU-AG LIB. MODELS RUNOFF CALCULA
 TIONS
- RURAL DEVELOPMENT & TRADITIONAL ECONOMIC BEHAVIOR IN AFRICAN 02837
 RURAL DEVELOPMENT & TRADITIONAL ECONOMIC BEHAVIOR IN AFRICAN
 SOCIETY <DEVELOPPEMENT RURAL ET COMPORTEMENT ECONOMIQUE TRADITI
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- RURAL ECONOMY IN THE ZARIA AREA, WITH SPECIAL REFERENCE TO A 02340
 RURAL ECONOMY IN THE ZARIA AREA, WITH SPECIAL REFERENCE TO AGRI
 CULTURE. NORMAN, D.W. SAMARU RES BULL 178 1973 BH 3150
 AGRICULTURAL ECONOMICS VILLAGE STUDIES NIGERIA
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 RURAL SOCIETY IN THE ZARIA AREA: THE CHANGING STRUCTURE OF GAN
 DU. BUNTJER, B.J. SAMARU RES BULL 180 1973 BH 3150 AGRICUL
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 FICATION CLIMATOLOGY WEST AFRICA
- SAHEL: DROUGHT, DEPENDENCE & UNDERDEVELOPMENT. 02648
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 A.M. STANFORD UNIV NO YEAR GIVEN BH 3150 DROUGHT FOREIGN
 AID AGRICULTURAL DEVELOPMENT WEST AFRICA

SUBJECT INDEX

ENTRY NO.

- DIRECTORIES 02813
 UNITED STATES & CANADIAN DOCTORAL DISSERTATIONS ON AFRICA.
 DUIGNAN, P. (COMPILEK) ANN ARBUR, MICH, XEROX UNIV MICROFILMS
 1973 BH 3150 RESEARCH PROJECTS BIBLIOGRAPHIES DIRECTORIES
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- DIRECTORIES 02709
 UNIVERSITY OF CALIFORNIA FACULTY AFRICANIST RESEARCH IN PROGR
 ESS 1973-1975. U.C.L.A. AFRICAN STUDIES CENTER LOS ANGELES,
 UNIV CALIF AFR STUD CENTER 1975 BH 3150 RESEARCH PROJECTS
 BIBLICGRAPHIES DIRECTORIES AFRICA
- DISEASE 02624
 MIGRANTS & MALARIA IN AFRICA. PROTHERO, R.M. LONDON, LONGMANS
 1965 RC165.A1P76 GENL LIB. HEALTH DISEASE AFRICA
- DIVERSION SYSTEMS 02876
 DIVERSION TERRACES FOR EROSION CONTROL & DRAINAGE. BROWER,
 F.R. TRANS ASAE 3:73-74 1960 S671.A452 BIO-AG LIB. DIVERS
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- DROUGHT 02858
 C.I.L.S.S. BUDGET FOR 1974 <C.I.L.S.S. BUDGET POUR L'ANNEE 197
 4>. C.I.L.S.S. OUAGADOUGOU, UPPER VOLTA, C.I.L.S.S. NO YEAR
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- DROUGHT 02682
 INTERNATIONAL DEVELOPMENT STRATEGIES FOR THE SAHEL: A CONFERE
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 <LE DEFICIT PLUVIOMETRIQUE DE 1971-1972 DANS LE SAHEL>. MOUN
 IS, H. C.I.E.H. NO YEAR GIVEN BH 3150 FRENCH DROUGHT
 PRECIPITATION MEASUREMENT CLIMATIC DATA WEST AFRICA
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 REPORT OF THE MEETING OF EXPERTS. PERMANENT INTER-STATE COMMIT
 TEE FOR DROUGHT CONTROL IN THE SAHEL OUAGADOUGOU, C.I.L.S.S./C
 OM.1/73 1973 BH 3150 DEVELOPMENT PROJECTS DROUGHT WEST
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 SAHEL DROUGHT: CHANGE OF CLIMATE OR PART OF CLIMATE? LANDSBE
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AFRICA WISCONSIN AFRICAN STUDIES, NEWS & NOTES. NO.6, JUNE 1975 TO DATE. UNIV OF WISCONSIN AFRICAN STUDIES PROGRAM MADISON, WIS, UNIV OF WIS 1975+ BH 3150 EDUCATION SOCIAL CONDITIONS AFRICA	02681
ALGERIA GREEN BELT AROUND THE DESERT. CAMPBELL-PURDIE, W. ECOLOGIST 4:300-301 1974 QH540.E295 BIO-AG LIB. DESERT AGRICULTURE RECLAMATION ALGERIA	02653
ALGERIA SOIL MORPHOLOGICAL OUTLINE (ALGERIA): AIN-BOUCIF <ESQUISSE MORP HOPEDOLOGIQUE>. KALMS, J.M. I.R.A.T. 1972 BH 3150 FRENCH SOIL MAPS ALGERIA	02729
ALGERIA SOIL MORPHOLOGY MAP (ALGERIA): ZEROUA WADI BASIN <CARTE MORPHOP EDUOLOGIQUE: BASSIN DE L'OUED ZEROUA>. RAUNET, M. I.R.A.T. 1975 BH 3150 FRENCH SOIL MAPS ALGERIA	02732
ALGERIA SOIL MORPHOLOGY MAP (ALGERIA): EL OMARIA AREA <CARTE MORPHOPEDO LOGIQUE: REGION D'EL OMARIA>. RAUNET, M. I.R.A.T. 1973 BH 3150 FRENCH SOIL MAPS ALGERIA	02730
AUSTRALIA FORESTRY & AGRICULTURE IN RELATION TO SOILS IN THE PEMBERTON AREA OF WESTERN AUSTRALIA. MCARTHUR, W.M. CLIFTON, A.J. AUST, C.S.I.P.O. SOILS LAND USE SER 54 1974 BH 3150 FORESTRY AGRICULTURAL SYSTEMS AUSTRALIA	02774

UPDATE FOR OPTIMIZATION OF WATER USE IN SEMI-ARID LANDS

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ENTRY NO.

- BAMAKO, MALI, EDIT POP 02863
ETHNIC GROUPS OF MALI <GROUPES ETHNIQUES AU MALI>. N'DIAYE, B.
BAMAKO, MALI, EDIT POP 1970 BH 3150 FRENCH ANTHROPOLOGICAL
STUDIES TRADITIONAL STUDIES MALI
- BERKELEY, UNIV OF CALIF PRESS 02629
URBANIZATION & MIGRATION IN WEST AFRICA. KUPER, H. (ED.)
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NUTRITION OF THE YOUNG CHILD IN THE SAVANNAH ZONE <L'ALIMENTAT
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ASSO, UPPER VOLTA, C.E.S.A.O. 1971 BH 3150 FRENCH NUTRITION
HEALTH WEST AFRICA
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CES D'ARACHIDES AU SENEGAL>. HACQUART, A. BULL AGR CONGO
BELGE 30:106-125 1939 BH 3150 FRENCH PEANUTS SEED IMPROVEM
ENT SENEGAL
- BULL AGR CONGO BELGE 40:1309-1316 02868
WIND EROSION IN THE NORTH OF SENEGAL & IN FRENCH SUDAN <L'EROS
ION EOLIENNE DANS LE NORD DU SENEGAL ET DU SOUDAN FRANCAIS
AUBERT, G. MAIGNIEN, R. BULL AGR CONGO BELGE 40:1309-1316
1949 BH 3150 FRENCH WIND EROSION WEST AFRICA

OPTIMIZATION OF WATER USE IN SEMI-ARID LANDS

ORGANIZATION/AFFILIATION	ENTRY NO.
DIV OF SOIL PHYSICS, VOLCANI CENTER, AGR RES ORGAN, BET DAGA WATER UPTAKE BY SEEDS AS AFFECTED BY WATER STRESS, CAPILLARY CONDUCTIVITY, & SEED-SOIL WATER CONTACT. I. EXPERIMENTAL STUDY. HADAS, A. RUSSO, D. AGRON J 66:643-647 1974 S22.A7 BIO-AG LIB. WATER UPTAKE MOISTURE STRESS ISRAEL	00419
DRYLAND AGR RES PROJECT, C.A.Z.R.I., JODHPUR (RAJASTHAN), IN A NOTE ON THE EFFECTS OF NITROGEN LEVELS & METHODS OF APPLICAT ION ON THE EMERGENCE & GROWTH OF SLENDER WHEATGRASS (AGROPYRON TRACHYCAULUM) ON DRYLAND. SINGH, R.P. SMOLIAK, S. ANN ARID ZONE 12(3/4):183-185 1973 SB110.A6 BIO-AG LIB. GRASSLAND AGRICULTURE RANGE IMPROVEMENT INDIA	00406
EAST AFR AGR & FORESTRY RES ORG (EAAFRU) NITROGEN & PHOSPHORUS RESPONSES OF SORGHUM & CORN IN UGANDA. JOWETT, D. AGRON J 63:654-655 1971 S22.A7 BIO-AG LIB. SORGHUM CORN FERTILIZER RESPONSE UGANDA	00514
ENG & WATERSHED PLANNING UNIT, SCS, USDA, PORTLAND, ORE METEOROLOGICAL CHARACTERISTICS OF THE SOUTHWEST AS RELATED TO WATER YIELDS. DORROH, J.H. CONTRIB A.A.A.S. COMM DESERT ARID ZONE RES 4:47-50 1960 SB110.A55 BIO-AG LIB. PRECIPITATION SOIL MOISTURE U.S.	01077
EVAPOTRANSPIRATION LAB, KANS STATE UNIV, MANHATTAN, KANS ENERGY BALANCE COMPARISONS OF WIDE & NARROW ROW SPACINGS IN SORGHUM. CHIN CHOY, E.W. KANEMASU, E.T. AGRON J 66:98-100 1974 S22.A7 BIO-AG LIB. SORGHUM ROW SPACING U.S.	00470
EVAPOTRANSPIRATION LAB, KANS STATE UNIV, MANHATTAN, KANS RAINFALL SHELTER & DRAINAGE LYSIMETERS TO QUANTITATIVELY MEASURE DROUGHT STRESS. TEARE, I.D. SCHIMMELPFENNIG, H. WALDREN, R.P. AGRON J 65:544-547 1973 S22.A7 BIO-AG LIB. DROUGHT STRESS LYSIMETRY U.S.	00449
EVAPOTRANSPIRATION LAB, KANS STATE UNIV, MANHATTAN, KANS WATER USE EFFICIENCY & ITS RELATION TO CROP CANOPY AREA, STOMA TAL REGULATION, & ROOT DISTRIBUTION. TEARE, I.D. KANEMASU, E.T. POWERS, W.L. JACOBS, H.S. AGRON J 65:207-211 1973 S22.A7 BIO-AG LIB. SORGHUM WATER USE EFFICIENCY ROOT POSIT ION U.S.	00433
EVAPOTRANSPIRATION LAB, KANSAS STATE UNIV, MANHATTAN, KANS DIURNAL & SEASONAL TRENDS IN NITRATE REDUCTASE ACTIVITY IN FIELD GROWN SORGHUM PLANTS. TEARE, I.D. MANAM, R. KANEMASU, E.T. AGRON J 66:733-736 1974 S22.A7 BIO-AG LIB. SORGHUM NITROGEN RESPONSE U.S.	00428
F.A.O. AFFORESTATION IN ARID ZONES. KAUL, R.N. THE HAGUE, W. JUNK 1970 SD409.K385.1970 BIO-AG LIB. AFFORESTATION DESERTS ARID SOILS	00924

Entry #:

APPENDIX # 2

Title 1)

Author 2)

Source 3)

Year 4)

Call #: 0)

Language 5)

Subject 6)

Orgs. &
Affil. 7)

Geogr.
Locat. 8)

Availability

Source of Reference

UNIVERSITY OF CALIFORNIA, RIVERSIDE

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SCIENCE LIBRARIES

Moisture Utilization in Semi-Arid Tropics:
Summer Rainfall Agriculture Project

RIVERSIDE, CALIFORNIA 92502

Gentlemen:

The University of California at Riverside (UCR) has recently received a 5-year grant from the Agency for International Development (USAID). The purpose of the grant is to strengthen and improve the capability of the UCR faculty to deal with dryland moisture conservation, utilization, and farming problems in semi-arid tropical regions in the developing countries that have low summer rainfall. The faculty at UCR that are concerned with the grant are primarily those in the Departments of Soil Science and Agricultural Engineering, and Plant Science. The agricultural research experience of the more than 50 faculty in these two departments is in the semi-arid regions of Southern California, and much of the research is concerned with irrigation rather than dryland farming per se.

The first phase of the project has been to accumulate a base of technical information on research on dryland farming in the United States. We are now beginning to amass information on research done worldwide on these problems. One of the goals of the Project is to establish at UCR an Information Center with a comprehensive bibliography and location index of relevant material. Another project is a directory of individuals and organizations engaged in research and field work in dryland farming in the semi-arid tropics. These two lists will be updated regularly, and will be available to interested persons and organizations. As our program develops, seminars, workshops, conferences and symposiums will be held.

I am writing to you to inquire about publications of your organization which we might review for purchase or subscription, and about current research which might be relevant to the Project. Any suggestions, advice, publication lists, catalogs, etc., will be greatly appreciated.

Thank you.

Sincerely,

Gretchen Dihoff
Project Librarian



SCIENCE LIBRARIES

RIVERSIDE, CALIFORNIA 92502

**MOISTURE UTILIZATION IN SEMIARID TROPICS:
SUMMER RAINFALL AGRICULTURE PROJECT**

Messieurs:

L'Université de Californie à Riverside (UCR) a reçu récemment une bourse de cinq ans de l'Agence pour Développement International (USAID). Le but de cette bourse est fortifier et améliorer la capacité de la faculté à UCR pour l'étude de la conservation et utilisation de la humidité des régions desséchés et les problèmes d'agriculture dans les régions semi-arides tropicales dans les pays en voie de développement ayant les pluies d'été. La faculté à UCR qui se concerne à ce bourse sont principalement ceux dans le Département de la Science de Sols et Génie Agricole, et la Science des Plantes. L'expérience en recherche agricole de la plus de 50 membres des facultés de ces deux départements est dans la région semi-aride du sud de Californie et la plupart de la recherche s'agit de l'irrigation et ne pas de la cultivation sèche même.

La première phase du projet était accumuler une base de renseignements techniques sur la recherche de l'agriculture sèche aux États Unis. Nous commençons maintenant ramasser des renseignements sur la recherche mondiale de cetttes problèmes. Un des buts du Projet est d'établir à UCR un Centre de Renseignements, avec une bibliographie et une liste des locations comprehensive des matériaux relatifs. Un autre but est une directoire des individus et des organisations qui font de la recherche de l'agriculture sèche dans les tropiques semi-arides. Ces deux listes sera revisé régulièrement, et sera disponibles aux individus et aux organisations intéressés. Comme notre programme se développera, nous organiserons des séminaires, ateliers, conférences et symposia.

Je vous écris en ce moment m'informer si votre organisation a des publications que nous pourrions revoir pour achat ou abonnement, et s'il y a de la recherche courant qui est relative au Projet. Nous apprécierons tellement tout conseil, suggestions, listes des publications, catalogues, etc.

Veillez accepter, messieurs, l'expression de mes sentiments les plus sincères,

Gretchen Dihoff
Project Librarian

UNIVERSITY OF CALIFORNIA, RIVERSIDE

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO



SANTA BARBARA • SANTA CRUZ

SCIENCE LIBRARIES

RIVERSIDE, CALIFORNIA 92502

MUSAT:SRA Moisture Utilization in the Semi-
Arid Tropics: Summer Rainfall Agriculture

Gentlemen:

The enclosed materials describe our Project in some detail. In attempting to achieve our goals in regard to information resources for this project, I am writing to a large number of organizations and individuals who, as listed in various directories, have research, development or other interests in either agriculture in the semi-arid tropics, or in African development.

If you would like to be listed in a directory of specialists in these two areas, and/or if you would like to be placed on our mailing list to receive our occasional publications and newsletters please let me know. Any suggestions of material that should be included in the data base described in the enclosed brochure, or other persons or organizations involved in these areas of interest would be greatly appreciated.

Sincerely,

Gretchen Dihoff
Project Librarian
MUSAT: SRA

GD:sr
enclosure

(Sample index pages attached
to original)

UNIVERSITY OF CALIFORNIA, RIVERSIDE

APPENDIX #3: Sent to African Studies
Programs, Libraries, Research and
Development Organizations

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO



SANTA BARBARA • SANTA CRUZ

SCIENCE LIBRARIES

MOISTURE UTILIZATION IN SEMIARID TROPICS:
SUMMER RAINFALL AGRICULTURE PROJECT

RIVERSIDE, CALIFORNIA 92502

Gretchen Dihoff, Project Librarian

Announcing a new research project and data base dealing with the Sahel and other semi-arid tropical regions of the developing nations:

THE PROJECT

The University of California at Riverside (UCR) has recently received a five year grant from the Agency for International Development (USAID). The purpose of the grant is to strengthen and improve the capability of the UCR faculty to deal with dryland moisture conservation, utilization, and farming problems in the semi-arid tropical regions in the developing countries that have low summer rainfall. The area of principle concentration is the Sahel region of West Africa. In June 1975 a group of Project members made a study tour of four countries in the Sahel--Senegal, Mali, Upper Volta and Niger--to consult with scientists doing research in that area.

One of the goals of the Project is to establish at UCR an information Center with a comprehensive collection and bibliography of relevant material. Another project is a directory of individuals and organizations engaged in research and field work in dryland farming in the semi-arid tropics. These two lists will be updated regularly, and will be available to interested persons and organizations. As our program develops, seminars, workshops, conferences, and symposiums will be held.

THE DATA BASE

The first goal mentioned above is already well underway. A computerized bibliographic data base has been established, and is growing rapidly. The material now in the data base reflects the Project's first research needs--the collection of material on dryland farming in semi-arid regions throughout the world, including the United States. As input is prepared, the focus is moving more and more toward the concentration mentioned above, that is, the Sahel region. Geographic, climatic, social and cultural material on that region will also be included.

The bibliography is indexed by title, author, subject, and geographic location. The subjects are assigned from a thesaurus--still undergoing revision--which was developed specifically for this bibliography. Topics of subject headings include, for instance crop names, such as sorghum, millett, cowpeas, peanuts; soil erosion and erosion control; soil fertility, drought. Sample pages of each index are attached.

As the bibliography grows, sections of general research interest will be prepared for publication. Searches on individual topics can be arranged. Hopefully this Project will provide the basis for a centralized pool of information on the Sahel, and for an exchange of research and information that will eventually contribute to the solution of the food production problems of the semi-arid tropics.

We would appreciate your suggestions for material to include in this data base, and your catalogs and publication lists.

Gretchen D. Dihoff

Entry #

APPENDIX #4

Name 1)

Organization 2)

Address 0)

**Geographic
Area 3)**

**Subject
Field 4)**

- IA1 C 02808 1 1)Research report, 1974: Australian National University, Research School Pacific Studies, Dept. of Economics. 2)Australian National University 3)Canberra, Aust Nat Univ 4)1974 0)BH 3150 6)research projects 8)Aust:
- 02841 1 1)Roots. 2)Sampson, H.C. 3)Empire Cotton Growing Rev 16:165-170 4)1939 0)BH 3150 6)root systems 8)West Africa
- 02892 1 1)Runoff prediction from point rainfall data by application of the digital computer. 2)Palmer, D.B. 2)Johnson, H.P. 3)Trans ASAE 7:424-426 4)196 0)S671.A452 Bio-Ag Lib. 6)models 6)runoff calculations
- 02837 1 1)Rural development & traditional economic behavior in African society <Developpement rural et comportement economique traditionnel au sein d'une societe africaine>. 2)Nicolas, G. 3)Geneve Afr 8(2):18-35 4)1969 0)BH 5)French 6)agricultural development 6)traditional societies 6)agricultur. systems 8)Africa
- 02820 1 1)Rural life the essential basis of all development; what is the Senegal experience? <L'animation rurale' base essentielle de tout developpement, Ou en est l'experience Senegalaise?>. 2)Cisse, B.M. 3)Afr Doc 68/69:115-1 4)1963 0)BH 3150 5)French 6)extension 6)agricultural development 8)Senegal
- 02806 1 1)Rural water supply & sanitation in less-developed countries: a selected annotated bibliography. 2)White, A.U. 2)Seviour, C. 3)I.D.R.C.-028E 4)1974 0)BH 3150 6)water management 6)bibliographies

Entry #: 003133

APPENDIX #6

Title 1)C.I.M.M.Y.T. Library. New acquisitions. v.2, no.1, Jan.1974 to date.

Author 2)C.I.M.M.Y.T.

Source 3)Mexico, C.I.M.M.Y.T.

Year 4)1974+ Call #: 0)BH 3150

Language 5)

Subject6)

Orgs. &
Affil. 7)

Geogr.
Locat. 8)

Availability Gift
Source of Reference

UNIVERSITY OF CALIFORNIA, RIVERSIDE, AREAS OF EXPERTISE

Primary Areas Under 211-d

Dryland agriculture

Sorghum

Millet

Crop-water relationship modeling

Soil management

Erosion control

Other Areas

Citrus culture

Drip irrigation

Biological control

**SPECIALIZED SYSTEMS AT THE UNIVERSITY OF CALIFORNIA, RIVERSIDE,
AVAILABLE TO CIDNET MEMBERS**

MUSAT:sra Project data base

- Scope:** This is a bibliographic data base developed and maintained by the 211-d grant, Moisture Utilization in the Semi-arid Tropics: summer rainfall agriculture project. It covers published and unpublished literature, including journal articles dealing with dryland agriculture in the semi-arid tropics, particularly in the Sahel region of West Africa, and social, cultural and economic material dealing with the Sahel region.
- Product:** In response to a request for citations, a user will receive a computer printout or a typed list giving the citations. Since nearly all items cited are available on the UCR campus, interlibrary loans can be arranged for U.S. users. For overseas requests arrangements will be made on a case by case basis. In the few cases where items are not located on the UCR campus, the location is in the UC system, and the location given in the body of the citation.
- Cost:** There is no cost for MUSAT services.
- Contact:** Search requests should be directed to the attention of Gretchen Dihoff, MUSAT:sra Project, Science Libraries, University of California, Riverside, CA. 92507. (714) 787-5312.

**SPECIALIZED SYSTEMS AT THE UNIVERSITY OF CALIFORNIA, RIVERSIDE,
AVAILABLE TO CIDNET MEMBERS**

The Drip Irrigation Information Center and Archive

- Scope:** The Drip Irrigation Information Center and Archive was established by a grant from the Second International Drip Irrigation Congress, April, 1975. It has compiled a bibliography of over 700 entries covering the last 15 years of publications on the subject of drip or trickle irrigation. A substantial portion of the items cited are now available in the Bio-Agricultural Library. Work is underway to obtain the remaining items, either in paper or microfilm form. It is anticipated that the bibliography will be put on computer using the TRIM system, and will be regularly updated.
- Product:** The printed bibliography is available through the Bio-Agricultural Library. Photocopies of items available in the Bio-Agricultural Library can be sent on request. At present specific questions could be handled by the Reference Services staff. When the bibliography is put on computer, searches on specific questions will be possible.
- Cost:** The bibliography is presently available at no cost. Photocopies of items requested are available at cost, 5¢ per page.
- Contact:** Reference queries should be directed to the attention of Gretchen Dihoff, MUSAT:sra Project, Science Libraries, University of California, Riverside, CA 92507. (714) 787-5312.

**SPECIALIZED SYSTEMS AT THE UNIVERSITY OF CALIFORNIA, RIVERSIDE,
AVAILABLE TO CIDNET MEMBERS**

The UCR Bio-Agricultural Library

- Scope:** The Bio-Agricultural Library, established in 1917, now comprises 84,000 volumes, and over 2,300 serial publications are currently received. Outstanding collections in agriculture, subtropical horticulture, arid land agriculture, the biological sciences, citrus and carob are included.
- Product:** Regular library and interlibrary loan services. The MUSAT Project librarian can act as liaison with reference questions which fall into the special purview of the Bio-Agricultural Library.
- Cost:** There is no cost.
- Contact:** Reference queries should be directed to the attention of Gretchen Dihoff, MUSAT:sra Project, Science Libraries, University of California, Riverside, CA 92507. (714) 787-5312.

OTHER SPECIAL SOURCES AT THE UNIVERSITY OF CALIFORNIA, RIVERSIDE

UNIVERSITY OF CALIFORNIA, RIVERSIDE--OFFICE OF TECHNICAL INFORMATION
STATEWIDE AIR POLLUTION RESEARCH CENTER

Riverside, CA 92502
Dr. Marian Carpelan, Manager
Phone: (714) 787-5132

Subject: Air pollution

Special Collections: San Francisco Bay Area Air Pollution Control District's Library (16,000 entries on microfilm).

Holdings: 150 books, 2000 unbound technical reports; 3 bookcase shelves of newspaper clippings; 30 bookcase shelves of miscellaneous material; 12 bookcase shelves of research staff reprints.

Subscriptions: 25 journals and other serials, 5 newspapers.

Publications: California Air Environment, 2/year, free on request.

Special Indexes: Computer Index of Research Center staff publications, 1950-1975; TRIM computerized index of unbound technical reports.

Staff: Dr. James N. Pitts, Jr., Director, Statewide Air Pollution

UNIVERSITY OF CALIFORNIA, RIVERSIDE--DEPARTMENT OF ENTOMOLOGY LIBRARY

Riverside, CA 92502
Saul Frommer, Senior Museum Scientist
Phone: (714) 782-4315
Mary Ann Walsh, Secretary
Phone: (714) 787-4674

Subjects: Systematic and economic entomology, biological control, acarology

Special Collections: Biological control (>10,000 reprints and bound volumes); insect behavior (emphasis on sexual behavior)(ca. 1000 reprints); Coleoptera (Meloidae)(ca. 1000 reprints and texts); Diptera (Bombyliidae)(>600 reprints and texts); Diptera (Chironomidae)(725 reprints and 27 texts); Thysanoptera (400 reprints and texts); Homoptera (Aphididae)(>500 reprints and 37 books); Acari (>8000 reprints and 120 bound volumes).

Services: Copying (Fee charged); open to outside users.

AN INTRODUCTION TO TRIM

by Everett Wallace

TRIM (standing for Technique for Report and Index Management) is both a service and a set of computer programs maintained by the Library Systems Office, General Library, University of California, Riverside, California, 92507. It provides a flexible means of producing printed indexes reflecting the contents of user files, and is designed to be adaptable to the needs of libraries, projects, and individuals. It is particularly suitable for library material requiring bibliographic access and control but not requiring full cataloging treatment.

Users of TRIM services index their files on standard forms in accordance with TRIM keyboarding specifications, and mail them to the University of California, Riverside, (U.C.R.), Library Systems Office on a regular basis for updating. Turnaround for updates is on the order of 10 to 15 working days, plus mail time. Costs to the user vary depending upon the size of indexed entries, the number of sorted elements defined, and the frequency of printing complete indexes and special lists. For the practice exemplified by U.C.R.'s MUSAT Project, described elsewhere in these proceedings, costs for initial processing have been \$0.41 per entry.

Before proceeding to a detailed description of TRIM input coding conventions with examples of their use, it will be worthwhile to spend a little time on the design philosophy that underlies this development. First, TRIM is intended to be competitive in cost with equivalent manual practices; second, the design emphasizes simplicity of use and therefore simplicity of record format; third, the design is adaptable to a variety of requirements; fourth, the computer programs are written to be maximally efficient.

These several considerations lead to certain clear choices. Limiting printing to upper case only makes printing costs at least a third of what it would be to print in a full character set. Limiting the length of a TRIM entry to 630 characters precludes the use of an extended abstract. This choice is based on the available experimental evidence that the presence or absence of an abstract accompanying a bibliographic or other description appears to have little effect in aiding a user to determine whether he needs to see that document. To put it another way, in our view abstracting and its associated editorial effort is not worth what it costs.

The design of the TRIM record format and its inputting conventions is aimed at freeing the user from having to worry about how the inputs are keyboarded and processed, and at creating the simplest possible record for processing that will meet the criteria of flexibility and adaptability to diverse requirements. It should be recognized that this is almost a completely opposite course to that taken by the large governmental and society designs for recording and processing catalog and index records, e.g., the Library of Congress' MARC format or the American Chemical Society's CA-Condensates version of Chemical Abstracts. The TRIM features reduce both human and machine memory requirements for inputting and processing, and simplify the conventions for machine searching of TRIM files.

To be maximally efficient the computer programs were designed as a series of modules and written in IBM 360 Assembly Language, assuring a speed advantage of 3-5 to 1 over a higher level language. In addition, advantage was taken of efficient utility routines already available, such as the IBM Sort/Merge program. This meant the acceptance of IBM sorting order as the cost-effective course. The programs are run on the U.C.R. campus IBM 360/50 using a partition of 120K bytes.

THE TRIM CODING SHEET

Users of TRIM services index their files, fill out and submit input coding sheets as illustrated in the example of Figure 1. The service assigns each index a unique identification code, i.e., ID code in the left-most column. The user chooses an output format and enters the appropriate code in the column labelled F (for format). There are three format options A, B, or C.

For each item or entry indexed, the user assigns an entry number of 5 digits and enters it in the column labelled Entry and enters the 1st card number in the column labelled Card. Entry numbers may be pure numbers, letters, or alpha-numeric, e.g., 12345, or LA123. They identify each unique item indexed in the file.

The body of each indexed entry is entered on the sheet in the area labelled "Index Content Within Numbered Fields." Each entry must begin with a blank space followed by a field number as shown in Figure 1. The convention of a slashed lower case is used to indicate a blank unequivocally for the keypunch operator. Otherwise the operator is expected to punch blank spaces as seen in the running text. For each entry the "Index Content" area may contain up to 630 characters, including blank spaces and field numbers.

INDEXING ENTRIES WITH FIELD NUMBERS

TRIM uses numbered fields to identify elements of information that are to provide an alphabetic key to the contents of the entries, and those that are not to be sorted and alphabetized. It is customary to use zero (0) to identify elements that are not to be sorted, and numbers 1 through 9 for elements that are to be sorted into as many different alphabets. The field numbers are single digit numbers followed by a right parenthesis, e.g., 1), 2), 3), etc. The information contained in a field follows directly after the parenthesis with no blank space between, e.g., 1)President of the United States. Field numbers must be preceded by a blank space.

The example of Figure 1 illustrates how two entries from a collection of federal documents might be treated, given a need to provide access to organization plans from several agencies. The field numbers used in the example are 0) for unsorted data, 1) for author, 2) for title, 3) for shelf list. The three alphabets resulting from these assignments are shown in Figures 2 and 3. Field numbers may be used any number of times within an entry and in any order the user finds convenient.

TRIM CODING SHEET

Date: 8/28/72

Name: Govt. Publications, UCR

Phone: 787-3226

ID 1-3	F 4	Entry 5 - 9	Card 10	Index Content within numbered fields 11 - 80
GP1	B	00112	1	1)Library of Congress. Congressional Research Service. 1)Kravitz, Walter. 1)Graham, Virginia. 2)Some effects of the President's reorganization proposals of 1971 on congressional committee jurisdictions: the legislative committees. 0)July 2, 1971. 3)LC 14.9:71-1
		00113	1	1)Congressional Research Service. 0)see Library of Congress. Congressional Research Service.
		00114	1	1)President of the United States. 2)Papers relating to the President's departmental reorganization program, a reference compilation. 0)Feb. 1972. 3)PREX 2.2:R29/972

CODING SHEET PROOF FOR GP1

ENTRY 00112 FORMAT B
 1 1)LIBRARY OF CONGRESS. CONGRESSICNAL RESEARCH SERVICE. 1)KRAVITZ, WAL
 2TER. 1)GRAHAM, VIRGINIA. 2)SOME EFFECTS OF THE PRESIDENT'S REORGANIZAT
 3ION PROPOSALS OF 1971 ON CONGRESSIONAL COMMITTEE JURISDICTIONS: THE LE
 4GISLATIVE COMMITTEES. 0)JULY 2, 1971. 3)LC 14.9:71-1

ENTRY 00113 FORMAT B
 1 1)CONGRESSIONAL RESEARCH SERVICE. 0)SEE LIBRARY OF CONGRESS. CONGRE
 2SSIONAL RESEARCH SERVICE.

ENTRY 00114 FORMAT B
 1 1)PRESIDENT OF THE UNITED STATES. 2)PAPERS RELATING TO THE PRESIDENT'
 2S DEPARTMENTAL REORGANIZATION PROGRAM, A REFERENCE COMPILATION. 0)FEB.
 3 1972. 3)PREX 2.2:R29/972

Figure 1. Coding Sheet and Proof in Punched Card Format

FEDERAL GOVERNMENT ORGANIZATION PLANS AND PROPOSALS

AUTHOR INDEX	ENTRY NO.
CONGRESSIONAL RESEARCH SERVICE. CONGRESSIONAL RESEARCH SERVICE. SEE LIBRARY OF CONGRESS. CONGRESSIONAL RESEARCH SERVICE.	113
GRAHAM, VIRGINIA LIBRARY OF CONGRESS. CONGRESSIONAL RESEARCH SERVICE. KRAVITZ, WALTER. GRAHAM, VIRGINIA. SOME EFFECTS OF THE PRESIDENT'S REORGANIZATION PROPOSALS OF 1971 ON CONGRESSIONAL COMMITTEE JURISDICTIONS: THE LEGISLATIVE COMMITTEES. JULY 2, 1971. LC 14.9:71-1	112
KRAVITZ, WALTER LIBRARY OF CONGRESS. CONGRESSIONAL RESEARCH SERVICE. KRAVITZ, WALTER. GRAHAM, VIRGINIA. SOME EFFECTS OF THE PRESIDENT'S REORGANIZATION PROPOSALS OF 1971 ON CONGRESSIONAL COMMITTEE JURISDICTIONS: THE LEGISLATIVE COMMITTEES. JULY 2, 1971. LC 14.9:71-1	112
LIBRARY OF CONGRESS. CONGRESSIONAL RESEARCH SERVICE. LIBRARY OF CONGRESS. CONGRESSIONAL RESEARCH SERVICE. KRAVITZ, WALTER. GRAHAM, VIRGINIA. SOME EFFECTS OF THE PRESIDENT'S REORGANIZATION PROPOSALS OF 1971 ON CONGRESSIONAL COMMITTEE JURISDICTIONS: THE LEGISLATIVE COMMITTEES. JULY 2, 1971. LC 14.9:71-1	112
PRESIDENT OF THE UNITED STATES PRESIDENT OF THE UNITED STATES. PAPERS RELATING TO THE PRESIDENT'S DEPARTMENTAL REORGANIZATION PROGRAM, A REFERENCE COMPILATION. FEB. 1972. PREX 2.2:R29/972	114

Figure 2. Author Index Example

FEDERAL GOVERNMENT ORGANIZATION PLANS AND PROPOSALS

TITLE INDEX

ENTRY NO.

PAPERS RELATING TO THE PRESIDENT'S DEPARTMENTAL REORGANIZATION PROGRAM, A REFERENCE COMPILATION. FEB. 1972. PREX 2.2:R29/972 114

SOME EFFECTS OF THE PRESIDENT'S REORGANIZATION PROPOSALS OF 1971 ON CONGRESSIONAL COMMITTEE JURISDICTIONS: THE LEGISLATIVE COMMITTEES. JULY 2, 1971. LC 14.9:71-1 112

FEDERAL GOVERNMENT ORGANIZATION PLANS AND PROPOSALS

SHELF LIST

ENTRY NO.

LC 14.9:71-1 112
LIBRARY OF CONGRESS. CONGRESSIONAL RESEARCH SERVICE. KRAVITZ, WALTER. GRAHAM, VIRGINIA. SOME EFFECTS OF THE PRESIDENT'S REORGANIZATION PROPOSALS OF 1971 ON CONGRESSIONAL COMMITTEE JURISDICTIONS: THE LEGISLATIVE COMMITTEES. JULY 2, 1971. LC 14.9:71-1

PREX 2.2:R29/972 114
PRESIDENT OF THE UNITED STATES. PAPERS RELATING TO THE PRESIDENT'S DEPARTMENTAL REORGANIZATION PROGRAM, A REFERENCE COMPILATION. FEB. 1972. PREX 2.2:R29/972

Figure 3. Title Index and Shelf List Example

To recapitulate, each entry must begin with a blank space, followed by a field number. The data following the field number is entered directly after the parenthesis with no blank space between. After a field number any number of characters may be written to the limit of entry size of 630 characters. Any number of fields may be used within that limit of space given that each must have at least one character of data within the field. Ten different field numbers are available, which means that you may have up to nine different alphabets in one index. You may, of course, choose to have several indexes for different materials or collections. Up to 100,000 entries may be contained in a TRIM index.

PRINTING AND SORTING CONVENTIONS

The printed index displayed in Figures 1 - 3 present first a proof of the TRIM coding sheet that replicates the punched card images. Each time a user presents an update to his indexes to the TRIM service, he obtains a proof of his coding sheets, and may, on demand, obtain a complete list of the punched-card format file representing the complete index. This file is arranged by entry number. For many applications the user may find it advantageous to have entry numbers correspond to accession, filing, or shelving numbers. The user is in control of the entry numbers, and may present them in any order on coding sheets that he finds convenient. The coding sheet proof, however, will be printed in entry number order, and as such, could be used as an official history or shelf list entry file, since it is here that complete tracing and formatting information is available.

The alphabetized lists of Figures 2 - 3 present the sorted field information on the left with an indentation for the body of the entry. The content of each entry is printed in the order submitted on the coding sheet with the field numbers deleted. The print lines were fixed at a length appropriate to being contained on an 8 x 11" page so that the indexes could be easily reproduced on standard sized paper, and otherwise be assembled or bound in a size convenient for lookup and storage.

Sorting order in TRIM is letter by letter with blank spaces being treated as a letter. This is equivalent to conventional word by word and letter by letter within-a-word filing order except that punctuation is also subject to a filing order, and files ahead of the alphabet. For example, the word man would be filed in the following order, depending on punctuation:

```
manØ  
man.  
man;  
man,  
man:  
man'  
mana
```

Sorting is confined to the first 60 characters of a field (or less if the field is shorter than 60 characters), as is the printing of the sorted elements in a TRIM index. This is illustrated in the title index of

Figure 3; the titles are terminated at the 61st character. Generally this length is quite adequate for discrimination in an alphabetic file.

When fields are identical within an alphabet, as would be the case with multiple publications of an author within an author list, a second level of sorting is effected upon the first 20 characters of each entry. Some examples of this feature will be presented in Figures 4 and 5. The second level sort makes the order of elements in an entry a fairly important choice for the user since the first 20 characters will determine the order of printing the entries when the data in the sorted fields is the same.

FORMAT OPTIONS

TRIM offers three format options: A, B, and C. Option A provides for complete information at every point in a user's index. Option B provides the same, except that the contents of field number 5 will not be printed in the body of the entries. That is, there will be an alphabet arranged by the contents of field number 5, but those contents will not be printed anywhere else in the index, except of course, in the coding sheet proof. There was no particular reason for selecting 5 as the number of the field to exhibit this feature; any could have been chosen, and we chose 5.

Figures 4 and 5 illustrate an application of Option B to an index to journal articles. Field number 5 is assigned to subject description. As in the prior example, field number 0) is for unsorted information, number 1) for author, but the order of entry elements chosen by this user is title, author, source, date, page, subject. Since two of the authors are the same, the figures will also illustrate the secondary sort on the first 20 characters of the entry. In this case the order will be title within author, and title within subject name. You will note that the contents of field 5, LIBRARY SYSTEM ANALYSIS, does not appear in the body of the entries as printed beneath the sorted field elements.

Option C offers a full measure of flexibility and control over the specification of the sorting and printing of fields. This option permits the user to specify which fields he wishes to have sorted and which printed or not printed in the body of the entries. The user may choose to specify 0) as a sortable field as well as fields 1) through 9), or alternatively, to define one or more fields in addition to 0) as non-sortable. Control over the fields to be printed in the body of the entries provides an extension of the feature of Option B for field 5) to any other fields. The option is particularly applicable to files containing different kinds of information needed for access in different alphabets, that would not be needed for reference at every point in the index - as would be the case if they were designated to be printed in the body of the entries.

CODING SHEET PROOF FOR WB2

ENTRY 71004 FORMAT B
1 0)ANALYTICAL MODELS FOR LIBRARY PLANNING. 1)COOPER, MICHAEL 0)AND 1)
2 LEIMKUHNER, FERDINAND F. 0)J. ASIS 22:6 NOV.-DEC. 1971. P390. 5)LIBR
RARY SYSTEM ANALYSIS

ENTRY 71039 FORMAT B
1 0)COST ACCOUNTING AND ANALYSIS FOR UNIVERSITY LIBRARIES. 1)LEIMKUHNER
2, FERDINAND F. 0)AND 1)COOPER, MICHAEL D. 0)COLL.& RES. LIBS. 32:6 N
3OV. 1971. P449. 5)LIBRARY SYSTEM ANALYSIS

INFORMATION SCIENCE PAPERS AND ARTICLES

AUTHOR INDEX ENTRY NO.

COOPER, MICHAEL. 71004
ANALYTICAL MODELS FOR LIBRARY PLANNING. COOPER, MICHAEL. AND
LEIMKUHNER, FERDINAND F. J. ASIS 22:6 NOV.-DEC. 1971. P390.

COOPER, MICHAEL. 71039
COST ACCOUNTING AND ANALYSIS FOR UNIVERSITY LIBRARIES. LEIMKUH
NER, FERDINAND F. AND COOPER, MICHAEL D. COLL. & RES. LIBS.
32:6 NOV. 1971. P449.

LEIMKUHNER, FERDINAND F. 71004
ANALYTICAL MODELS FOR LIBRARY PLANNING. COOPER, MICHAEL. AND
LEIMKUHNER, FERDINAND F. J. ASIS 22:6 NOV.-DEC. 1971. P390

LEIMKUHNER, FERDINAND F. 71039
COST ACCOUNTING AND ANALYSIS FOR UNIVERSITY LIBRARIES. LEIMKUH
NER, FERDINAND F. AND COOPER, MICHAEL D. COLL. & RES. LIBS.
32:6 NOV. 1971. P449.

Figure 4. Example of Format B

INFORMATION SCIENCE PAPERS AND ARTICLES

SUBJECT INDEX

ENTRY NO.

LIBRARY SYSTEM ANALYSIS 71004
 ANALYTICAL MODELS FOR LIBRARY PLANNING. COOPER, MICHAEL. AND
 LEIMKUHNER, FERDINAND F. J. ASIS 22:6 NOV.-DEC. 1971. P390.

LIBRARY SYSTEM ANALYSIS 71039
 COST ACCOUNTING AND ANALYSIS FOR UNIVERSITY LIBRARIES. LEIMKUH
 NER, FERDINAND F. AND COOPER, MICHAEL D. COLL. & RES. LIBS.
 32:6 NOV. 1971. P449.

Figure 5. Subject Index in field 5 of Format B.

TRIM CODING SHEET

Date: 8/28/72

CORRECTION

Page 1 of 1

Name: Everett Wallace

Phone: (714)787-5326

ID 1-3	F 4	Entry 5 - 9	Card 10	Index Content within numbered fields 11 - 80
WE2	B	71004	D	----- -----
↓	↓	71004		Leimkuhler, Ferdinand F. ØØ0)j. asis 22:6 Nov.-Dec. 1971. ØØP390. Ø5)Libra ----- ry_system analysis -----

Figure 6 Example of Correction & Deletion

SPECIAL LISTINGS

Several types of special lists are available on request. These include extra copies of user indexes, or portions of the indexes, lists of the sorted elements only for authority guidance or analysis of nomenclature, and lists of the entries in an alphabet without the sorted elements. This last may be useful for author lists in which one desires only the body of the entries arranged by author without the author names separately printed on a line above the entries, as is the case with the standard TRIM printout.

CORRECTIONS AND DELETIONS

Corrections and deletions are effected through submission of a coding sheet labelled as such at the top, and the card images to be corrected indicated by entry and card number on the sheet. In addition the entry is indicated to be deleted. Deletions are specified by filling in the ID, Format and entry numbers concerned, and writing the letter "D" in the Card column. The remainder of the coding space is left blank. Figure 6 displays a typical correction-deletion pair for the error that was embedded in the coding sheet proof of Figure 4.

In Figure 4, the second card of the first entry (71004) began with a blank space preceding the name Leimkuhler, which would cause the alphabetization of Leimkuhler in the author index to begin with a blank space, putting it first in the alphabet and out of proper sorting order. Figure 6 illustrates correction of the card images. TRIM corrections, then, are effected through deletion of the old entry wherever it appears in the index, and reprocessing of the corrected cards as an update. It would also be perfectly acceptable to redo the entire entry and either use a new entry number or the old one. In any case the older flawed entry should be deleted.

The ease with which deletion can be done shows one of the major advantages of an indexing support device such as TRIM over conventional manual files. Not only is all of the sorting and filing done mechanically, but weeding files is too, through a very economical convention.

INITIATING A TRIM INDEX

The first step in initiating a TRIM index is to decide what is to be indexed, what kinds of access will be needed, and what entry nomenclature will be optimum. Second, decide on which TRIM conventions seem to fit your requirements best. For example, will you choose to tie your system of numbering entries to a physical filing or shelving order or not? Again, will you need author, title, subject, call number, vendor, publisher, numerical, chronological, geographical, or other distinct files? Which of the Format Options seems appropriate? Third, decide on the order of elements in the description of the indexed entries. Remember that the first field will determine the secondary sort within the sorted fields where the primary sorted elements are identical. To put it another way, choose what you wish to see first, second and third within the body of the entries after and under the sorted elements of the index.

Lastly, obtain a supply of TRIM coding sheets and a TRIM Setup Sheet and begin submitting same to the Systems Office, General Library, UCR. The Setup Sheet will identify the title of the index that you wish printed at the top of each index page, and the titles of the several alphabets defined by the fields you have chosen to use. Figure 7 presents an example of such a sheet for the government document collection indexed in Figures 1 - 3. If no titles are chosen for the fields, the printout will show the field number at the top of each page instead of a field title.

The Setup Sheet contains a pair of columns in the lower right section of Figure 7 labelled C Option and headed by the letters S and P. S stands for sort and P stands for print. In this example the columns are left blank since Option C is not being used. When Option C is used, a 0 or 1 is assigned to the columns to designate which fields are to be sorted and printed. In the S column a 0 would indicate that the user wanted this field non-sortable, a 1 would mean that he wanted it sortable. For the P column, a 1 would mean that the field contents would be printed in the body of the entries, and a 0 will suppress the printing of that field in the body of the entries.

TRIM SETUP SHEET

Date:

Name: Government Publications

Phone: 787-3226

Location: General Library, UCR

ID CODE: GP1

FORMAT: B

Fund: Sub-7

Index Title (60 characters max)

Federal Government Organization Plans and Proposals		C OPTION	
Field No.	Field Title	S	P
1)	author index		
2)	title index		
3)	shelf list		

Figure 7 Example of TRIM Setup

APPENDIX

TRIM SETUP SHEET

Date: August 1975

Name: Gretchen Dihoff
MUSAT - Semi-Arid Lands Project

Phone: 714-787-5312

Location: 3162 Batchelor Hall

ID CODE: sax

UCR

FORMAT: c

Fund: AM-08

Index Title (60 characters Max)

Optimization of Water Use in Semi-Arid Lands

Field No.	Field Title (60 characters max)	C OPTION	
		S	P
0	Non-sortable elements	0	1
1	Title Index	1	1
2	Author Index (personal & Corporate)	1	1
3	Source Index	1	1
4	Year	0	1
5	Language Other than English	0	1
6	Subject Index	1	1
7	Organization/Affiliation	1	0
8	Geographical Location	1	1

CODING SHEET PROOF FOR SAXC

INDEX 0111001110 ← (indicates which fields are sorted) **FORMAT C**
OPTIMIZATION OF WATER USE IN SEMI-ARID LANDS

FIELD 0 KEY 1111111010 ← (indicates fields printed in the body of the entries) **FORMAT C**
NON-SORTABLE ELEMENTS

FIELD 1 KEY 1111111010 **FORMAT C**
TITLE INDEX

FIELD 2 KEY 1111111010 **FORMAT C**
AUTHOR INDEX (PERSONAL & CORPORATE)

FIELD 3 KEY 1111111010 **FORMAT C**
SOURCE INDEX

FIELD 4 KEY 1111111010 **FORMAT C**
YEAR

FIELD 5 KEY 1111111010 **FORMAT C**
LANGUAGE OTHER THAN ENGLISH

FIELD 6 KEY 1111111010 **FORMAT C**
SUBJECT INDEX

FIELD 7 KEY 1111111010 **FORMAT C**
ORGANIZATION/AFFILIATION

FIELD 8 KEY 1111111010 **FORMAT C**
GEOGRAPHICAL LOCATION

(establishes headings for the various indexes or identifies the content of fields)

ENTRY 00001 **FORMAT C**
1 1)AGROCLIMATIC CALENDAR FOR NEBRASKA. 2)NEILD, R.E. 3)NEBR AGR EXP
2STA BULL SB498:1-35 4)1968 0)BH 3150 6)AGROCLIMATIC CALENDAR 8)U.S
3.

ENTRY 00091 **FORMAT C**
1 0)AN 1)*AGROCLIMATOLOGICAL PROCEDURE FOR DETERMINING & EVALUATING TIM
2E & LENGTH OF HARVEST SEASON FOR PROCESSING TOMATOES. 2)NEILD, R.E.
32)YOUNG, J.O. 3)PROC AMER SOC HORT SCI 89:549-558 4)1966 0)BH 3150
4 6)AGROCLIMATOLOGY 6)HARVESTING INTERVAL 8)U.S.

ENTRY 00093 **FORMAT C**
1 1)AGROCLIMATOLOGY AS A BASIS FOR EVALUATING A REGION'S AGRICULTURAL H
2AZARDS. 2)WILHITE, D.A. 2)NEILD, R.E. 3)PROC ASSN AMER GEOGR 6:71-9
33 4)1974 0)BH 3150 6)AGROCLIMATOLOGY 6)DROUGHT PROBABILITY 8)U.S.

ENTRY 00170 **FORMAT C**
1 1)ABSORPTION OF SOIL MOISTURE BY MAIZE ROOTS. 2)DAVIS, C.H. 3)BOT G
2AZ 101:791-805 4)1940 0)BH 3150 6)MAIZE. 6)ABSORPTION BY ROOTS 8)U
3.S.

The word **FORMAT** is repeated for each entry primarily as a check against the possibility of an entry for the same user but for a different index might enter this proof list by mistake.

TITLE INDEX	ENTRY NO.
ABSORPTION OF SOIL MOISTURE BY MAIZE ROOTS. ABSORPTION OF SOIL MOISTURE BY MAIZE ROOTS. DAVIS, C.H. BOT GAZ 101:791-805 1940 BH 3150 MAIZE ABSORPTION BY ROOTS U.S.	00170
ADVECTION & EVAPOTRANSPIRATION OF WIDE-ROW SORGHUM IN THE CENTRAL GREAT PLAINS. HANKS, R.J. ALLEN, L.H. GARONER, H.R. AGRON J 63:520-527 1971 S22.A7 BIO-AG LIB. SORGHUM ROW SPACING EVAPOTRANSPIRATION U.S.	00519
AGRICULTURAL EXPERIMENTS ON THE NATURAL PHOSPHATES OF TILEMSI (MALI) USED FOR RAINFED CROPS. JENNY, F. AGRON TROP 28:1070-1078 1973 S5.A46 BIO-AG LIB. FRENCH (ENGL SUM) PHOSPHORUS CONTENT PHOSPHATE FERTILIZATION MALI	00663
AGRICULTURAL GENETICS; SELECTED TOPICS. AGRICULTURAL GENETICS; SELECTED TOPICS. MOAV, R. (ED.) JERUSALEM, NAT COUNC RES DEVELOP 1973 SB123.A37.19738 BIO-AG LIB. PLANT BREEDING	00691
AGRICULTURAL PROBLEMS IN ARID & SEMIARID ENVIRONMENTS. AGRICULTURAL PROBLEMS IN ARID & SEMIARID ENVIRONMENTS. BEETLE, A.A. (ED.) WYO AGR EXP STA BULL 367:1-64 1960 BH 3150 IRRIGATION WATER USE DRYLAND AGRICULTURE U.S.	00308
AGROCLIMATIC CALENDAR FOR NEBRASKA. AGROCLIMATIC CALENDAR FOR NEBRASKA. NEILD, R.E. NEBR AGR EXP STA BULL SB498:1-35 1968 BH 3150 AGROCLIMATIC CALENDAR U.S.	00001
AGROCLIMATOLOGICAL PROCEDURE FOR DETERMINING & EVALUATING TIME & LENGTH OF HARVEST SEASON FOR PROCESSING TOMATOES. NEILD, R.E. YOUNG, J.O. PROC AMER SOC HORT SCI 89:549-558 1966 BH 3150 AGROCLIMATOLOGY HARVESTING INTERVAL U.S.	00091
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- ALLEN, L.H. 00514
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- BEETLE, A.A. (ED.) 00308
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- DAVIS, C.H. 00170
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- GARDNER, H.R. 00519
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- BOT GAZ 101:791-805** 00170
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ROW SPACING

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SORGHUM

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00308

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U.S.D.A., FORT COLLINS, COLO

00519

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INFORMATION RETRIEVAL PROGRAMS
UNIVERSITY OF HAWAII, COLLEGE OF TROPICAL AGRICULTURE
DEPARTMENT OF AGRONOMY AND SOIL SCIENCE

by Peter P. Rotar

The Department of Agronomy and Soil Science has two programs which are of interest to the CID information network.

Bibliographic Information Retrieval Program

This program is part of a cooperative agreement between the USDA-ARS and the University of Hawaii, Department of Agronomy and Soil Science. This agreement is based on Section 406 of the Food-for-Peace Act (PL-808) passed in 1966, which authorized expenditures of up to \$33 million per year "to conduct research in tropical and subtropical agriculture for improvement and development of tropical and subtropical food products". In early 1971, the International Program Division of ARS requested that the U.H. College of Tropical Agriculture submit a proposal for the establishment of an "Institute for Research and Training in Tropical and Subtropical Agriculture" (HITA). HITA research was to investigate pulse crops, root crops, poultry and pork, tropical fruits and vegetables and tropical pastures. HITA is supposed to develop a collection, in modern retrieval form, of the knowledge available about the selected commodities, etc. Hence the development of the Bibliographic Information Retrieval Program.

This program was initiated in 1974, and the statement of work was:

- a) To establish computerized search capabilities within the University of Hawaii Computing Center for subsequent dissemination of literature citations to tropical agriculture research locations both in Hawaii and elsewhere. Search service will include utilization of relevant available commercial data bases including Biological Abstracts, Chem Abstracts, Food Science and Technology Abstracts and CAIN. The search system is similar to that used by Data Systems Application Division of the USDA.
- b) To conduct bibliographic searches for tropical commodities in terms of evaluating coverage in existing machine readable data bases.
- c) To use these commodities in delineating the scope and definition of the subjects relevant to tropical and subtropical agriculture. This study would define the tropical agricultural audiences, their geographic distribution, publishing habits and general literature use patterns and needs.
- d) To provide recommendations to relevant data base suppliers for new or modified retrieval descriptor terms and recommend sources of information not currently being covered to improve suppliers'

coverage, particularly with reference to tropical and subtropical commodities.

This program has had difficulty in becoming operational and we have just now established the data bases in our computing center. As other relevant data bases become available we hope to include them in our program. We are looking forward to the Commonwealth Agricultural Bureaux's files which are now on magnetic tape but which are not available at this time. We envision these files to be the most important with respect to the coverage which we are seeking.

Our retrieval services are available, according to the broadest interpretation of the agreement, to all workers in the area of tropical and subtropical agriculture. We envision that those individuals and organizations which are capable of paying for retrieval costs would do so and that those not able to would be provided services free of charge. The intent of the project is to develop an International Center for selective dissemination of information concerning tropical agriculture.

We feel that our program can be of considerable use in providing literature searches from machine readable data bases in developing state-of-the-art documents as well as for current awareness service, etc. It should be pointed out that hard-copy of such machine retrieval is available either through interlibrary loan or from the National Agricultural Library.

We do not have search capabilities for literature published prior to 1970 and which does not exist in machine readable form. Data base suppliers inform us that such information in their files will probably never exist in machine readable form. Anyone desirous of literature prior to 1970 will have to use ordinary library search procedures for retrieval.

Our program will provide current awareness information service similar to that provided by USDA-ARS for all of its staff. We will also provide retrospective searches when the need arises. The searches are set up on a batch system basis whereby all profiles are run on the currently received data bases as they arrive at the University of Hawaii. Our files go back to 1970 for CAIN, Bio-Abstracts, Chem Abstracts and to 1974 for Food Science and Technology Abstracts. We also have an on-line terminal in the U.H. Hamilton Library whereby we have access to data bases maintained by Lockheed Information Service, Palo Alto, California. This allows us immediate access to other data files which may be of interest.

At this time we do not have adequate cost figures for the information retrieval program in the Computing Center. After several months of operation we will be able to estimate the local computer costs on a per user profile basis. On-line retrieval includes a long-distance phone charge, the usual data charges from Lockheed Information Service, plus a service charge.

Computerized Soil Data Bank

Under COST's 211(d) grant revision and extension, SOIL DATA BANKS (SDB) for storage, retrieval and interpretation of soil survey data will be expanded to accommodate soils from LDC experiment sites, LDC Experiment Stations and International Centers. The maintenance and operations of one such BANK is supported in part by a contract with the Soil Conservation Service of USDA, and the University of Hawaii. The project title is "Soil Survey Interpretation for Agricultural and Non-agricultural Uses of Land", and the project leader is Dr. H. Ikawa.

The objectives of this project are:

- 1) Creating characterization data file of soil series with representative (functional) morphological, chemical, physical, and mineralogical information which can be used for soil interpretation and updating the University of Hawaii Soil Data Bank.
- 2) Showing relationship between soil properties and behavior by statistical and/or other techniques.
- 3) Selecting criteria which will be used to develop potential indices for agricultural and non-agricultural uses.
- 4) Calculating the soil potential indices, including the basic soil characteristics and edaphic characteristics, for various uses.
- 5) Showing the potential of different soil mapping units for specific uses by means of computer-generated maps including the Automatic Mapping System (AMS).

Soil data stored in the bank are used to develop relationship between measured soil parameters and soil productivity and/or behavior. The relationship, for example, might be the cause and effect relation between texture-mineralogy and permeability, water holding capacity or erosivity. These relationships become more precise for soils which are grouped according to a classification scheme. For example, the criteria for using slightly saline waters for irrigation would be different for soils with oxidic mineralogies than for soils of similar texture but of montmorillonitic mineralogies.

The purposes of linking COST's SOIL DATA BANK to the CID information system are to:

- 1) Enable COST to develop new cause and effect relationships in the soil-water area through discussions with CID scientists.
- 2) Utilize CID's research results for soil survey interpretation.
- 3) Enable CID to utilize existing soil management relationships for problem solving in LDCs.
- 4) Foster greater use of soil survey information in irrigation design and planning.

INFORMATIONAL RESOURCES AVAILABLE TO
THE OREGON STATE UNIVERSITY/CID PROJECT

by

Michael P. Kinch
OSU Agriculture/Forestry Librarian

OSU has only just begun its involvement with CID so we have fewer informational resources to offer than do some of the other institutions represented at this workshop. However, OSU has had some experience in working in AID related projects and has developed some expertise in areas which are related to the project at hand.

An OSU/AID cereals production contract was carried out in Jordan and has only recently been completed. In Turkey two major projects were just completed on cereal breeding and testing. Both were carried out by OSU staff and were sponsored by AID and the Rockefeller Foundation respectively. All of these projects have generated publications.¹

A program with which OSU is still actively involved is the International Plant Protection Center (IPPC) which is located on this campus. This center has produced many publications of its own and has collected other publications for distribution by their office.² In addition, the IPPC has a small library of weed related publications accessed by a needle card-sort system. The IPPC also publishes its INFOLETTER which is distributed to approximately 3,800 addresses in over 100 countries. The INFOLETTER recently won a blue ribbon for excellence from the American Association of Agricultural College Editors. The INFOLETTER attempts to keep its international audience abreast of the latest news, publications and products relating to the field of weed research.³

OSU's KERR LIBRARY:

The Kerr Library houses approximately 750,000 volumes of books and serials, all of which are cataloged according to the Library of Congress system. Of that number about 40,000 volumes deal specifically with agriculture (as defined by the Library of Congress classification scheme) but thousands more are scattered throughout the collection in the areas of agricultural economics, agricultural engineering, animal science, and other related areas. The library currently subscribes to approximately 13,000 scientific serial titles of which about 2,000 specifically deal with agriculture.

Some of the specific collections and resources of the OSU Library are mentioned below:

Map Room:

The OSU Library is fortunate to have a very strong collection of cartographic materials. The Map Room is under the direction of the

Science-Technology Division of the Library and includes about 3,000 square feet of space. The more than 130,000 maps, atlases, and aerial photographs are thoroughly cataloged and accessible to researchers via a catalog located in the Map Room. The Map Room is open about 50 hours per week and is staffed by one full-time employee and several part-time students under the direction of a professional librarian in the Sci-Tech Division.

Library Information Retrieval Service (LIRS):

In May of 1975 the Kerr Library initiated an on-line information retrieval service which goes by the acronym, LIRS. The system consists of a high-speed printer (120 cps) combined with an equally rapid CRT terminal (a DataSpeed 40 Teletype). The terminal is connected by telephone to the Lockheed DIALOG system in Palo Alto, California. We have purchased the terminal through a grant provided by the University's Graduate Research Council which enables us not to have to pass on a terminal rental cost to our patrons. This service can allow us to work on-line with several of the abstracts and indexes which relate to agriculture and other scientific disciplines. We can make literature searches for commercial users as well as university patrons, charging the former group a higher rate.

Besides the above services, the library of course provides other services which are probably similar or the same as those provided by other libraries in the CID but which may be useful to mention. Our interlibrary loan office is quite active and interacts rapidly with other libraries in the Oregon State System of Higher Education via a Western Union TWX housed in the Library. Recently an interlibrary loan tool has been generated by Oregon libraries. It is entitled the OSSHE-OSL (Oregon State System of Higher Education Oregon State Library) Union List of Serials and is available on microfiche in 39 sheets. The List is a pilot attempt with many errors, but is still useful in my estimation. It is expected to be updated periodically and hopefully many of the problems will be smoothed out in future editions.

The Library has an efficient photocopy service which can rapidly reproduce printed materials. Microfilm and microfiche can be copied in the library but at present we have no way to reproduce microcards.

Like many academic libraries, the Kerr Library is a general depository for U.S. Government Documents, as well as for U.S. Military and Federal specifications and standards. The library was formerly a depository for U.S. Atomic Energy Commission publications, but the service was discontinued in 1971 because of budgetary reasons. Most of this material was received in microcard and microfiche form and many individual items are still being purchased on a selective basis.

There are some other OSU resources indirectly related to the Library which might be worth mentioning since they may be useful to the 211-d project.

Computer facilities:

OSU has a Computer Center with terminals scattered about the campus, including two in the Library. The principal computers of the Center are a Control Data CYBER 70 Model 73 and a Model 3300. The CYBER operates under the KRONOS time-sharing system. The CDC 3300 operating system is OS-3, a system designed and developed by the Center. The Library's LOLITA (Library On Line Information and Text Access) system is an on-line process of handling acquisition information and is tied to the Center via a CRT unit in the Library's Technical Services Department.

Environmental Remote Sensing Applications Laboratory (ERSAL):

We have an ERSAL facility on campus to which access can be made to microfiche and large transparencies of remote sensing photographs produced by satellite and high altitude aircraft. The coverage is most complete for Oregon but is worldwide in scope.

Water Resources Research Institute:

The WRRRI was established on campus in 1960 to foster, encourage, and facilitate research and education related to all factors that affect the quantity and quality of water available for beneficial use. The Institute is administered through the Schools of Agriculture, Engineering, and Forestry and its members include all personnel in higher learning in Oregon engaged in water resources research and training. The WRRRI has a small library consisting of a few hundred items relating to water research. The material is to be used in their library and is accessed by a conventional card catalog.

The campus also contains several collections of natural history materials which might be useful to scientists wishing to make identification of specimens in the areas to be under study. An entomological collection contains over 1,000,000 specimens, chiefly from the Pacific Northwest. There is also a special collection of Acarina, or mites, containing approximately 8,000 slides and 1,000 vials of specimens. The Herbarium contains about 180,000 plant specimens plus a large collection of seeds and a fine mycological collection.

Regarding the question of our normal information requests--most of our requests are made in person by our patrons at our Science-Technology reference desk. General questions are answered directly by the librarian who might best handle the question. Many questions are also handled by phone and only a few by letter. The majority of the questions are made by Oregon State University patrons, but some come from business or local government. Those calls from other academic libraries usually are in regard to our holdings or are to refer a question which might be best answered by use of the OSU Library's resources. Our LIRS system has produced a new breed of patron who normally did his or her research quietly in the reference section, but who now comes to save time and avoid tedium by taking advantage of our information retrieval system. LIRS is a time saver for patrons, but has placed the added burden upon

the librarians in that we must help the LIRS patron find in the card catalog, or locate in another library, the sometimes esoteric references spewed forth by the computer. This burden we gladly bear, however, since our job is to get information to our patrons and this is one way we find that it can be done effectively.

The last question posed by Ms. White was "What special past publications or special products have been generated as part of our normal information services?" We have the usual introductory handouts to new patrons entitled OSU Library Handbook which explains the use and services available in the Library. The subject specialist librarians also produce informational bulletins, usually consisting of a single sheet, listing useful references of abstracts, indexes, bibliographies, and a few key journals useful for beginning students for a specific discipline. Most of us have also produced slide-tape programs explaining the uses of certain key reference tools such as the Science Citation Index and Biological Abstracts. We also have a card file of bibliographies arranged by subject for those items which might not easily be found in the card catalog. All of these items are accessible to our patrons.

As I said at the start of this presentation, since the OSU Library has only begun its involvement into the CID program, we have not yet developed any specialized resources which directly relate to the program. We are anxious, however, to participate in the CID program and hope to cooperate with the other institutions as fully as is possible within the confines of our portion of the 211-d budget.

Notes

1) For further information on the Jordan project and publications produced by that project, contact Norman Goetze in Extension Crop Science at OSU. Warren Kronstad in the Agronomic Crop Science Department may be contacted for more information on the OSU/Rockefeller Foundation Turkey project and related publications. Homer Hepworth in Extension Crop Science can supply more information on the OSU/AID Turkey project. This latter project's research has been summarized in a publication entitled: MORE WHEAT FROM FALLOW FARMING, 2nd ed., USAID/OSU team, Ankara, Turkey, 1975, 112 p. (Available from Hepworth's office). Another important publication of the same team is their WHEAT PRODUCTION MANUAL, edited by F. V. Pumphrey.

2) An important bibliography generated by IPPC is:

Fisher, Herber H. and Eduardo Locatelli, eds.
A PARTIAL BIBLIOGRAPHY OF WEED RESEARCH AND CONTROL
PUBLICATIONS FOR SOUTH AND CENTRAL AMERICA, THE CARIBBEAN,
AND MEXICO, 1942-1972. IPPC, Ore. State Univ., Corvallis,
Ore. 97331, 1974, 179 p. (IPPC Report 74-3).

A list of the publications available for distribution from the IPPC may be requested from their office in Corvallis. The title is CHRONOLOGICAL LISTING OF PUBLICATIONS RELATED TO THE AID/OSU WEED PROJECTS.

3) Further information regarding the IPPC or the INFOLETTER may be obtained from INFOLETTER's editor, Allan Deutsch, IPPC, Oregon State Univ., Corvallis, Oregon, 97331.

OREGON STATE UNIVERSITY AREAS OF EXPERTISE

Primary Areas Under 211-d

Moisture conservation and utilization in those areas of less developed countries which receive their main rainfall in low winter amounts.

Other Areas

All aspects of agriculture

Forestry

Botany and plant pathology

Oceanography

Fisheries and wildlife

Veterinary medicine and animal sciences

Pharmacy

SPECIALIZED SYSTEMS AT OREGON STATE UNIVERSITY
AVAILABLE TO CIDNET MEMBERS

International Plant Protection Center (IPPC)

- Scope:** The Center was formed in 1969 to increase the capability of OSU to develop and administer effective plant protection programs in developing countries. At the same time the program serves to improve teaching, research, and extension capabilities in plant protection with the University.
- Product:** The Center collects as well as produces literature relating to weed control. They can make available lists of the materials which they have available for distribution.
- Cost:** The prices of their publications are available upon request.
- Contact:** International Plant Protection Center,
Oregon State University
Corvallis, Oregon 97331 Phone: (503) 754-3541

SPECIALIZED SYSTEMS AT OREGON STATE UNIVERSITY
AVAILABLE TO CIDNET MEMBERS

Library Information Retrieval Service (LIRS):

Scope: This is a system located in the Library comprised of a high-speed printer and a CRT terminal (DataSpeed 40 Teletype handling 120 cps). The system is connected by phone line to the Lockheed DIALOG system in Palo Alto. We soon (late 1975 or early 1976) expect to use the MEDLINE system and will be also using the services of the Systems Development Corporation (SDC). These last two services will only be available on our 30 cps machine until further notice. The system allows on-line queries into the available data bases.

Product: The Lockheed DIALOG citations which appear to be relevant to a particular query can either be printed out on our 120 cps printer or can be printed out in Palo Alto by Lockheed and mailed to us.

Cost: We pass on the costs of the search to our patrons. This Library does not charge for overhead nor for staff time. We charge only for telephone line charges and for our on-line time charged to us by system to which we query.

Contact: The CIDNET Librarian at OSU at (503) 754-1592.

ARID LANDS INFORMATION SYSTEM PRESENTATION
OFFICE OF ARID LANDS STUDIES
UNIVERSITY OF ARIZONA

by

Nancy Ferguson

The Arid Lands Information System uses a combination of bibliographic skill, experience in arid lands information, various publications, a computerized bibliography, a document collection and computer programs to provide information on arid lands to a world-wide clientele.

SCOPE

The Arid Lands Information System (ALIS) contains over 4,500 bibliographic references to books and scientific articles dealing with all the arid regions of the world. Major emphasis is placed on the geography, geomorphology, climatology, hydrology, vegetation, zoology, and natural resources of these regions. The agricultural, social, and anthropologic aspects receive less emphasis. This scope evolved from the production of the classic volume Deserts of the World¹ by the Office of Arid Lands Studies and is reflected in the references that have been published in Arid Lands Abstracts (Table 1). Most issues of Abstracts are divided into two parts: current references consisting of articles published in the last two or three years and a special retrospective bibliography on a topic of current interest. There is no set formula for the sections that are published. For example, there was no special bibliography in issue #4 and no current references in #5. The subjects covered in early issues were fauna, geography, hydrology, range management, surface materials (primarily soils), vegetation, and weather and climate. In later issues environmental engineering, irrigation, man in desert, and salinity were added. The specials have been on physiological responses to heat stress, burning, creosote bush, desert animals, solar energy, and sand control. The topics of the Arid Lands Resource Information Papers also indicate the subject interests of the Arid Lands Information System (Figure 1). They include salinity, geothermal resources, desertification, Southwest groundwater law, jojoba, and energy development.

SELECTION

The Arid Lands Information System is a selective data base. The intent is not to bank every reference dealing with arid lands or even every reference dealing with the appropriate subjects. To be included, a

¹McGinnies, W. G., Goldman, B. J., and Paylore P., eds. 1968. Deserts of the World. University of Arizona Press, Tucson, 788 p.

Table 1. Subjects covered in Arid Lands Abstracts (1972-1975).

SUBJECTS	Publication numbers						
	1	2	3	4	5	6	7
Current referen...							
Ecology	7						
Fauna/Animals	17	25	20	24			10
Geography and Geomorphology	8	30	10			24	8
Hydrology/Water Resources	3	28	14			22	11
Range Management	23		11	23			
Surface Materials	5		17	16		20	17
Vegetation	26	35	23	30		37	67
Weather & Climate	6	15	9			15	17
Environmental Engineering			14	25		24	26
Land Use			11				
Irrigation				10		22	13
Man in Desert				12			7
Salinity						25	14
Bibliographies	4		6			11	8
Retrospective Specials							
Physiological Responses to Heat Stress	33						
Burning		88					
Creosote Bush			75				
Desert Animals					213		
Solar Energy						114	
Sand Control							159

1. **Salinity Problems in Arid Lands Irrigation: A Literature Review and Selected Bibliography**, by Hugh E. Casey. 1972, 300 p. Out-of-print. Available only through *NTIS as document #PB-214 172. \$6.00
2. **Exploration and Exploitation of Geothermal Resources in Arid and Semiarid Lands: A Literature Review and Selected Bibliography**, by the OALS Staff. 1973, 118 p. Out-of-print. Available only through *NTIS as document #PB-218 830. \$5.45.
3. **World Desertification: Cause and Effect. A Literature Review and Annotated Bibliography**, by Wade C. Sherbrooke and Patricia Paylore. 1973, 168 p. Out-of-print. Available only through *NTIS as document #PB-228 100. \$5.50
4. **Southwestern Groundwater Law: A Textual and Bibliographic Interpretation**, by John R. Chalmers. 1974, 228 p. Out-of-print. Available only through *NTIS as document #PB-228 130. \$6.00
5. **Jojoba: A Wax-Producing Shrub of the Sonoran Desert. A Literature Review and Annotated Bibliography** by Wade C. Sherbrooke and E. F. Haase. 1974, 141 p.
6. **Impact of Energy Development on Water Resources in Arid Lands. A Literature Review and Annotated Bibliography**, by Charles Bowden. 1975, 268 p. \$10.00

*NTIS National Technical Information Service
 U.S. Department of Commerce
 5285 Port Royal Road
 Springfield, VA 22161

Figure 1. Arid Lands Resource Information Papers.

document must contain information that has not been previously published or must reexamine known facts to reveal new insights. This avoids setting an arbitrary cut-off date for including materials as is commonly done by other data bases. While the majority of information in ALIS is current (more than 50% since 1969), classic references from as early as 1864 are included.

A wide variety of sources are searched to find documents that meet the above criteria. The Office of Arid Lands Studies subscribes to a core of scientific journals and receives other arid lands publications through exchange agreements. A steady stream of publication announcements and catalogues are received. The University of Arizona Library provides access to many journals and 19 abstract publications which are scanned routinely. The library also provides computer searches of several major abstract publications which we use for retrospective searches on selected topics.

INFORMATION PROCESSING

The basic elements in each ALIS reference are author, title, publication date, source, abstract, and keywords. Belief that a reference is only as useful as it is reliable has occasioned the evolution of a set of rules for formulating each element. Keywords are assigned from a hierarchically structured vocabulary. Since sources are the means of locating the actual document, particular attention is paid to avoiding abbreviations and to verification. A multiple review process of all references assures a minimum number of errors.

SERVICES

Information provided from ALIS takes a variety of forms. Our correspondence is an indication of the international interest that is shown in ALIS. During the academic year 1974-75, we corresponded with individuals from Pakistan, Mexico, Argentina, Iraq, Sudan, Upper Volta, Iran, Saudi Arabia, India, Ghana, Chile, Kenya, Senegal, Namibia, and Egypt as well as individuals in developed countries and those working with international agencies such as the Food and Agricultural Organization of the United Nations and the United Nation's Development Program. The response to these inquiries may consist of an answer to a direct question, mention of a few select references, referral to an expert in the field of interest, dissemination of a requested publication, or a computer search of our data base. During the year 1974-75 we sent over 300 publications to individuals and institutions in 55 countries. Table 2 summarizes the computerized searches made between May, 1974 and April, 1975.

DOCUMENT COLLECTION

In addition to the computer readable bibliography, ALIS has a small document collection. Initially the collection consisted of basic reference books on arid lands. These have been augmented by the addition of reprints received in exchange for OALS publications and of reports being used

Table 2. Arid/Semi-arid Natural Resources Program. CIS/ALIS Computerized Searches.

Subjects of searches (with examples)	Number of searches	Number of references retrieved
Agriculture and Pastoralism (dry farming, Sahelian livestock, weather modification, trickle irrigation, industry)	7	231
Arid Regions (Takla-Makan, Namib, Aswan Dam, Wadis, Egypt, Arabian Peninsula, Iranian Desert, S.W. Arizona, East Africa, Iran, Ghana)	10	492
Land Use and Management (carrying capacity, land use, burning, range management, strip mine, revegetation, vegetation establishment, water quality, land classifi- cation in Kenya, vegetation management)	9	1360
Earth Sciences and Hydrology (alluvium, sediments, sand stabilization, ground water, desertification, brackish water, Yuma ground water, saline water)	7	824
Miscellaneous (Ocotillo, building design)	2	44

by on-going projects, such as the current Natural Resources Program and the preparation of state-of-the-art reviews (see Fig. 1). The document collection now consists of 1,300 items distributed among 57 subject categories (Figure 2). The documents are shelved by category to allow users to browse through the collection. The shelf list consists of author, title, publication date, source, and keywords for each document. Computer produced author and keyword indices are used to retrieve documents.

COMPUTER PROGRAMS

The 4,500 bibliographic references are managed and manipulated by a linked set of computer programs. These codes in Fortran and machine language use the resources of both the CDC 6400 and the DEC-10 computers at the University of Arizona. The major programs perform the following functions: create a master tape of all references; build searchable indices of author names, publication dates and keywords; correct and update the master tapes; and retrieve information from the tapes. Retrievals use Boolean logic (and, or, not) to combine keywords, author names, and dates to define the desired subset of the data base. Frequently several requests are run at the same time to minimize computer costs. Use of the controlled ALIS vocabulary increases the precision and recall of the searches.

Computer programs are also used to prepare Arid Lands Abstracts and the bibliographic portions of the Arid Lands Resource Information Papers. References selected for publication are reordered, renumbered, and printed. Author and keyword indexes are created. These same programs produce author and keyword indices for manual use in the office.

Africa (general) 36	Egypt 13	Mali 10
Argentina 7	Environmental studies 25	Niger 23
Africa, East 14	Fauna 18	North America 3
Agriculture 27	Far East: China, Mongolia 1	Nevada 9
Africa, North 29	Geomorphology 4	New Mexico 6
Arizona 101	Geography 6	Power (energy) 116
Africa, South 15	Ghana 30	Peru 2
Australia 8	Human Resources 13	Reference 10
Africa, West 22	Irrigation 40	Remote Sensing 18
Building 9	India/Pakistan 12	Soils 30
Colorado 2	Iraq 15	South America 13
California 2	Iran 7	Sahel/Sudan Region 83
Controlled environment 47	Israel 8	Sudan 7
Chile 2	Kenya 33	Technology, Rural 3
Colorado River 36	Land Management 28	Utah 8
Desalination 10	Mexico 9	Vegetation 63
Desertification 27	Middle East 10	Water 75
Ecology 33	Microfiche 46	Weather/Climate 58
Education 2	Mines & Mining 38	Wyoming 4

Figure 2. ALIS documents arranged by subject category.

RECON
AN ON-LINE INFORMATION SYSTEM

by Kenneth E. Foster*

RECON is a computerized information retrieval system, designed to allow the user to search large files of document citations. Information such as titles, authors, keywords, and abstracts for literature articles and research projects can be accessed from RECON at the University of Arizona, from the Energy Research and Development Administration's Oak Ridge National Laboratory computer facility. Retrievals are in real-time with a local printing capability for rapid user access to the information.

RECON currently has twelve data bases with a combined total of about three-quarter million abstracts. Following is a brief overview of some of the data bases thought to interest the audience most.

Energy Research and Development Projects File

The Energy R & D file is a compendium of over 8,000 ongoing and proposed works in energy research, by both private and government research institutions.

Abstracts are stored for all projects with machine generated indexing and are available for retrieval by principal investigator, research institution, index terms (keywords), and the subject categories listed for the Energy Data Base.

Energy Data Base

The Energy Data Base is a selected collection of over 15,000 bibliographic references related to the field of energy. The Energy Data Base contains references to books, reports, journal articles, symposium papers and proceedings, and congressional committee prints.

Full abstracts are stored and available for retrieval by author, keywords, or subject categories.

References in the Energy Data Base are grouped into the following general subject categories:

Air Pollution	Coal
Electricity General	Electricity Forecasts
Electricity Generation	Electricity Markets
Electricity Transmission	Energy General
Energy Forecasts	Energy Markets
Energy Policy	Energy Resources

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Environment
Hydroelectric Power
Natural Gas
Petroleum
Residential Buildings
Unconventional Energy Sources
Water Pollution

Fossil Fuels
Hydrogen
Nuclear Energy
Solar Energy
Transportation
Waste Heat

Nuclear Science Abstracts (NSA)

The printed version of Nuclear Science Abstracts is published twice a month by the Atomic Energy Commission Technical Information Center. It consists of 480,000 bibliographic data and abstracts in the area of nuclear science and technology taken from reports, journals, books, patents, reviews, theses, and conferences.

Water Resources Abstracts

This bibliographic data base is prepared and maintained by the Water Resources Scientific Information Center, Department of Interior. The information covers water-related aspects of the life, physical, and social sciences, as well as the engineering and legal aspects of the characteristics, conservation, control, use, and management of water resources.

The file of over 80,000 entries beginning in 1969 is available for retrieval by personal author, index terms (keywords), or WRSIC category code (see Table 1).

Table 1

Water Resources Category Code

Fields and Groups

01 NATURE OF WATER

A Properties

B Aqueous solutions and suspensions

02 WATER CYCLE

A General

B Precipitation

C Snow, ice, and frost

D Evaporation and transpiration

E Streamflow and runoff

F Groundwater

G Water in soils

H Lakes

I Water in plants

J Erosion and sedimentation

K Chemical processes

L Estuaries

03 WATER SUPPLY AUGMENTATION AND CONSERVATION

A Saline water conversion

B Water yield improvement

C Use of water of impaired quality

D Conservation in domestic and municipal use

E Conservation in industry

F Conservation in agriculture

04 WATER QUANTITY MANAGEMENT AND CONTROL

A Control of water on the surface

B Groundwater management

C Effects on water of man's nonwater activities

D Watershed protection

05 WATER QUALITY MANAGEMENT AND PROTECTION

A Identification of pollutants

B Sources of pollution

C Effects of pollution

D Waste treatment processes

E Ultimate disposal of wastes

F Water quality control

- 06 WATER RESOURCES PLANNING
 - A Techniques of planning
 - B Evaluation process
 - C Cost allocation, cost sharing, pricing/repayment
 - D Water demand
 - E Water law and institutions
 - F Nonstructural alternatives
- 07 RESOURCES DATA
 - A Network design
 - B Data acquisition
 - C Evaluation, processing and publication
- 08 ENGINEERING WORKS
 - A Structures
 - B Hydraulics
 - C Hydraulic machinery
 - D Soil mechanics
 - E Rock mechanics and geology
 - F Concrete
 - G Materials
 - H Rapid excavation
 - I Fisheries engineering
- 09 MANPOWER, GRANTS AND FACILITIES
 - A Education-extramural
 - B Education-in-house
 - C Research facilities
 - D Grants, contracts, and research act allotments

10 SCIENTIFIC AND TECHNICAL INFORMATION

- A Acquisition and processing
- B Reference and retrieval
- C Secondary publication and distribution
- D Specialized information center services
- E Translations
- F Preparation of reviews

All water resource abstracts on RECON have been published in the bi-weekly Selected Water Resources Abstracts. The Water Resources Scientific Information Center, U.S. Department of Interior (WRSIC) is a cosponsor of the RECON system at the University of Arizona, and as such the University of Arizona provides searches on the Water Resources Abstracts file to users in the 11 western states of Arizona, California, Colorado, Hawaii, Nevada, New Mexico, Oklahoma, Oregon, Texas, Utah and Washington.

In order to access RECON, simply call in your search request to Mrs. Mercy Valencia, (602) 884-2816 or write the Water Information Section, Water Resources Research Center, University of Arizona, Tucson, Arizona 85721. Forms for your use are available upon request. (A sample follows.)

WRSIC COMPUTER NETWORK INQUIRY

Office of Arid Lands Studies or
Water Resources Research Center
University of Arizona
Tucson, Arizona 85721

ATTN: Mercy A. Valencia
Tele: (602) 884-2816

Requestor's Name _____ Date _____

Address _____ Tel. _____

1. Narrative description of the subject to be searched, Underline words or phrases that have special meaning in the discipline, or can help define the specific area of your interest.

2. List key words or associated disciplines you think appropriate.

The key words used come from the Water Resources Thesaurus, Second Edition, 1971. The use of WRSIC's Water Resources Thesaurus is recommended for narrowing searches to provide more precise output. Our staff will be glad to assist with this if you have not had experience in the use of the Thesaurus.

WAMIS - THE BIBLIOGRAPHIC INFORMATION SYSTEM USED IN THE SCHOOL OF RENEWABLE NATURAL RESOURCES

by Linda M. White

BACKGROUND ON WAMIS

The development of the School of Renewable Natural Resources' Watershed Management Information System, called WAMIS, grew out of another project. In 1972, the School was asked to write an extensive literature review on water yield improvement potentials in Arizona through vegetation management, particularly examining the work done in Arizona and other western states since 1956. This analysis involved a review of the research done on management practices (such as herbicide use or clear-cutting) and the effects on water yield, timing of the runoff, and water quality, in addition to other effects on other resources of the same area, such as timber production, grazing use, wildlife habitat, or recreation. In connection with this status-of-knowledge report, it was decided that the development of a bibliographic information retrieval system on this same topic would be beneficial. Since the documents were being gathered anyway for the report, document acquisition was one goal of the project; but more important was the development of an abstracting and indexing service for these documents to allow for use of or access to these documents at a distance.

The initial emphasis of WAMIS was Arizona and southwestern research on water yield improvement potentials, for these vegetation types: alpine, aspen, mixed conifer, ponderosa pine, pinyon-juniper, chaparral, grasslands, desert shrub, and riparian vegetation. We have also tried to expand coverage to include more recent research in other western areas.

Initially, primary support for the development of the bibliographic information system came from a grant from the Office of Water Research and Technology. Under our current 211-d grant, we are continuing this system, including in WAMIS materials related to our AID grant, additional range management materials, and also soil erosion material, since soil erosion is one of the state-of-the-art reports being written under the current 211-d grant.

COOPERATIVE RELATIONSHIP

When we first began to develop WAMIS in 1972, we sought the assistance and cooperation of the Office of Arid Lands Studies, which at that time was in its sixth year of developing a bibliographic information system, ALIS. This system has already been described. We became a subsystem of ALIS, and as such, used the same thesaurus (already developed by Miss Patricia Paylore) for indexing of our references and the same computer program for banking and retrieval of citations.

PROCEDURES USED

The day-to-day operations used in WAMIS involve input (or banking) and output (or retrieval). The schematic diagram (Fig. 1) shows the major procedures for these processes.

To begin with, appropriate material is identified for inclusion into WAMIS. These can be journal articles, monographs, proceeding papers, theses and dissertations, reports of governmental agencies, and other research findings. Currently, the vast majority of the references which are banked into WAMIS are materials which are in the main library's collection; we do not keep copies of most of the documents in our office because we feel that this would be an unnecessary duplication of materials on campus that are already accessible on campus. Thus, a great deal of the identification work occurs in the library. Material is identified by scanning current publication lists from various agencies, from publications generated from or sent to the School, and by scanning current journals.

The second step in preparation of the document for banking is writing the abstract. Abstracts, which vary from 75 to 200 words in length, are included in WAMIS because they provide the user with additional information on the nature and scope of the document. The abstract helps the user decide if a copy of the document should be obtained. Abstracts which may already be on the document are used as they are, with only slight modification, whenever possible.

The next step in banking is identification and selection of indexing terms (or keywords) which are taken from a controlled list. Each document is indexed under ten to twenty terms, based upon the contents of the document, and not just the title. The terms can be general, such as trees or water yield or specific, such as pinus ponderosa or storm runoff. A sample listing of some keywords and the thesaurus arrangement follows.

The citation (which includes the author, date, title, and source of the document), along with the abstract and the keywords are written on a 5 x 8 index card. This information is then keypunched from the card, and the bibliographic data stored in a computer bank to await retrieval.

Retrieval begins with the receipt of an individual's search request. Previously, this has most often come in the form of a letter or a telephone call. We have just started using a pre-printed request sheet (included following this report) which will be used mostly by distant users not on campus.

The search request is analyzed, key concepts are selected, and the search request is translated into the language used in the thesaurus. A search strategy is developed, generally using Boolean logic, and the computer bank is searched for appropriate references. A "typical" search request could therefore be written as follows: (grazing systems) and (herbage production or forage production) and (Festuca arizonica or Agropyron

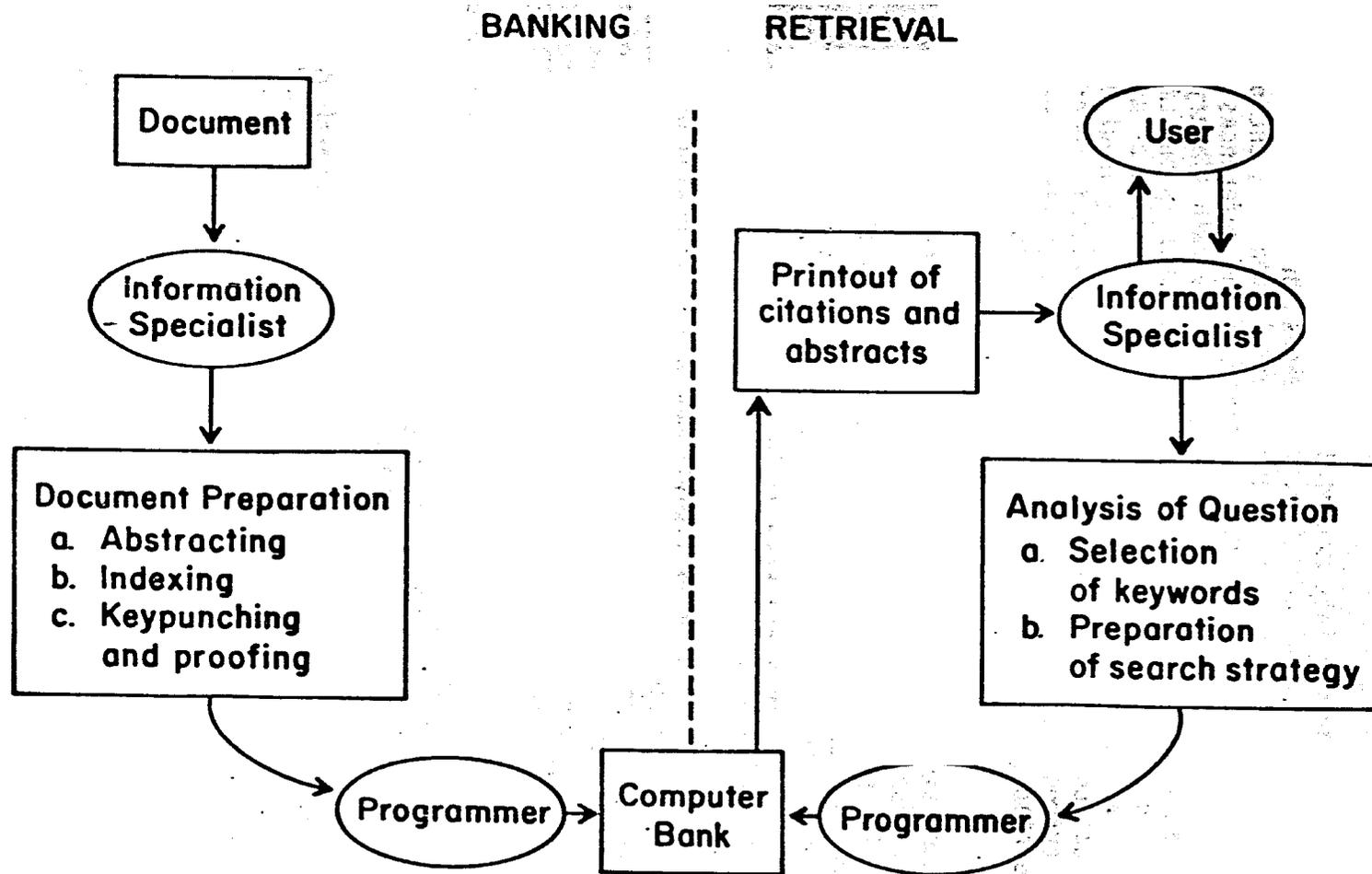


Figure 1. Banking and retrieval processes used in WAMIS

Sample Keywords Used for Thesaurus

CLEAR-CUTTING

RT-BRUSH CONTROL
CLIPPING
CONVERSION (MANAGEMENT)
ENVIRONMENTAL ENGINEERING
FOREST MANAGEMENT
LOGGING (TIMBER)
MECHANICAL CONTROLS
PRUNING
REFORESTATION
SEED-TREE SYSTEM
SELECTION CUTTING
SHELTERWOOD SYSTEM
SILVICULTURAL SYSTEMS
THINNING
VEGETATION EFFECTS
WATER YIELD
WATER YIELD IMPROVEMENT
WEED CONTROL
BT-LAND MANAGEMENT
TIMBER MANAGEMENT
WATERSHED MANAGEMENT
NT-PATCH CUTTING
STRIP CUTTING

CLIFFROSE

USE:COWANIA

CLIMATE

RT-BIOMES
CLIMATIC ZONES
CLIMATOLOGY
KOEPPENS CLIMATIC CLASSIFICATION
MEIGS CLIMATIC CLASSIFICATION
SEASONAL
SYNOPTIC CLIMATOLOGY
NT-ARID CLIMATE
EXTREMELY ARID CLIMATE
MEDITERRANEAN CLIMATE
SEMIARID CLIMATE

desertorum or Agropyron spicatum or Bromus). Searching in WAMIS is done by the same individual who does the indexing, and this helps with providing a better retrieval, since that individual would be more familiar with the indexing terms being used for a concept. Retrievals can be done by author, date, or subject keywords.

A computer printout, including the abstract, citation and indexing terms, is obtained. A sample entry is included on the next page. It is also possible to retrieve only citations. The resultant printout is returned to the user. In most cases, users have had access to libraries in their own areas and document copies are not sent. However, depending on the situation, some distant users in other countries have been sent a limited number of documents, which were first identified by the computer printout.

USER DESIRES

Most of the users to date have come from Arizona or other western states since the emphasis of the system has been on natural resources of western United States. Based upon WAMIS users and letters requesting information that come to the School, users fall into two groups: (1) generalists--those with no particular expertise in the area of inquiry, and (2) specialists--those with some expertise in the area; they are normally using the system to identify related material or newer material they have not come across, or similar studies done outside of their geographic area. It is often easier to work with the specialist, who has more specific needs. For each of these two users, their requests are for (1) a very narrow geographic area or specific results in a specific type of experiment, or (2) background information or methodology material. The number of searches fluctuates from month to month, ranging from 0 to 12. Use of WAMIS has increased 25 percent between fiscal years 1974 and 1975.

COSTS OF THE SYSTEM

Generally speaking, costs of the system fall into three categories: preparation, keypunching, and computer searching.

Preparation cost is by far the biggest expense, since it involves the greatest amount of labor and time. Included in here are the costs for the time involved with identification of references, verification of the citation (or completion of an incomplete citation), abstracting, indexing, and proofing of the final work slip. The input into WAMIS is limited by the amount of time available for identification and preparation of materials. Currently, we have only one person doing this, and because of this and the amount of time consumed by abstracting, input into WAMIS is much less than input into TRIM. Under the 211-d grant, we are committed to banking a minimum of 800 references each year.

Keypunching is the second major cost. Use of abstracts in WAMIS doubles or triples the keypunching time required, compared to a system which uses citations and keywords, such as TRIM. On the average, one entry takes 25 minutes to keypunch, proof, correct, and file, according to our records to date.

HUNGERFORD, C.R.

1970

RESPONSE OF KAIBAB MULE DEER TO MANAGEMENT OF SUMMER RANGE.

JOURNAL OF WILDLIFE MANAGEMENT 34(4):852-862.

THE 400,000-ACRE SUMMER RANGE OF THE KAIBAB MULE DEER HAS BEEN CHANGED BY SEEDING, LOGGING, FIRE, AND RANGE TREATMENT. FROM 1962 THROUGH 1968, THE SUMMER COMPOSITION OF FOOD PLANTS WAS MEASURED BY LINE INTERCEPT TRANSECTS AND THE DEER'S CHOICE OF FOOD PLANTS BY THE FEEDING-MINUTES METHOD. PLANTED GRASSES WERE AN IMPORTANT FOOD EARLY IN SUMMER, FUNGI IN LATE SUMMER; AND TREES, SHRUB, AND FORBS WERE FOUND TO BE USED THROUGHOUT THE SUMMER. PLANT SUCCESSION REPLACED PLANTED SPECIES WITH NATIVE PLANTS MOST RAPIDLY IN MIXED CONIFER FOREST AND LEAST RAPIDLY IN BURNED AREAS. THE RESEEDING PRACTICES RESULTED IN IMPROVED SUMMER DEER CONDITION AND A 24.5- PERCENT BETTER FAWN CROP. THE DEER ACCEPTED THE MODIFIED HABITAT SLOWLY AND YEARLING ANIMALS WERE OFTEN THE FIRST TO APPEAR IN NEW FEEDING AREAS. TEN REFERENCES.

OALS/WAT-C/ODOCOILEUS HEMIONUS/FOOD HABITS/SUCCESSION /SEEDING/
LOGGING(TIMBER)/BURNING/RANGE MANAGEMENT/TRANSECT/WILDLIFE MANAGEMENT/
SUMMER/FORAGE PRODUCTION/KAIBAB PLATEAU/ARIZONA

The costs for computer searches vary, depending on the complexity of the search strategy and the amount of "hits" the search gets. Since we are an off-line system, it also saves money to group together searches and run several at one time. Costs are mostly influenced by the complexity of the search strategy. A simple strategy search of one term with 570 hits costs about \$4.70, while another search with several "and's" and "or's" and 80 hits costs about \$8.60.

SERVICES TO OTHER CID MEMBERS

If any CID member receives an information request which falls into the WAMIS scope, they should either complete one of the WAMIS request sheets and send it to the School of Renewable Natural Resources, or else call in the information.

I have directed my comments to WAMIS specifically, but there are other information systems on campus to which we have access - principally RECON (allowing access to the Water Resources file) and the bases of SDC and those of Lockheed not in SDC (i.e., BIOSIS). At this particular time, the Water Resources searches are free. I would suggest that each CID member obtain a copy of the Water Resources Thesaurus to facilitate retrieval and preparation of search requests. Currently searches through SDC and Lockheed are offered for no charge to campus members (faculty and students); but it is possible that during this current year a fee schedule will be established.

The College of Agriculture also has another specialized base, known as the Faculty/Staff Biographical Information File. This system is designed to provide talent bank information, and could identify which faculty in the College speak certain languages, are engaged in certain types of research, and would be available for assignments in foreign countries. It was developed under the direction of W. G. Matlock, who works with the International Program for the College. The base still needs some input data, and will not be operational until later this winter; but after that point, it would be accessible for CID operations.

CONCLUSIONS

Information retrieval systems came into being for three related reasons: problems created by the explosion of knowledge and literature proliferation, such that older methods of accessing information were not adequate; specialization, which required more special tools and also ways of keeping the specialist informed of other related work tangential to his field; and multiple utilization of the same information and more interdisciplinary work, with the need to pull information from a variety of fields. Information systems, particularly bibliographic systems and not information analysis centers, are not panaceas, and do not provide the researcher or consultant with a concise solution to his problem. But it can be a time saving device for many types of users.

WATERSHED MANAGEMENT INFORMATION SYSTEM (WAMIS)
REQUEST FORM FOR BIBLIOGRAPHIC SEARCH

Name _____

Address _____

City _____ Country/State _____ Zip _____

Phone where you can be reached if necessary _____

Short title of search _____

Purpose of search: dissertation
 special paper
 other research
 instruction-related work
 other (specify) _____

Have you used this search service before? Yes _____ No _____

Have you used another computer search service? Yes _____ No _____

If so, which one? _____

Please describe as fully as possible the subject in which you are interested. Be specific if possible and define terms which have special meaning in the context of your request. Where appropriate, include alternative names for chemical substances, common and scientific names of biological species, and names of specific techniques or methods used.

Please list the important terms for your search and synonyms.

Terms	Synonyms
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Are there any concepts you would like to exclude in your search? If so, please list:

If possible, list by author and title two or three articles which are relevant to your search request.

Which type of search would you prefer?

- broad (fairly long list, missing few relevant references but probably including many non-relevant items)
- narrow (a shorter list containing mostly relevant items with the possibility that some relevant items will be missed)

RETURN TO: Gail Barclay
Watershed Management Information System
School of Renewable Natural Resources
University of Arizona
Tucson, Arizona 85721

PLACE
STAMP
HERE

G. Barclay
School of Renewable Natural Resources
College of Agriculture
University of Arizona
Tucson, Arizona 85721

Fold on dotted line

Fold on dotted line

WAMIS SEARCH APPRAISAL

Please answer the following questions and return this pre-addressed form to us. Your feedback is required in order for us to monitor the effectiveness of WAMIS and to make improvements in the system. Thank you for your cooperation.

1. Your search printout on _____
contains _____ citations. Please indicate the number of citations which are relevant
or peripherally relevant _____, or not relevant _____ to your information needs.
2. Consider the articles that you judged relevant in Item No. 1 above. How many of these
were brought to your attention for the first time by this WAMIS search? _____
3. Of all the relevant articles that you know have been published and deal with your topic,
this WAMIS search retrieved: (check one)
_____ approximately 100% _____ approximately 75% _____ approximately 50% _____ approx. 25% or less

4. Please give citations for any relevant articles that were not retrieved by this WAMIS search.

	<u>Author(s)</u>	<u>Title of Article</u>	<u>Journal or Publisher</u>	<u>Date</u>
(1)				
(2)				
(3)				
(4)				
(5)				

5. Consider the articles that you judged not relevant in Item No. 1 above. Please give specific details as to why these articles are not relevant to your information needs.

6. Was this search of material value (time or effort saved, duplication avoided, etc.)?
 yes no If yes, how of value? If nct, why not of value?

7. Do you have suggestions for improving:

- a. Subjects covered by WAMIS..... yes no
- b. Literature coverage in WAMIS..... yes no
- c. Ways to get copies of documents..... yes no
- d. Were the abstracts beneficial..... yes no

Please list specific comments and/or suggestions:

8. In summary, do you consider this search generally:

 excellent satisfactory poor

Your name:

UNIVERSITY OF ARIZONA AREAS OF EXPERTISE

Primary Areas Under 211-d (for both 211-d grants)

Arid lands natural resource management

Watershed management and hydrology

Range management

Remote sensing

Natural resources of N.E. Ghana

Other Areas

Wildlife management

Forestry

Landscape design

Fisheries

Jojoba

Desertification

West African livestock and agriculture

Guayule

**SPECIALIZED SYSTEMS AT THE UNIVERSITY OF ARIZONA
AVAILABLE TO CIDNET MEMBERS**

Arid Lands Information System (ALIS)

- Scope:** A bibliographic information system developed and maintained by the Office of Arid Lands Studies since 1967. ALIS covers in general world-wide problems in the development, regeneration, and understanding of the world's deserts and their adjacent arid and semiarid borders, with emphasis on their physical and biological environment. For the most part, agriculture and cultural materials are not included in the base. References cover journal articles, books, dissertations, technical reports, international agency documents, and publications of foreign governments and institutions. Under the sponsorship of a 211-d grant to the University, references on the natural resources of the arid and semiarid regions of developing countries are being added to ALIS. Initial emphasis has been on Kenya, Ghana, and West Africa.
- Product:** ALIS provides bibliographic references and referral services through manual and automated literature searching of the computer-readable data base. The computer printout provides a complete citation and abstract. Several research information papers based on the ALIS file have been prepared on topics related to the utilization of arid lands including desertification, water and energy, water law, geothermal energy, and salinity problems in arid lands.
- Cost:** For members affiliated with the Consortium for International Development or other AID persons, there will be no charge for searches until the volume of requests can be assessed.
- Contact:** For computer searches of ALIS, Consortium members should send their requests to Gail Barclay or Linda White, School of Renewable Natural Resources, University of Arizona, Tucson, AZ 85721.

Information on the general activities of the Office of Arid Lands Studies is available from J. D. Johnson, Office of Arid Lands Studies, 845 N. Park Ave., University of Arizona, Tucson, AZ 85719.

**SPECIALIZED SYSTEMS AT THE UNIVERSITY OF ARIZONA
AVAILABLE TO CIDNET MEMBERS**

Watershed Management Information System (WAMIS)

- Scope:** This is a bibliographic information system developed and maintained by the School of Renewable Natural Resources since 1972. It covers primarily published literature on watershed management with emphasis on the western United States. More specifically, it centers on land management practices and effects of such practices on such resources as water, timber, forage, and wildlife. Material on south-western snow research is also included. During fiscal year 1976, material along this line will continue to be added into the WAMIS, but also materials on 211-d related activities of the School, material on range management, and soil erosion control through vegetation practices. Types of materials covered include government publications, journal articles, proceeding papers, theses and dissertations, and some progress reports.
- Product:** In response to a request for citations, a user will receive a computer printout giving the citation and an abstract, varying in length from 75 to 200 words. For some of the proceeding articles cited in WAMIS, we will provide one xerox copy for U.S. users who have difficulty in locating a copy. For users outside of the U.S., copies of the documents can be supplied, if necessary.
- Cost:** There is no charge for WAMIS searches.
- Contact:** Search requests should be directed to the attention of Gail Barclay, School of Renewable Natural Resources, College of Agriculture, University of Arizona, Tucson, 85721, phone (602) 884-2968. WAMIS search request forms are available.

**SPECIALIZED SYSTEMS AT THE UNIVERSITY OF ARIZONA
AVAILABLE TO CIDNET MEMBERS**

RECON Bibliographic Bases

- Scope:** The University of Arizona acts as an access point for the several bibliographic bases offered through the Oak Ridge National Laboratory facility of the U.S. Energy Research and Development Administration. The primary base of interest to CIDNET members would be the base generated by the U.S. Water Resources Scientific Information Center, part of the Office of Water Research and Technology. This bibliographic data base provides access to a variety of published literature on water, water management, and water resources. The base is not limited to only U.S. publications or research, but the vast majority of the citations deal with the U.S. The Water Resources base is used to produce Selected Water Resources Abstracts.
- Product:** Users can obtain a computer printout in response to a search request. An abstract can be included as part of the printout.
- Cost:** The Water Information Section of the University of Arizona, provides access to the Water Resources data base for 11 western states, and the members in the Consortium network are in these states. Currently searches through the Water Resources base are offered for no cost to the user.
- Contact:** Search requests should be sent to the Water Information Section, c/o Office of Arid Lands Studies, University of Arizona, Tucson, 85719.

**SPECIALIZED SYSTEMS AT THE UNIVERSITY OF ARIZONA
AVAILABLE TO CIDNET MEMBERS**

College of Agriculture Faculty/Staff Biographical Information File

- Scope:** This is a computer based faculty biographic information file for all the faculty in the College of Agriculture, University of Arizona. It was developed under the direction of Dr. W. G. Matlock who works with the International Program for the College of Agriculture. Data for the base was first collected in the summer of 1974 and after some additional updated information is added, the base will be accessible in January, 1976. Currently biographical information is in the base on some 400 persons, including faculty in extension. Data of most interest to CIDNET members would be faculty areas of speciality, language competency, foreign countries visited or worked in, availability for foreign assignment, and publications of the faculty. Computer retrievals in each of these areas, or a combination of these areas, would be possible.
- Product:** Desired information is printed out on the computer and can be sent to the requester.
- Cost:** For members affiliated with CIDNET or other AID persons, there is no charge.
- Contact:** Requests should be directed to Dr. W. G. Matlock, Soils, Water and Engineering, College of Agriculture, University of Arizona, Tucson, 85721. Users are asked to indicate specifically how the information will be used.

AN OVERVIEW OF INFORMATION SOURCES AS RELATED TO THE CID NETWORK

by Linda M. White

INTRODUCTION

The phrase "information sources" is more elusive than "network" and under "information sources" one could talk about the telephone book, a resource directory, a file system of documents, a local library, etc. However, today I will be discussing computer-based, or machine-readable, data bases. Certainly there are other types of services for the information network which we are considering, such as translations, document supply, etc., which have nothing directly to do with computers. In fact, an information system need not be operated on a computer, but because the bibliographic bases with which we will deal are computer based, I will focus here on systems related somehow to computers.

DATA VS. BIBLIOGRAPHIC SYSTEMS

There is a difference between a data system and a bibliographic system (Lancaster 1968). A data system can be oriented toward any type of data or information, and this data is frequently isolated pieces of information. Normally, most of the data systems center around a specific institution or organization, or a particular type of data from a region (such as ground-water data on Arizona). The system's usefulness to persons outside of that region or organization is minimal. Bibliographic data systems, such as CAIN (Cataloging and Indexing System) or CRIS (Current Research Information System), are concerned with the identification of citations or citations and abstracts. Some bibliographic systems only give out citations, not the document copies themselves. Other systems, such as ERIC (Educational Resources Information Center) and MEDLINE (Medical Literature Analysis and Retrieval on-line), make more provision for document delivery as a final service of the system.

THE GENERATION AND USE OF MACHINE-READABLE BASES

Many of these data bases which are now available in machine readable format existed for years prior to the use of computers in information retrieval, and their data were converted to machine-readable form for a combination of reasons (Williams 1973):

because machine readable data are a necessary component of a computerized production system for journals, indexes, or secondary source publications;

because computerized typesetting was to be employed; and

because of the need to facilitate information retrieval.

Frequently the first two reasons provided the real rationale, while the facilitation of information retrieval was a by-product.

Why should we use machine-readable bases for information dissemination, or more specifically, why are we considering their use as part of the CID information network?

A variety of studies have been done in the field of information science to address this question. It has been shown that with the same amount of staff a library or information center can help the researcher and scientist do literature searches that they are failing to do for lack of time (Maier 1974). It can save the scientist time. Furthermore, some cost studies have shown that it is considerably cheaper to use on-line searching versus manual searching for the same material, particularly when qualified personnel are being used to do the manual searching (Elman 1975). Additionally, use of machine readable bases for literature searching can minimize the need to have specialists do the literature searching. When the cost of staff time is taken into consideration, literature searching with the aid of computers can be beneficial (Bivans 1974).

NUMBER OF BASES

How many computerized information sources are there? The answer depends on how you define this expression. Kruzas in his most recent issue of the Encyclopedia of Information Systems and Services (Kruzas 1974) lists over 500 abstracting and indexing services worldwide; some 425 places engage in selective dissemination of information services; and over 1,100 centers or services have some sort of computerized application.

There are a variety of directories and listings of computer-based bibliographic services or information dissemination centers (Herner and Vellucci 1972, Keenan 1973, Schneider et al. 1973, and Williams and Stewart 1972) but none of them is complete nor exhaustive, since there are so many specialized and localized bases. Martha Williams in a recent review of machine-readable data bases for the American Society for Information Science (Williams 1973) has the longest list--118 different data bases or data base generators.

Obviously, with this number of bases, there is going to be overlap. In spite of the concern of data base generators and especially users with this overlap, it is a fact which information specialists must accept. There have been certain studies examining this overlap of coverage between two or three bases (Flanagan 1973, Jerome 1973, Wood et al. 1972, and Wood et al. 1973) but nothing that compares many different bases with each other. This sort of information would be difficult to come up with, since many bases do not spell out precisely what their input sources are, and, if they do list the journals covered, for example, they may not exhaustively index this journal.

HOW BASES DIFFER

Although bases overlap in their coverage, they are not identical-- particularly in the way that input goes into the base. Some bases can be title-oriented systems, with indexing based on the titles and some supplementary indexing. Such indexing lacks vocabulary control, which results in scattering of references in a base and makes retrieval of broad topics difficult. Other systems provide for indexing based on examination of the document contents with indexing from some sort of controlled list. This list, however, although it may be controlled for use within the base itself, may not be standardized with any other controlled list used by another system. This creates problems for the user trying to get access to information from more than one base.

It is important to keep in mind that bibliographic (or data) bases can be batch processed or on-line. An on-line information retrieval system is one in which a user can via the computer directly interrogate a machine-readable data base. In an on-line system there is two-way communication between the computer and the user (or more accurately, the searcher) by way of input/output devices such as a teletypewriter or cathode ray tube display connected to the computer by some communication channel, which may be a regular telephone line (Lancaster and Faxen 1973). Frequently, time-sharing modes are used to operate the on-line information system, such that the computer shares its processing time between two or more completely independent activities. On-line systems will not necessarily give the user a better search, although a user can find out faster if there is any information in the base relevant to his question. Its chief advantage is that it allows for better search strategy development. For example, one may want information on "soil types of Peru" and under such a strategy find very little in a base; if one knew this instantaneously, the search strategy could be altered and, in this case, broaden to "soil types of South America" to identify the desired information.

RETROSPECTIVE SEARCH VS. SDI

There is another distinction which should be made here--a distinction between two services which can be obtained from computerized bibliographic files. One is the retrospective bibliographic search, in which a search strategy (or profile) is developed and a search is run against the base's entire file, however far it goes back (in most cases this is 1970 for many of the science bases with which CID would be concerned).

The other service is SDI, or selective dissemination of information. For this a profile is developed for a particular user or group of users (this profile could basically be the same as one used in a retrospective search) and at predetermined intervals, depending partly on how often new material is added to a bibliographic base, a retrieval is run against this profile for only that new material. This gives the user a listing of new materials on his topic, and gives him a mechanism for keeping up to date with the current literature in that base.

WHAT IS A BROKER?

So we have a particular information base, which is generating machine-readable data, and this base may be operated by a university, a library, a governmental agency, a private company, a professional organization, etc. The generator of this data base may turn around and permit its base to be used by outsiders, for free or for a charge. It may also sell or lease these machine readable files to another dissemination center. These centers function as brokers, retailers, or middlemen between the data base producers and the end user, and they can differ very much with respect to their philosophy and policies regarding service, funding, relationships to libraries, charging, maintenance of cost data, cost allocation, user involvement in profile development, output delivery, etc.

Two brokers well known in the field of information retrieval are Lockheed Information Systems and System Development Corporation (SDC).

Lockheed began the brokerage business after acquiring access to these bases for the Lockheed Palo Alto Research Laboratories, and currently offers on-line access to the bases to other users on a contract basis. These bases are listed on Table 1.

SDC began in a similar way and also provides access to their bases to other users on a contract basis. The bases which can be accessed through SDC are listed in Table 2.

Another information broker which may be used by CID is the Technology Application Center, part of the University of New Mexico at Albuquerque. TAC began as one of the six NASA regional information dissemination centers. Originally, it had only two bases, NASA Scientific and Technological Aerospace Reports and International Aerospace Abstracts. Now it accesses over 80 bases, including the ones at Lockheed and SDC. Over half of their users are industrial firms, and normally TAC generates specialized bibliographics, by querying several different bases and putting together the resulting printouts into one book, eliminating the duplicates, etc. Charges for this run from \$180 to \$700. Very recently it has started offering unedited searches, which is less expensive than having the specialized bibliography worked up; the user obtains simply the product of the printout from the base which is searched and edits it himself. The bases on which this unedited searching is done are listed in Table 3.

Still another center--the Chemical Data Center, Inc. of Columbus, Ohio--is doing this same sort of thing, charging for individual one-time searches. Their fee charge is based on number of terms searched, however, and not the connect time with the computer. (See Table 4 for bases and fee charges).

Table 1. Bases available through Lockheed Information Systems.

<u>BASE NAME</u>	<u>STARTING COVERAGE DATES</u>	<u>SIZE</u>
AIM/ARM--Abstracts of Instructional and Research Materials	1966	13,000
*BIOSIS Previews (biological sciences)	1972	900,000
*CAIN (agriculture)	1970	680,000
Chemical and Electronics Market Abstracts	1972	75,000
*CHEMCON (Chemical Abstracts Condensates)	1972	,000,000
CLAIMS TM/CHEM--U.S. chemical patents	1950	330,000
CLAIMS TM/GEM--U.S. general, electrical and mechanical patents	1975	20,000
*COMPENDEX (engineering)	1972	250,000
Domestic Statistics (time series and forecasts covering economics, demographics, finance and production)		100,000
EIS Industrial Plant Statistics		120,000
ERIC (educational research)	1966	190,000
Exceptional Children Abstracts	1966	160,000
Funk and Scott Index (business and finance)		500,000
INFORM (business management literature)	1971	27,000
INSPEC--Physics Abstracts	1969	450,000
INSPEC--Electronics/Computers	1969	340,000
INSPEC--mechanical engineering and management	1969	30,000
*NTIS (U.S. research and development reports)	1964	460,000
Psychological Abstracts	1967	200,000
Social Science Citation Index	1972	300,000

*description of this base is included elsewhere in this paper

Table 2. Bases available through System Development Corporation.

<u>BASE NAME</u>	<u>STARTING COVERAGE DATE</u>	<u>SIZE</u>
APILIT (petroleum literature, refining oriented)	1964	178,000
APIPAT (petroleum patents, refining oriented)	1964	90,000
ASI (American Statistics Index, from government statistical publications)	1974	22,000
*CAIN (agriculture)	1970	680,000
*CHEMCON (chemistry)	1972	1,190,000
CHEM7071 (chemistry)	1970 and 1971	600,000
CIS (Congressional Information Service Index), from U.S. Congress publications)	1970	47,000
*COMPENDEX (engineering)	1970	400,000
ERIC (educational research)	1966	207,000
GEO-REF (geosciences)	1967	257,000
INFORM (business management literature)	1971	29,000
LIBCON (Library of Congress cataloging)	1965	600,000
*NTIS (U.S. research and development reports)	1970	295,000
P/E NEWS (business in petroleum and energy)	1975	52,000
Pollution (from Pollution Abstracts)	1970	41,000
*SSIE (Smithsonian)	FY 1974	120,000
Tulsa (oil and gas exploration, development, and production)	1965	

 *description of this base is included elsewhere in this paper.

Table 3. Bases available through Technology Application Center, University of New Mexico, Albuquerque 87131 (prices as of September 1975).

<u>BASE NAME</u>	<u>COST/HOUR</u>	<u>COST/CITATION</u>
DUC		
*CHEMCON (chemistry)	\$ 60.00	\$.12
CHEM 7071 (chemistry)	60.00	.12
*CAIN (agriculture)	45.00	.12
INFORM (business management)	70.00	.20
GEO-REF (geosciences)	75.00	.20
*COMPENDEX (engineering)	95.00	.20
*NTIS (U.S. research and development reports)	60.00	.15
LIBCON (Library of Congress cataloging)	120.00	.25
Pollution	90.00	.15
P/E NEWS (business in petroleum and energy)	115.00	.08
CIS (Congressional Information Service Index)	120.00	.25
ASI (American Statistics Index)	120.00	.25
*SSIE (Smithsonian)	110.00	.25
ERIC (educational research)	40.00	.12
SEARCH (chemical marketing)	120.00	.25
LOCKHEED		
*CHEMCON (chemistry)	45.00	.08
*CAIN (agriculture)	25.00	.05
INFORM (business management)	65.00	.10
*COMPENDEX (engineering)	65.00	.10
*NTIS (U.S. research and development reports)	35.00	.10
ERIC (educational research)	25.00	.10
Exceptional Children Abstracts	25.00	.10
*BIOSIS Previews (biological sciences)	65.00	.10
Social Sciences Citation Index	70.00	.10
AIM/ARM (instruction and research)	25.00	.10
Psychological Abstracts	50.00	.10
INSPEC--Physics Abstracts	45.00	.10
INSPEC--Electronics/Computers	45.00	.10
INSPEC--mechanical engineering and management	45.00	.10
Chemical and Electronics Market Abstracts	90.00	.20
Funk and Scott Index (business and finance)	90.00	.20
EIS Industrial Plant Statistics	90.00	.50
Claims--U.S. chemical patents	150.00	.10
Claims--U.S. general, electrical and mechanical patents	90.00	.10
*MEDLINE (National Library of Medicine)	15.00	.10/page
Popinform--population statistics and information	60.00	.20/page
Environ--environmental information system	55.00	.20/page
Technical Assistance Data Systems		
Oil and Hazardous Materials Spills		
Noise		
Matrix--communication, environment and urban planning	120.00	.25
BEIC--Batelle Energy Information Center	60.00	.10

*description of this base is included elsewhere in this paper.

Table 4. Bases available through Chemical Data Center, Inc., 3620 N. High Street, Columbus, Ohio 93214 (prices as of April 1975).

	<u>COST PER SEARCH TERM</u>	<u>COST/ CITATION</u>
GROUP A FILES		
*CHEMCON (chemistry)	\$1.50	\$0.14
CHEM7071 (chemistry)	1.50	0.14
*NTIS (U.S. research and development reports 1970-)	1.50	0.17
NTIS (U.S. research and development reports 1964-)	2.00	0.12
*CAIN (agriculture)	1.50	0.14
INSPEC--Physics Abstracts	2.00	0.12
INSPEC--Electronics/Computers	2.00	0.12
INSPEC--mechanical engineering and management	2.00	0.12
LIBCON/E (Lib. of Congress, English holdings 1970-)	2.00	0.27
LIBCON/F (Lib. of Congress, foreign holdings 1970-)	2.00	0.27
*COMPENDEX (engineering) (plus \$25 royalty fee per search)	1.50	0.22
Claims--U.S. chemical patents	3.00	0.12
ERIC (educational research)	1.50	0.14
AIM/ARM (instruction and research)	2.00	0.12
Exceptional Children Abstracts	2.00	0.12
P/E NEWS (business in petroleum and energy)	2.00	0.10
INFORM (business management)	1.50	0.22
SEARCH (chemical marketing)	2.00	0.27
Social Sciences Citation Index	2.00	0.12
Matrix--communications, environment and urban planning	2.00	0.27
Pollution (pollution control, research, legal and business aspects)	2.00	0.17
*SSIE (Smithsonian)	2.00	0.27
Psychological Abstracts	2.00	0.12

GROUP B FILES

CHEMLINE (chemical dictionary)	\$40 per hour staff time required to develop search strategy, run the search, and to review results (when requested). Includes all charges for searching. off-line printouts 11¢/page
TOXLINE (chemical and drug toxicity)	
MEDLINE (bio-medical literature 1972 to current)	
MEDLINE/backfile (bio-medical literature 1969-71)	
SDILINE (current bio-medical literature, 1 month)	
CCALINE (cancer research 1967 to current)	

Notes: The cost of a search in the Group A Files is determined by the file entry fee(s) plus the search term fee(s) plus the printout charges as shown above. The cost of a search in the Group B Files is determined by the staff time plus the printout charges as shown above.

File entry fees: first file searched--\$20.00; each additional file searched--\$5.00.

*description of this base is included elsewhere in this paper.

DESCRIPTION OF BASES

There follows a summarization of several bases, generated from various sources, whose scopes are such that they could be of use to AID and CID users. The special bases offered at various CID universities and RECON, which is described elsewhere, are not included in this section.

BIOSIS PREVIEWS

Scope: BIOSIS PREVIEWS is a bibliographic data base on the general field of life sciences. The data base generator is BioSciences Information Service, and BIOSIS PREVIEWS contains all of the citations (not abstracts) since 1972 that are in Biological Abstracts and Bioresearch Index (combined). Material is drawn from a variety of sources, such as symposia papers, government reports, and monographs. Also selected articles are chosen from over 8,000 journals from over 100 countries. Topics in BIOSIS include microbiology, plant and animal sciences, experimental medicine, agriculture, pharmacology, ecology, and other interdisciplinary areas such as biochemistry, bioengineering, and biophysics. Although only covering literature since 1972, BIOSIS has now some 900,000 entries and adds 120,000 a year.

Product: Through arrangement with brokers it is possible to obtain computer printouts of citations (no abstracts). It is also possible through Lockheed Information Systems to do your own searching of the BIOSIS tapes on your terminals. If the citation is from Biological Abstracts, the BA abstract number is given also.

Cost and Contact: For searching through your own terminals contract arrangements must be made with Lockheed. Charges for searching BIOSIS include \$65/hour of connect time while searching and printing on-line and \$.10/citation for off-line printing.

For libraries or individuals not having contracts with Lockheed, searches can be done through another type of broker, Technology Application Center or Chemical Data Center, Inc. (see Tables 3 and 4).

CAIN (Cataloging and Indexing System)

Scope: CAIN is the system used to process all cataloged items in the U.S. National Agricultural Library and for preparation of its two indexes (Bibliography of Agriculture and National Agricultural Library Catalog). All types of published literature in the NAL collection are covered, i.e., journal articles (90 percent of the base), government documents, proceeding papers, and monographs. Forty percent of the journal input is literature not in English, and other foreign literature received by NAL is processed into CAIN. Subject areas include general agriculture, plant science, soils and fertilizers, forestry, animal science, entomology, pesticides, natural resources, agricultural engineering, agricultural products, agricultural economics, and food and human nutrition. Most of the references in CAIN date since 1970. The base has about 680,000 entries, with 120,000 added annually.

Product: A CAIN printout only has citations (no abstracts), although it does indicate the language (if not English) and the classification number used by NAL.

Cost and Contact: Searches on CAIN can be done under contract agreements with Lockheed and with SDC. Lockheed charges \$25/hour of computer connect time and \$.05/citation printed off-line. SDC charges \$45/hour of connect time and \$.12/citation.

For users not having contract agreements with Lockheed or SDC, they can contact Technology Application Center or Chemical Data Center, Inc. (Tables 3 and 4).

CHEMCON (Chemical Condensates)

Scope: CHEMCON is the on-line bibliographic service produced by the Chemical Abstracts Service of the American Chemical Society. Input for CHEMCON is the same as for Chemical Abstracts. Source documents for references include government reports, patents, monographs, published proceedings, and journals (70 percent of the input is journals and 55 percent of these are in English). Worldwide chemical literature is identified in topics such as biochemistry, organic chemistry, macromolecular chemistry, applied chemistry, chemical engineering, and physical and analytical chemistry. CHEMCON began in 1972 (an earlier version CHEM7071 covers 1970 and 1971 literature), and numbers 1,000,000 entries, with 360,000 added yearly via monthly updates.

Product: A printout of CHEMCON contains only citations (no abstracts) but a reference is made in the corresponding citation in the printed Chemical Abstracts.

Cost and Contact: CHEMCON is accessible on a contract basis through Lockheed for \$45/hour of computer connect time and \$.08/citation printed off-line. SDC has access to CHEMCON and CHEM7071 for \$60/hour of computer connect time and \$.12/citation printed off-line. Searches here are done through your own terminals.

For persons not having access to Lockheed or SDC, individual searches can be purchased through Technical Application Center and Chemical Data Center, Inc. (Tables 3 and 4).

COMPENDEX

Scope: COMPENDEX, produced by Engineering Index, Inc., is a data base corresponding to the monthly issues of The Engineering Index Monthly. Input is obtained from over 3,500 publications, including journals, transactions, proceedings of conferences and symposia, and selected government publications. Sixty-five percent of the input is journals, and 30 percent of these are not in English. More specific subjects in COMPENDEX are civil-environmental-geological-bio-engineering; mining-metals-petroleum-fuel engineering; mechanical-automotive-nuclear-aerospace engineering; electrical-electronics-control engineering; chemical-agricultural-food engineering; and industrial engineering, management, mathematics, physics, and instruments. This base began in 1970 and has 400,000 entries in it currently, growing by 84,000 citations a year.

Product: Searches of COMPENDEX provide an abstract and a citation.

Cost and Contact: For COMPENDEX searches, Lockheed charges \$65/hour of connect time with computer and \$.10/citation printed off-line; SDC charges \$95/hour and \$.20/citation printed off-line (Lockheed only provides access to citations since 1972). Both Lockheed and SDC require contract agreements before searches can be done.

For individuals not having access to Lockheed or SDC, searches can be obtained from Technology Application Center or Chemical Data Center, Inc. (Tables 3 and 4).

CRIS (Current Research Information System)

- Scope:** CRIS was developed by the U.S. Department of Agriculture to provide access to current research activities of the USDA. Information on research projects is identified from all research conducted or sponsored by the six USDA research agencies (Agricultural Research Service, Forest Service, Economic Research Service, Cooperative State Research Service, Farmer Cooperative Service, and Statistical Reporting Service), by 53 state agricultural experiment stations, by 30 forestry schools, and by other cooperating institutions. All types of research sponsored by these agencies are reported. The current file numbers about 22,000 projects. Reference to a project is kept in the file from its time of origin until two years after termination.
- Product:** A CRIS printout will contain the following information--status of the research, title, responsible agency, investigators, contract or grant number, objectives of the research, and a brief description of the approach and progress to date. Citations to publications reporting results of the research may also be included. If a request is too broad, an abbreviated printout of titles and objectives only is sent, and a complete printout can then be obtained for specific projects.
- Cost:** There is no charge for searches, but use is restricted only to agencies in the USDA network or agricultural experiment stations.
- Contact:** Requests should be submitted on form AD427. If this form is lacking, requests should indicate (1) name and address of recipient, (2) date information is needed, (3) a specific statement of 100 words or less on the information need, and (4) if the search should cover all USDA and experiment station research or any organizational segment thereof. Response time varies, from two to four weeks.

Current Research Information System
U.S. Department of Agriculture
Room 6818, South Building
Washington, D. C. 20250

DATRIX II

Scope: DATRIX II is a mail-order, computerized bibliographic retrieval system developed by Xerox University Microfilms. It permits individualized retrievals for citations to dissertations in the Comprehensive Dissertation Index (and its updates) and Dissertation Abstracts International. DATRIX II contains references to dissertations granted from most U.S. universities (and some Canadian ones) since 1861, and the base currently numbers 500,000 entries with annual additions of 36,000. Three-fifths of the total referenced dissertations can be obtained in microfiche copy from Xerox University Microfiche. Topics encompass all disciplines for which dissertations have been written. Subject retrievals are based on words used in the dissertation titles.

Product: In response to a search in DATRIX II, you would receive a computer printout of citations (no abstract), with data on author, dissertation title, degree, date, university and issue/page references to an abstract in Dissertation Abstracts International (if any).

Cost: The charge for a search is \$15 for up to 150 citations, and any additional citations can be purchased for \$.10 each (minimum of \$5 for second search).

Contact: Search forms and detailed instructions are available from:

Xerox University Microfilms
300 N. Zeeb Road
Ann Arbor, Michigan 48106

MEDLINE (Medical Literature and Retrieval System On-Line)

- Scope:** MEDLARS (Medical Literature Analysis and Retrieval System) is a computer-based information storage and retrieval system established at the U.S. National Library of Medicine to furnish rapid bibliographic access to the Library's biomedical literature collection. MEDLINE is the on-line service that provides access to a substantial portion of the MEDLARS base through remote terminals in about 200 U.S. medical libraries. Subjects covered include preclinical and clinical sciences medicine, dentistry, nursing, pharmacy, pharmacology, veterinary medicine, allied health professions, and other health-science related topics. All types of medical literature are included, but the majority of input is journal literature, from 2,300 journals. Base size is about 2,000,000 articles, with an annual input of 200,000.
- Product:** Computer printed citations are generated through querying the base by remote terminals. Abstracts are included for part of the MEDLINE base added since January 1975, but not for all of the references added since that date. (Retrievals printing these abstracts cost an additional \$2.) Search turn-around times vary with the institution's policies, but may be 24-hour service for up to 30 citations (printed on-line) and the remainder of the search is printed off-line and mailed.
- Cost:** The current file of MEDLINE covers 1974 - current and costs \$7 for a retrospective search. If part of the search is printed on-line, then up to 300 citations can be obtained for the \$7; if the entire search is printed off-line, then up to 500 citations can be obtained for the \$7. There are three backfiles (dating back to 1966) which cost \$3 each for a search of up to 500 citations from each backfile.
- Contact:** The nearest hospital, medical school or research institution offering MEDLINE services will service any user. Additionally, regional medical libraries near CID members are:

Pacific Northwest Region
University of Washington
Health Sciences Library
Seattle, Washington 98105

Pacific Southwest Region
University of California
Center for the Health
Sciences
Los Angeles, Calif. 90024

South Central Region
University of Texas Southwestern
Medical School at Dallas
5323 Harry Hines Blvd.
Dallas, Texas 75235

NTIS (National Technical Information Service)

Scope: NTIS gathers and processes into its base U.S. government sponsored research and development reports and analyses prepared by federal agencies, contractors, or grantees. These are unclassified, unlimited distribution reports (often project completion reports) from such agencies as NASA, DDC, HEW, HUD, DOT, and ERDA. U.S. federal agencies provide 99 percent of the input to NTIS. However, federally sponsored translations and some foreign language reports in areas of major technical interest are also included, and some state and local government agencies contribute to NTIS. Subject coverage is broad and interdisciplinary, including agriculture and food, building technology, chemistry, earth sciences, energy, environmental pollution, medicine and biology, and natural resources. The machine readable base for NTIS now numbers more than 460,000 citations (since 1964), with an input of an additional 60,000 entries each year.

Product: NTIS documents are listed in the Government Reports Announcements and Index and the Weekly Government Abstracts. Specialized (individualized) bibliographies can also be obtained through NTIS or through brokers such as SDC or Lockheed. The printouts contain a citation, NTIS order information, and an abstract.

Cost: Costs for searches vary. SDC (which accesses tapes since 1970) charges \$60/hour of connect time with the computer and \$.15/citation printed off-line. Lockheed (which accesses tapes since 1964) charges \$35/hour of connect time with the computer and \$.10/citation printed off-line.

Contact: For on-line searching contract arrangements must be made with Lockheed of SDC (Tables 1 and 2). Others can pay for individual searches through Technology Application Center or Chemical Data Center, Inc. (Tables 3 and 4). Other contacts for searches handled by NTIS, for purchasing NTIS documents or submitting documents for NTIS input, should be sent to:

National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Road
Springfield, Virginia 22161

SSIE (Smithsonian Science Information Exchange)

Scope: SSIE acts as a central clearinghouse for on-going research sponsored by both federal and non-federal organizations. It was established in 1949 by federal agencies engaged in the support of research in the medical sciences, but has since expanded its scope considerably. SSIE is designed to meet the pre-publication information gap, by maintaining a data base of information on on-going and recently completed projects in basic and applied research in the life, physical, and engineering sciences. Project information is voluntarily submitted by some 1,300 organizations, including U.S. government agencies, private investigators, associations, foundations, universities and colleges, state and local governments, and, to a more limited extent, from private industry and foreign organizations. (One U.S. agency submitting to SSIE is CRIS, which sends all its data to SSIE.) The current file, which covers the past two U.S. government fiscal years, contains records on more than 200,000 on-going or recently completed projects.

Product: SSIE uses the single-page Notice of Research Project (NRP) as its basic record. This contains information on the supporting agency, grant or contract number, title, principal investigator and specialty, performing organization, funding, and in most cases a 200-word summary of the project. The NRPs are packaged into a variety of forms, such as the SSIE Science Newsletter, specialized bibliographies of NRPs, individualized searches on the current files, selective dissemination of service on the current file, and historical searches.

Cost: Prices fluctuate, and a current listing is available through SSIE.

Contact: Smithsonian Science Information Exchange, Room 300, 1730 M Street, N. W., Washington, D. C. 20036.

It is also possible to have on-line access to the SSIE base through one's own terminals, through contract arrangements with SDC (Tables 2, 3 and 4).

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USER REACTIONS TO INFORMATION RETRIEVAL SYSTEMS (CRIS, CAIN and WRSIC)

by Gail G. Barclay

Before we offer users access to bibliographic data bases, it would be to our advantage to evaluate current user reactions to several of the existing computerized bases. Evaluative studies of computerized information retrieval systems as they are currently being conducted usually consider one or more of the following aspects: 1) journal coverage, 2) indexing practices, 3) precision and recall, 4) comparisons with manual sources, 5) cost effectiveness, and 6) user reactions to individual searches. Though all of the above aspects are important in analyzing the value of information systems, I am limiting my presentation today to what the user actually feels about the services rendered; i.e. user reactions to searches.

Lancaster in his book INFORMATION RETRIEVAL SYSTEMS (1968), lists the following six requirements which users of an information retrieval system are concerned with: 1) recall, 2) relevancy, 3) response time of the system, 4) format of search results, 5) amount of effort expended by the user, and 6) extent and quality of subject coverage. The two most important of these six factors are recall and relevancy. Recall refers to the ability of a system to "retrieve" all documents which are useful to the user. In some cases only a very few citations may be sufficient, as in the case of an individual requesting items regarding a very specific study. On the other hand, some users may want a system to retrieve many items, as in the case of the individual who requests everything and anything dealing with soil erosion. Relevancy refers to the usefulness of the items retrieved to the needs of the user. High relevancy implies that most of the items retrieved were useful to the user, while low relevancy implies that most of the items were not useful.

The inverse relationship existing between recall and relevancy is simply stated: the higher the recall, the lower the relevancy. The more documents retrieved, the greater the likelihood that the search results contain many items which are only peripherally relevant as a result of the broader search strategy. On the other hand, the more we restrict a search strategy and narrow it down, the more the result is likely to be few items retrieved (low recall) but high relevancy.

A third user requirement concerns the response time of the system or how long a time the user is willing to wait between the time (s)he communicates his/her information needs and receipt time of the search output. This requirement varies from person to person but usually those who call for broad searches can wait longer than those who need a few, highly specific items.

A fourth user requirement concerns the format of search results. If a user receives his search results in citation form only (minus abstracts), then it is necessary to go to a secondary file of some form or another to find documents or abstracts. Whether or not a user has access to a library

is of great importance when receiving search results in citation form only, since the citations are worthless if the user cannot obtain documents or abstracts rather quickly.

A fifth user requirement concerns the amount of effort expended by the user. This refers to the amount of time spent delineating information needs to the searcher, examining output, and perhaps even running another search depending on the relevancy and recall of the initial search.

A sixth user requirement involves the extent and quality of index coverage, which refers to the input policies of the system. Input or acquisition policies include such factors as the number of foreign language items, date or age of the items, and reliability of items.

CAIN

The first system which I will be referring to in terms of user reactions is CAIN, the National Agricultural Library's data base. Edward Jestus (1975) conducted a comparison study on the University of California at Davis campus of monthly current awareness services and on-line retrospective services provided by CAIN. Seven profiles were run against both services from January through May, 1974, in order to compare content of the two services, workload, cost data, and user reactions. Specifically concerning user reactions, 70% of the 90 SDI CAIN bibliographies were evaluated as relevant and 57% of the 245 on-line searches (out of 600 questionnaires sent out) were judged relevant. Jestus mentions that these results cannot be directly compared as a result of dissimilar wording between the two questionnaires.

Table 1 indicates that out of the 211 agricultural researchers who voiced a desire for retrospective searches, over half (63%) wanted one or two searches per year, and 11% wanted 5 to 12 searches per year. A possible reason for this latter group's desire for retrospective searches rather than SDI service on one topic may be that they are responding to a variety of different research questions during the year.

Table 2 indicates that of 217 respondents to the on-line retrospective questionnaire, 193 (89%) thought the bibliographies were worth the cost even though the university was paying for searches during this experiment. Of 214 respondents answering the second question in Table 2, 158 (74%) indicated they would be willing to pay at a cost of \$14 per search, 28 (13%) would not be willing to pay, and 28 (13%) would pay "if" their employer paid.

Another important user reactions study was conducted by Oyler and McKay at the University of Wisconsin's (Madison) Steenbock Library. CAIN was made available to grad students, staff, and other groups including government agencies, associations, and agri-business at no cost. Publicity was intentionally low-key and consisted of two notices in the library's publication called BOOKLIST and several announcements at faculty meetings. Searches were performed at the user's convenience, but later were made on an appointment basis due to heavy demand (See Table 3).

Table 1. Number of CAIN retrospective bibliographies wanted each year by 211 agricultural researchers on the University of California at Davis campus (Jestus 1975).

No. Retrospective Bibliographies Wanted Each Year	No. of Responses	Percent	Grouped Percent
1	75	35%	63%
2	59	28%	
3	23	11%	26%
4	31	15%	
5	4	2%	
6	2	1%	
7	0	0	
8	2	1%	11%
9	0	0	
10	6	3%	
11	0	0	
12	<u>9</u>	<u>4%</u>	
Total	211	100%	

Table 2. Response to questions regarding individual CAIN search costs (Jestus 1975).

Was your on-line retrospective bibliography worth the cost even though you were not directly paying for it?

Yes 89%

217 respondents

No 11%

Would you be willing to pay for an on-line retrospective bibliography?

Yes 74%

214 respondents

No 13%

Yes, if employer pays 13%

Table 3. CAIN search utilization (Oyler and McKay 1975).

<u>Month</u>	<u>No. Searches</u>
October 1973	7 searches
November 1973	9 searches
December 1973	7 searches
January 1974	5 searches*
February 1974	53 searches
March 1974	41 searches†
April 1974	31 searches

*vacation leave resulted in lowest monthly count.

†searches by appointment imposed at the end of the month.

During the experimental period 137 searches were performed for users from a variety of different departments. Table 4 indicates the departmental distribution. Veterinary science, plant pathology, and entomology accounted for 43.1% of all the searches. Because certain departments were particularly strong in terms of usage, it is possible that "word of mouth" was operating in these cases.

The evaluation forms were attached to search results when given to the user. Table 5 indicates that out of 137 search forms sent out, 88 (64%) were returned. Of 9,246 citations evaluated, 42% were judged relevant, 30% peripherally relevant, and 27% not relevant. The second question in Table 5 asked for an overall evaluation of the search. Nearly 50% felt the search was better than expected, an encouraging note. The third question in Table 5 concerns the matter of individuals paying for their search services. The largest response (33%) fell in the category of individuals willing to pay \$2.50. Out of the two categories willing to pay \$10 or more (35.3%), 50% were faculty members, 66.7% were staff members, 24.1% were graduate students, and 58.3% were non-university personnel. The low number of grad students is attributed to their limited funds.

Most users tend to agree on the fact that computer searching is a time saver compared to manual searching. Some of the comments extracted from Oyler and McKay's questionnaire include: "Excellent results in 1/100th of the time of a manual search"; "Computer - 19 minutes. Manual two or three weeks"; "I accomplished the review in about 1/4 of the time otherwise spent." The responses in regard to time saved were variations on this same theme.

The chief criticism of CAIN as determined by Oyler and McKay's questionnaire was the lack of adequate indexing. Since there is no controlled indexing in CAIN, it is necessary to search by title, thus the possibility of losing a lot of relevant items is high. Many respondents commented on this shortcoming. For this reason it is important for the user to be present during the search in order to define search parameters.

Fearn and Kovalick conducted a user reactions study at the University of Florida on the S(elective) D(issemination) of I(nformation) Service. Table 6 indicates that out of 131 user evaluation questionnaires, 106 (81%) felt the printouts were of value while 25 (19%) felt negatively about the service. The total number of responses on Question 2 of Table 6 is greater than the number of questionnaires returned due to multiple answer responses. Those marking "other" gave generally favorable comments.

CRIS

A second base which has been evaluated by way of user reactions is CRIS (Current Research in Science). A study was conducted in early 1975 by ARPAC (Agricultural Research Policy Advisory Committee) in order to determine strengths and weaknesses and to make recommendations for improvements. Two questionnaires were used: 1) one was sent to a representative sample of scientists and 2) one was sent to all U.S. Department of

Table 4. Distribution of CAIN searches (Oyler and McKay 1975).

University of Wisconsin-Madison	Searches N = 137	Questionnaires Returned N = 88
College of Agricultural and Life Sciences	<u>89</u>	<u>60</u>
Agricultural and Extension Education	2	1
Agricultural Engineering	2	1
Agronomy	4	1
Bacteriology	2	0
Dairy Science	1	1
Entomology	21	16
Food Science	1	0
Genetics	1	0
Horticulture	6	5
International Agricultural Programs	1	1
Library	2	1
Meat and Animal Science	1	1
Nutritional Sciences	1	0
Plant Pathology	11	8
Poultry Science	3	0
Soil Science	3	0
Veterinary Science	27	23
School of Natural Resources	<u>8</u>	<u>4</u>
Forestry	4	3
Landscape Architecture	3	0
Wildlife Ecology	1	1
College of Letters and Sciences	<u>12</u>	<u>9</u>
Botany	8	7
Other departments	4	2
College of Engineering	<u>6</u>	<u>3</u>
Library	5	3
Other departments	1	0
Medical School	2	1
Other Campus	1	1
U.S. Forest Products Laboratory	9	6
Agri-business, Research Societies, and other Government Agencies	<u>9</u>	<u>6</u>

Table 5. Extract from CAIN user evaluation (Oyler and McKay)

1) Your printout contains _____ citations. Please indicate the number of citations which are

- | | |
|---------------------------|---------------|
| (A) relevant | <u>42.3%</u> |
| (B) peripherally relevant | <u>30.50%</u> |
| (C) not relevant | <u>27.30%</u> |

to your information needs

2) Essentially, the search was

- | | |
|--------------------------|---------------|
| (A) better than expected | <u>47.7%</u> |
| (B) same as expected | <u>36.45%</u> |
| (C) less than expected | <u>15.9%</u> |

3) If the computer search was not free, would you pay for it?

- | | |
|---------------------------------|--------------|
| (A) would not pay | <u>4.5%</u> |
| (B) would pay \$1.00 | <u>10.2%</u> |
| (C) would pay \$2.50 | <u>33.0%</u> |
| (D) would pay \$5.00 | <u>17.0%</u> |
| (E) would pay \$10.00 | <u>20.5%</u> |
| (F) would pay more than \$10.00 | <u>14.8%</u> |

Table 6. CAIN SDI usefulness and relevance. (Fearn and Kovalick 1973).

1) In general, are the printouts of materials of value to your research needs?

Yes 106

No 25

- a) savings of time and effort
- b) better coverage of literature
- c) ability to find out about only literature of interest

- a) too many foreign items
- b) better coverage could be obtained by reading or reviewing journals or by searching other indexing services
- c) not obtaining enough relevant information

2) If this monthly printout continues for the next several years, what sort of impact might it have on your literature surveillance habits?

- a) 83 I would save about _____ hours per week because I could eliminate my scanning of some abstracts and/or current contents, etc.
- b) 26 Not much. I get most of my pertinent citations from the key journals I regularly read and/or from my colleagues, etc.
- c) 4 Negative effort. The bibliographies just clutter my office and files, etc.
- d) 27 Other. Please explain.

Agriculture and State research administrators with direct responsibility for conduct of scientific research programs. Among the questionnaires sent out to various scientists, 625 were sent to Agricultural Research Service, 200 to Forest Service scientists, 109 to Economic Research scientists, 8 to Farmer Cooperative Service scientists, 3 to Statistical Reporting Service scientists, and 1,097 to scientists associated with state institutions. Response rate for the questionnaires was 66%.

The questionnaire contained 22 questions, not all of which will be discussed. Initially, respondents were asked whether or not they had used CRIS and 48.5% answered "yes" while 51.5% answered "no." Response from users in federal agencies increased with rank up to GS-16 and 17 where the level of response was low.

Table 7 indicates the reasons why respondents used CRIS. The majority of respondents (76.8%) wanted to get information on other research being conducted in their particular field of interest.

Concerning general user satisfaction to CRIS, responses were indicated on a 5-point scale where 1 was useful and 5 useless (See Table 8). The average for this response group was 2.74 (2.57 for state scientists, and 3.02 for Forest Service scientists). It is possible to say that user satisfaction increased with usage if the responses in Table 8 are true indicators.

In evaluating the quality of various items received on the CRIS print-out, respondents answered more than one time. The results were fairly revealing: 38% said the search failed to identify projects which should have been included, 32% said the search provided good coverage and data was current, 30% said too many reports were out of date, 14% said too many terminated projects were included, and 16% said too many irrelevant projects were included. Comparing the results regarding the quality of information received and the date of the last search, indicates increasing dissatisfaction regarding out of date reports.

WRSIC

In 1973 when WRSIC (Water Resources Scientific Information Center) was located at the University of Oklahoma, a study was conducted to develop and evaluate a prototype information network for retrieval and dissemination of WRSIC's water resources research information. At the time, three information processing centers served to process user requests for bibliographic information. These centers were linked via remote terminal to the University of Oklahoma Research Institute which furnished technical support and served as coordinator for the project. The following data was taken from the project summation report. The following percentages are available concerning the users: 1) 93.5% have Master's degrees or Ph.D. degrees, 2) 77.8% were between 31 and 50, 3) 71.2% had considerable to extensive experience in water resources, 4) 83.9% had moderate to considerable computer exposure, and 5) 72% were University personnel.

Table 7. What scientists look for from CRIS (Agricultural Research Policy Advisory Committee CRIS Subcommittee 1975).

Statement	Number	Scientists Percent of Responses	Percent of Respondents
To get an idea about what else is currently being done in my area of interest	486	39.1	76.8
To obtain names and locations of other scientists researching related problems	356	28.6	56.2
To supplement library search in connection with developing a research proposal	247	19.9	39.0
To obtain information for use in planning, budgeting or otherwise managing a research program	126	10.1	19.9
Other	<u>29</u>	<u>2.3</u>	<u>4.6</u>
Total Responses	1,244	100.0	NA
Total Respondents	633	NA	NA

Table 8. User satisfaction with retrievals from CRIS by frequency of use (Agriculture Research Policy Advisory Committee, CRIS Subcommittee 1975).

Frequency of Use	Number Respondents	Highly Useful					Useless	Weighted Average
		1	2	3	4	5		
		%	%	%	%	%		
Once	229	7.1	34.9	35.4	17.0	5.7	2.79	
Twice	191	8.9	31.9	44.5	12.5	2.1	2.67	
Three or More	179	7.3	36.9	38.0	14.5	3.3	2.70	
Unspecified	8	37.5	12.5	25.0	25.0	0.0	2.38	
Data Not Provided	35	---	---	---	---	---	---	
Total	642							

As seen in Table 9, the majority of users were satisfied as shown in Question 2. Relevancy of retrieved items was fairly low however, as shown in Question 1. Two disadvantages cited were: 1) the items were not current enough and 2) the items were too restrictive in scope. Even with its drawbacks, the majority of users as shown in Table 10 said that they would use WRSIC again, an encouraging sign.

In summary, user reactions to CAIN were generally favorable except for the question of subject control. For WRSIC, certainly the fact that many users would return a second time is a sign of user satisfaction. For CRIS, the reactions were not overwhelmingly positive but they were not negative either. Except for more constant updating, CRIS seems to be performing a worthwhile service also.

Table 9. User reactions to WRSIC (Morrison, Greenwell, and Hilsen 1973).

		<u>NCSU</u>	<u>WSC</u>	<u>CORNELL</u>	<u>TOTAL</u>	
1.	PERCENTAGE OF SELECTED ABSTRACTS RELEVANT TO INPUT REQUEST	10	7	20	37	100%
	0-10%	5	1	5	11	29.7%
	11-20%	2	3	2	7	18.9%
	21-30%	0	0	5	5	13.5%
	31-40%	0	2	0	2	5.5%
	41-50%	0	1	0	1	2.7%
	51-60%	0	0	5	5	13.5%
	61-70%	2	0	1	3	8.1%
	71 and above	1	0	2	3	8.1%
2.	LEVEL OF SATISFACTION WITH SEARCH RESULTS ON A 7 POINT SCALE	10	15	20	45	100%
	Highly Satisfied 7	0	2	3	5	11.1%
	6	3	3	2	8	17.8%
	5	5	3	3	11	24.4%
	4	0	4	5	9	20.0%
	3	0	2	4	6	13.3%
	2	2	0	1	3	6.7%
	Highly Dissatis- fied 1	0	1	2	3	6.7%

Table 10. User reactions to WRSIC (Morrison, Greenwell, and Hilsen 1973).

	<u>NCSU</u>	<u>WSC</u>	<u>CORNELL</u>	<u>TOTAL</u>	
3. THE AMOUNT OF TIME REQUIRED TO FORMULATE AND EVALUATE THE SEARCH	<u>9</u>	<u>9</u>	<u>18</u>	<u>36</u>	<u>100%</u>
0-1 hours	5	4	9	18	50.0%
2-3 hours	3	2	5	10	27.8%
4-5 hours	1	1	2	4	11.2%
6-7 hours	0	0	0	0	0
8-9 hours	0	0	2	2	5.5%
10 hours or more	0	2	0	2	5.5%
4. WOULD YOU USE THE WRSIC RETRIEVAL SYSTEM AGAIN?	<u>10</u>	<u>12</u>	<u>18</u>	<u>40</u>	<u>100%</u>
Yes	9	11	16	36	90.0%
No	0	1	0	1	2.5%
Maybe	1	0	2	3	7.5%

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SUMMARIZATION OF GRADUATE STUDENT PANEL

(editor's note: The following is a summarization of the statements made by participants of a guest panel. They were asked to briefly comment on information problems in their countries and information problems they would each have.)

Severo Saplaco: I work with the University of Philippines College of Forestry and teach there, along with some research along the lines of agriculture and forestry. When I go home I will be doing a lot more teaching, and at the same time doing research. As researchers we need very much information. We have to keep up with the advancement in technology as well as information, especially in a specialized field, my field being watershed management. This is becoming a very important field in the Philippines, and we don't have much information along these lines. We know that the western countries have good information and men in research in this field.

Jose Beserra: I've been at the University of Ceara, and first came to the University of Arizona in 1966. I got my Masters in botany, and I have come back to work on my Ph.D. in range management. In Brazil I am doing research and some teaching; I am mostly doing research with cotton and other vegetation native to my country. I hope when I go back I can be of much help this way. We have received much help from the University of Arizona through a contract supported by AID. We have some real good friends from the UA down in my country who are helping us improve our university in the field of agricultural sciences. I never got a chance to thank my friends from UA for giving us all of their help and I want to do this now. They helped us improve our facilities for teaching and research but not our library. This takes a lot of money and we don't have it. Any kind of contract that would give support to libraries would be good. What this group (CID workshop) is trying to do is a good thing because we need some kind of support to do the kind of teaching that we need to do over there. I don't know yet what kind of information and how we would get it, but I know we need this even though it may take a very long time.

Feitosa Teles: I am also from Brazil, and Jose was my professor ten years ago. We have a very young library, but most of the books are very old and now we have a program to get some new books but this is still very small. We have a good historical view of the research, but not an update of what's going on. I have been working mostly with casava and also research with flora for use by the pharmaceutical industry.

Muftah Shalgam: I work at the University of Libya in plant science. I have started my graduate work at the University of Arizona. Agricultural research in my country is not that old. It has started up in the last ten years, basically because of limitations in technical skills. The population is limited about 2 1/2 million. The resources are available in my country but the technical skills to deliver are not. For example, we established the College of Agriculture in 1962. We have established the Ministry of Agriculture which is also limited by the number of technical skills. The countries that surround my country, like Egypt, Tunisia and

Sudan, help us with our teaching of agriculture skills. A problem facing our country is the unorganized system of research. What we need is something to pull all our reports together. In regard to information, we have a new library; it's not a modern one but we are trying to get new information from different sources in the world. Last year the University of Libya wrote to Libyan students in the U.S. and asked for suggestions of new materials to purchase in their particular fields. The point I want to get across is that we are still lacking so many sources of information. We have got to cooperate with the western countries.

Ratiba Saad: I graduated in 1968 from the University of Tunisia with a B.S. degree in agricultural sciences. I started working at the Institute of Research in Tunis. I knew I would have to continue my education someday. I never realized what a tremendous help it was to get information from official newsletters and publications. As a future scientist and teacher I would need some kind of information, a kind of summary of current research that could keep me up to date. The library at the Institute of Research is very small. The agencies should first look at what is available as a source of information, because they now have their own preference in tools and it's very hard for me to finance a subscription to journals because it's hard to get money out of the country. Therefore, the system should be changed so that all people who need materials should be able to get them. One thing I liked at the UA is that I had a search run on a computer base and it took so little time to do. I would like to see this done in other countries.

Jabr Khalil: I worked for the University of Libya. After I get my Ph.D. I'll go back and teach in the College of Education at the University of Tripoli. Especially we need material on plant pathology, biology, and other publications. We are limited as to the publications that we can get.

What are the two or three most important things (or services) for you?

Ratiba Saad: It is critical that I keep up to date in research. I think we should not be isolated from the rest of the world. We need different periodicals and journals and we need to know the names of different colleagues and what work they are doing. Sooner or later we will get the information we need, but the geographical distance is a limitation as far as time goes.

Feitosa Teles: Being able to obtain names of colleagues is one of the most important, so we can write and get information from the colleagues. Also being able to have this sort of information on a periodic basis (updates) would be another priority.

Can you give me some kind of idea whether or not your students are using the libraries?

Feitosa Teles: Yes and no. That is, they use it according to their teacher. Some teachers give classes lists of publications (bibliographies) to read for the class, while others do not. This is how some of the students use

the library. Most students are forced by the teacher to use the library, but I am a library parasite; I live inside the library. If the teacher could be more informed in Brazil, he could keep the students more informed too.

Severo Saplaco: In the Philippines, we make use especially of western books and whatever is available. The students are very much interested in using the library. There are many agencies helping us to improve our library in the University of Philippines. The College of Agriculture complex is a prime spot for a systematized information base. I just heard a few weeks ago that a centralized data bank is being established at my University and, if we could be linked with some outside source providing us with information services, it would be to our advantage. We would have a much greater need for information from the outside world than the outside world would have from us, and so it might be a one-sided communication.

Robert Dodoo: In Ghana and most developing countries the researchers are not making an effort to get publications other than those that are readily available. They are only interested in the books that the publishers have sent to them. There is not much information flowing from professor to student, and this is a major problem at least in Ghana.

Jose Beserra: Related to critical information needs, in my country we receive Biological Abstracts, Science Citation Index, and Current Contents and we are acquainted with the latest books that are coming out, but we have no way of discussing with colleagues in the same field some of our ideas, so we can talk about our research. A newsletter then informing us of what is going on in our field, and who is doing it, would be most valuable.

Jose Beserra: It is very difficult to respond at this moment about what are the information needs in our country. We need to find out what options are available to us, and then details can be settled upon.

Severo Saplaco: The information needs and priorities will vary from one developing country to another, since we are in different stages and are operating under different programs. We need to know what are our options, through this agency (CID) and other groups.

INFORMATION NEEDS OF THE INTERNATIONAL USER

by Dorothy Parker

Implied in this title are agricultural specialists (users) who are engaged in agricultural programs at an international center or in association with some program of such a center whose objective is to improve and increase the food production in a wide geographic region.

International agricultural programs supported by governments have existed for a long time. Great Britain has conducted research in the former colonies since early times and, after Independence, many are still continued under the sponsorship of the Commonwealth Agricultural Bureaux. France, the Netherlands, Belgium, Canada, the United States, the Pan American Union, and others have also supported extensive overseas programs.

As an outgrowth of specialized Agricultural programs that were founded by the philanthropic private foundations, i.e. the Rockefeller Foundation and Ford Foundation, a new type of venture emerged. This was the creation of an International Institute whose objective was to specialize in a commodity that is important to many people in a large area.

The first of these institutions was the International Rice Research Institute (IRRI) located in the Philippines. The objective was to improve the varieties of rice grown in the rice belt in order to increase the yield which nourishes at least one half of the world's population.

The Rice Institute quickly developed some new varieties which greatly exceeded the production of any existing ones. This success with rice inspired the creation of the International Institute for Tropical Agriculture (IITA) in Ibadan, Nigeria; the International Center for the Improvement of wheat and corn (CIMMYT) in Mexico; the International Center for Tropical Agriculture (CIAT) in Cali, Colombia; the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in Hyderabad, India; the Asian Vegetable Research and Development Center (AVRDC) in Taiwan; the International Potato Center (CIP) in Peru; the International Center for Livestock Protection (ILCA) in Addis Ababa, Ethiopia; the International Laboratory for Research on Animal Diseases (ILRAD) in Nairobi, Kenya; and the Arid Lands Agricultural Development Program in Beirut, Lebanon. Other international centers are being discussed.

Support for these centers now comes from private foundations, the governments of the United States, Canada, Great Britain, France, West Germany, the Netherlands, the Scandinavian countries, the World Bank, the Interamerican Development Bank, and the United Nations.

These International Institutes have developed information programs which help disseminate knowledge of new techniques and new materials which can increase food production. The majority of the Institutes have a library and documentation service to assist the staff members and trainees in their research and dissemination of information activities.

The people who are engaged in international agricultural activities can be grouped into the following categories:

- Administrators
- Project leaders
- Research scientists
- Extension leaders
- Training specialists
- Information specialists
- Librarians
- Documentalists
- Engineers
- Experiment station directors

People working in each of these categories have special needs for information, for example: administrators must report regularly on the progress and accomplishments of their institution and should have access to a wide range of such reports from other institutions; they should have available data concerning production, export, import statistics, etc. concerning the commodities of interest to their organization, world coverage of scientific advances in a large number of fields, new trends in research, training and extension, as well as a general knowledge of socio-political developments of the region in which they are working.

The project leaders are specialists in a more narrow field and they need to have access at least to abstract, review, and index journals that will give them knowledge of what is being published throughout the world in their specialization. This should be accompanied by either direct access to a collection of at least the major scholarly journals covering the specialization and/or a documentation service which can supply original documents or photocopies of originals. The project leader should know where other similar projects are located, how they are organized, and who is engaged in each.

The research scientists have needs for the same type of information.

The extension leaders and training specialists are responsible for the communication of new methods, techniques and materials and must have access to the journals which serve their needs in both research and applied fields.

The information specialists likewise are specialists in communication and they must interpret the results of new scientific and technological development in terms that can be understood and applied by the layman; the information specialist must have available not only the scholarly publications in his field but also the work of information specialists in other similar institutions.

The librarians and documentalists also must have access to the scholarly journals in these fields, a basic collection of the standard monographs, and a carefully selected collection of references. Of special importance is a collection of addresses of libraries and documentation centers around

the world and information concerning the development of networks which they can join in order to obtain more information for their clients.

The engineers need access to the engineering and technological journals which serve the special field or fields of engineering in which they are engaged. They too should keep abreast of the advances being made in agriculture as well as those in related institutions. In addition they need many specialized manuals and basic standard references in their field.

The experiment station directors should have available a basic collection of literature concerning management and field experimental operations, agriculture in general, mechanical equipment, machinery, buildings, fertilizers, pesticides, fungicides, first aid, irrigation systems, land preparation, and personnel management.

The above list should be developed for the specific needs of each individual but it does illustrate the magnitude of the published information that is necessary to support modern international agricultural activities.

Two other categories of information must be mentioned: the ephemeral material that exists in the form of mimeographed reports, photocopies of typed reports, etc., which appear in limited number, and are distributed to a limited number of people. There usually is no library that has access to these or can make a collection of such items because they are not available through the book trade which is the only regular source the library has for the acquisition of materials. The ephemeral material is often the most useful printed information that an international worker has since this type of information is often available one or more years earlier than the scholarly journal publication of new research, because of the long delays which occur between the receipt and the publication of manuscripts. The other category of information is the verbal communication which occurs in laboratories and field plots when scientists and specialists visit various institutions or exchange information at conferences and meetings. This informal, unrecorded type of exchange of information is extremely important but fortuitous. Many needed ideas are sparked in this manner. However, it is not recorded and many potential stimulants to new experimentation and improvements of techniques may be lost. They are not recorded and hence do not influence the thinking of the larger group of specialists who were not present at these thought-provoking sessions.

In general, all of the preceding categories of information users working on the international scene will need to have access to a collection of the published record of his specialty in order to keep abreast of the trends and developments throughout the world; to make retrospective surveys of what has been published in order to understand the state of the art in his field of interest; to have those publications which answer the day to day questions concerning designs of experiments, descriptions of materials, procedures, species of pests and diseases,

mathematical tables, etc; to read in related fields for the stimulation of new ideas; and to be aware of developments in the world surrounding him.

The international users usually have contacts with a library and documentation center in their native country. If they become a member of an International Institute the majority of these have a specialized library and documentation service to assist them. The International Institute librarians have formed an informal network and are engaged in exchanging information of many kinds such as bibliographies, joint compilation of new bibliographies, and exchange of materials (government reports as well as Institute publications).

Recently a group of specialists working with international programs expressed an urgent need for an international organization that could issue a roster of all workers in their field with the address of each and a statement of the specialization and current research interest of each to facilitate rapid communication among individuals; a newsletter; a recommendation from specialists of the 5-10 best publications in their field during each year; and assistance with the collection and orderly dissemination of the ephemeral materials. Also the specialists stated that they are not acquainted with many of the new techniques and systems for handling information through data banks and computer programs. Some type of training program for the specialists could greatly accelerate the existing pace of exchange of information.

The development of international networks of library and documentation centers for the exchange of information is one of the most significant accomplishments of recent years. No longer can any one library obtain everything on any subject as vast as agriculture. The sharing and exchange of materials is mandatory.

Librarians and documentalists are eager to cooperate but to do so they must know who and where their counterparts are and what their collections consist of, what services are available, and what special fields of interest are the concern of their institution.

The following is a list of International Institutes with their addresses which may be useful in establishing links with them:

International Rice Research Institute (IRRI)
P. O. Box 933, Manila, Philippines

International Center for the Improvement of Corn and Wheat (CIMMYT), Londres 40, Mexico 6, D.F., Mexico

International Center for Tropical Agriculture, (CIAT)
Apartado Aereo 67-13, Cali, Colombia, SA

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
1-11-256 Begumpet, Hyderabad 500016, A.P., India

International Potato Center (CIP)
Apartado 5969, Lima, Peru, SA.

International Laboratory for Research on Animal Diseases
(ILRAD), P. O. Box 475 43, Nairobi, Kenya, East Africa

Centre International de L'elevage pour Afrique (CIEA),
P. O. Box 5689, Addis Abába, Ethiopia

International Institute for Tropical Agriculture (IITA)
PMB 5320, Ibadan, Nigeria

Asian Vegetable Research and Development Center (AVRDC)
Shanhua, Tainan County, Republic of China (Taiwan)

International Institute for Scientific Agriculture (IICA)
Turrialba, Costa Rica, CA

(SURVEY CIRCULATED TO POTENTIAL USERS)

POTENTIAL USER SURVEY

Name _____

Area(s) of speciality _____

Current position (indicate location) _____

In what countries have you worked or visited for professional reasons? For persons who have made trips in connection with AID contracts or grants, see attached sheet.

What information services, i.e. collections or services, are available to you? Please check appropriate column for each.

	immediate access	have access through library in nearby city	no access
Small collection of current journals			
Good set of current and retrospective journals			
Adequate library in terms of relevant monographs and reports			
Current reports from U.S.			
Current reports from other nations			
Able to get document copies through normal library channels, such as interlibrary loan			
Help in bibliographic searches			
Microfiche reader			

POTENTIAL USER SURVEY

Page 2

When your work requires you to prepare a literature review or do background research, what sources do you use to help you accumulate your information? If you check more than one, please indicate which is used most.

- | | |
|--|--|
| _____ local library | _____ information systems, such as
CRIS, NTIS, CAIN, or Water Resources |
| _____ personal collection of
your own | _____ someone else gathered materials
(please indicate who) |
| _____ prepared bibliographies | _____ AID abstracts |
| _____ information from colleagues | _____ other sources, please specify |

We are considering development of an information and resource-sharing network. In terms of your experiences and your information needs, which of the following services should be included as part of this network? Please indicate 1, 2, or 3.

1 = very important 2 = of some importance 3 = not important

- _____ Ability to determine names of colleagues at other universities and institutions and what research they are currently involved with
- _____ Searches through computerized bibliographic files. The topic would be of your own choosing. These searches would give citations only. These searches would have citations and abstracts. (Underline one of these.)
- _____ Ability to determine what books and reports on dryland farming, the Mediterranean area, the Sahel, irrigation, soil erosion, water logging and salinity, water delivery, LDCs, or soil moisture are at the libraries at other CID universities
- _____ Help in location of copies of publications
- _____ Access to annotated bibliographies
- _____ Translations of other publications (from what language and into what language?)
- _____ Selective dissemination of information services, that is, notification of new publications in a particular topic, received two to four times a year. Topics would be dry land farming, irrigation practices, soil erosion, water logging, and salinity, sediment control in delivery systems, and water delivery.
- _____ Training sessions on how to perform bibliographic searches or how to use government documents. Circle which one.
- _____ Others, please specify

Are you ever asked to supply publications, or information, or data to persons located in another country? If so, about how many times per year? _____

Give examples of requests and where sent:

If the network were used for document copy supply, how long would you be willing to wait for a copy of the document?

_____ 2 weeks

_____ 3 months

_____ 1 month

_____ other, please specify

_____ 2 months

Would you be willing to pay for copies of the document?

_____ yes

_____ no

Would you be willing to pay for translations?

_____ yes

_____ no

Would you be willing to pay for computer searches?

_____ yes

_____ no

Price range from \$15 to \$60.

FOR PERSONS WHO HAVE MADE TRIPS UNDER AID GRANTS OR CONTRACTS

Please indicate where you visited, for what purpose, and for how long?

In preparation for trips, how much time did you take to gather together information about the country you were to visit or the topic you were asked to advise on?

How much notice did you have prior to the start of the trip(s)?

What sources did you use to help you accumulate your information? If you check more than one, please indicate which was used most.

_____ campus library	_____ personal collection
_____ information systems such as CRIS, NTIS, CAIN, or Water Resources	_____ materials sent to you by country to be visited
_____ someone else gathered materials (please indicate who)	_____ from colleague
_____ AID abstracts	_____ prepared bibliographies
	_____ others (please specify)

POTENTIAL USER SURVEY

Page 5

After arriving in the country, did you feel that you would have been more prepared if you had seen other material before the trip? If so, what kind of material?

Regarding future trips you might take, which of the following types of services would you like to be made available to you:

1 = very important 2 = of some importance 3 = not important

- _____ names of colleagues who had visited the same country or similar region
- _____ overview publications about the culture, geography, resources, government, etc. of the country to be visited.
- _____ a listing of natural resource or water publications (from symposia or journals) about that country published in the last four years
- _____ a listing of natural resource or water publication (from sumposia of journals) about that country published in the last ten years
- _____ U.S. government publications about that country
- _____ U.S. government publications about that country's resources
- _____ U.N. and AID publications about that country
- _____ U.N. and AID publications about that country's resources
- _____ a literature search only giving citations on the topic on which you will be advising
- _____ a literature search giving citations and abstracts on the topic on which you will be advising

RESULTS FROM POTENTIAL USER SURVEY

Note: The surveys were divided into two groups--those answered by individuals currently working in the United States and those answered by individuals currently working outside of the United States or by foreign graduate students who responded in terms of services in their country. The first group is labeled "U. S. users" and the second group labeled "foreign users." When possible, responses were tabulated in terms of percentage of that particular user group, in order to facilitate comparisons from one group to the other. These percentages may total less than 100% since some respondents marked more than one group or left the item blank.

Results are presented in 9 sections. For the first three pages of the survey (Survey results A, B, C, D, E, F, and G) there were 53 U.S. respondents and 36 foreign user respondents. For the last two pages of the survey (Survey results H and I), for persons who have made trips under AID grants or contracts, there were 35 U.S. respondents and 18 foreign user respondents.

SURVEY RESULTS A

	Immediate Access		Have Access Through Library in Nearby City		No Access	
	U.S.	foreign	U.S.	foreign	U.S.	foreign
Small collection of current journals	70%	53%	9%	14%	4%	14%
Good set of current and retrospective journals	66%	14%	17%	22%	6%	50%
Adequate library in terms of relevant monographs and reports	66%	19%	19%	17%	6%	47%
Current reports from U.S.	60%	25%	17%	22%	2%	36%
Current reports from other nations	25%	19%	23%	22%	15%	39%
Able to get document copies through normal library channels, such as interlibrary loan	70%	14%	19%	17%	6%	47%
Help in bibliographic searches	60%	14%	11%	31%	15%	42%
Microfiche reader	64%	17%	13%	6%	11%	56%

SURVEY RESULTS B

When your work requires you to prepare a literature review or do background research, what sources do you use to help you accumulate your information? If you check more than one, please indicate which is used most.

	Ranked of 1st Importance		Ranked of 2nd Importance		Marked but not Ranked as 1st or 2nd	
	U.S.	foreign	U.S.	foreign	U.S.	foreign
Local library	15	5	7	2	22	12
Personal collection of your own	15	11	7	3	23	16
Prepared bibliographies	-	1	2	-	23	9
Information from colleagues	-	1	2	5	23	11
Information systems, such as CRIS, NTIS, CAIN, or Water Resources	1	-	5	-	11	5
Someone else gathered materials	3	-	-	-	4	4
AID abstracts	-	1	-	-	7	3

SURVEY RESULTS C

We are considering development of an information and resource-sharing network. In terms of your experiences and your information needs, which of the following services should be included as part of this network?

	Very Important		Of Some Importance		Not Important	
	U.S.	foreign	U.S.	foreign	U.S.	foreign
Ability to determine names of colleagues at other universities and institutions and what research they are currently involved with	55%	59%	34%	35%	9%	6%
Searches through computerized bibliographic files; the topic would be of your own choosing*	62%	56%	32%	29%		12%
Ability to determine what books and reports are at the libraries at other CID universities (on topics related to CID projects and areas of expertise)	30%	59%	43%	26%	17%	15%
Help in location of copies of publications	45%	65%	36%	29%	13%	6%
Access to annotated bibliographies	32%	44%	51%	44%	4%	6%
Translations of other publications	23%	20%	36%	43%	30%	37%
Selective dissemination of information services, that is, notification of new publications in a particular topic, received two to four times a year (topics related to CID projects)	30%	50%	42%	41%	23%	3%
Training sessions on how to perform bibliographic searches or how to use government documents	2%	14%	34%	3%	43%	83%

*Although some did not respond to the last part of this question, 19 U.S. respondents indicated preference for receiving citations and abstracts, and 1 preferred only citations; 15 foreign users preferred citations and abstracts.

SURVEY RESULTS D

If the network were used for document copy supply, how long would you be willing to wait for a copy of the document?

	U. S. Users	Foreign Users
2 weeks	34%	17%
1 month	50%	51%
2 months	7%	14%
3 months		17%

SURVEY RESULTS E

Would you be willing to pay for copies of the document?

	U. S. Users	Foreign Users
Yes	90%	81%
No	6%	16%

(Special tabulation: for those who listed as "very important" or "of some importance" help in location of copies of publications, 95% of the U.S. users indicated willingness to pay for copies, and 81% of the foreign users indicated willingness to pay for copies.)

SURVEY RESULTS F

Would you be willing to pay for translations?

	U.S. Users	Foreign Users
Yes	52%	39%
No	39%	61%

(Special tabulation: for those who listed as "very important" or "of some importance" translations of other publications, 71% of the U.S. users indicated willingness to pay for translations, and 45% of the foreign users indicated willingness to pay for translations.)

SURVEY RESULTS G

Would you be willing to pay for computer searches?

	U.S. Users	Foreign Users
Yes	74%	59%
No	21%	40%

(Special tabulation: for those who listed as "very important" or "of some importance" getting searches through computerized bibliographic files, 83% of the U.S. users indicated willingness to pay for searches, and 58% of the foreign users indicated willingness to pay for searches.)

SURVEY RESULTS H

In preparation for trips, what sources did you use to help you accumulate your information? If you check more than one, please indicate which was used most.

	Ranked of 1st Importance		Ranked of 2nd Importance		Marked but Not Ranked as 1st or 2nd	
	U.S.	foreign	U.S.	foreign	U.S.	foreign
Campus library	5	-	1	-	15	7
Information systems, such as CRIS, NTIS, CAIN, or Water Resources	1	-	1	-	-	1
Someone else gathered materials	2	1	2	-	9	4
AID abstracts	-	-	1	1	6	2
Personal collection	2	1	-	1	16	5
Materials sent to you by country to be visited	-	-	-	-	8	4
From colleague	2	3	2	-	18	6
Prepared bibliography	-	-	-	1	4	2

SURVEY RESULTS I

Regarding future trips you might take, which of the following types of services would you like to be made available to you?

	Very Important		Of Some Importance		Not Important	
	U.S.	foreign	U.S.	foreign	U.S.	foreign
Names of colleagues who had visited the same country or similar region	42%	57%	46%	43%	9%	-
Overview publication about the culture, geography, resources, government, etc. of the country to be visited	61%	71%	24%	14%	12%	7%
A listing of natural resource or water publications (from symposia or journals) about that country published in the last four years	61%	57%	30%	29%	6%	14%
A listing of natural resource or water publications (from symposia or journals) about that country published in the last 10 years	33%	29%	42%	21%	9%	36%
U.S. government publications about that country	24%	14%	67%	57%	3%	29%
U.S. government publications about that country's resources	30%	29%	49%	57%	12%	14%
U.N. and AID publications about that country	42%	21%	55%	79%	-	
U.N. and AID publications about that country's resources	55%	50%	36%	50%	6%	
A literature search only giving citations on the topic on which you will be advising	33%	23%	42%	54%	12%	15%
A literature search giving citations and abstracts on the topic on which you will be advising	73%	71%	15%	21%	6%	-

OUTCOMES OF THE WORKSHOP

Name of Group

It was unanimously agreed that a specialized group of CID should be developed, to be named the Consortium for International Development Information Network, or CIDNET. Generally speaking, CIDNET would serve as a mechanism for facilitating the exchange of information and information resources, particularly in relation to information problems related to CID or AID sponsored projects or information needs of persons in developing countries. Each CID member will designate at least one individual at that university to actively work with CIDNET activities. Additionally, other individuals not involved with CID can participate in CIDNET.

Areas of Expertise

In general, CIDNET members are interested in providing information services to AID related users and persons in developing countries. However, particularly at first, each CIDNET member will focus their primary information activities on their areas of expertise, as designated in the 211-d grants. (These listings of expertise are included in this proceedings following the paper presented by each participating university.)

Under a reciprocal arrangement, other CIDNET members or AID affiliated persons may contact each CIDNET member for assistance in information questions related to that university's area(s) of expertise.

Special Systems

Working within the funding limitations of the current 211-d grants, CIDNET members will continue developing or begin developing computer access to special collections of documents related to their 211-d grants.

The University of California at Riverside will continue inputting into the MUSAT:sra base following the TRIM program. Oregon State University and Colorado State University will both begin development of their bases this year, following the TRIM program.

Utah State University will specifically investigate the searchability of the tapes used to generate the Bibliography of Water Management. These tapes are still on the USU campus. If possible, a copy of the tapes will be sent to Riverside to investigate the feasibility of converting them to the TRIM format.

The Watershed Management Information System of the University of Arizona will continue working with a different format, one which provides an abstract along with the citation. The WAMIS format is identical to the Arid Lands Information System, which also receives grant money from AID.

The scope of each of these special bases is under the jurisdiction of the individual 211-d grants. However, these bases will differ from the

TA/PPU/EUI information system (see Appendix to the Proceedings by John Hafenrichter), in that the TA/PPU/EUI base will only cover research papers listed as outputs of AID grants and contracts, while the CIDNET bases cover many other sources of research results and publications.

Exchange of Materials

A special request was made by some of the participants that publications and annual reports from member CID universities be sent to libraries and special collections of the 211-d projects, at least temporarily, in order to ensure that the persons handling the information requests be aware of these publications.

All CIDNET members have procedures within their university libraries to obtain materials on interlibrary loan. However, occasionally this takes from four to six weeks for a response. One use of CIDNET would be to contact directly individuals at each of the universities for borrowing of materials, when an immediate response is important. To help facilitate this, each CIDNET member will provide copies (in microfiche or computer printout format) of their campus library's serial holdings.

Publications

A general promotional brochure describing briefly CID and the information services of CIDNET members will be printed for distribution to missions and individuals in developing countries. The brochure will be printed and distributed with CID headquarter funds, although individual CID members will obtain some copies for their own distribution. Linda White will be responsible for compiling the brochure.

An in-house newsletter will be published, with the primary audience being CIDNET information persons. Its frequency will depend on need. Initially, it will be sent out by the University of Arizona; however, each CIDNET member will contribute material.

At least for the time being, no newsletter for distribution outside the United States will be published by CIDNET. Each CIDNET member has the option to publish its own special newsletter related to its own 211-d grant and distribute this at the project's discretion.

Document copy distribution will continue to be handled as it has been in the past. Specifically, the AID Washington office will carry the primary responsibility of distributing to developing countries publications supported through the 211-d grants. (This follows the procedures used for input to A.I.D. Research and Development Abstracts, outlined in the Appendix to the Proceedings.) CIDNET members will also continue to handle at their own discretion requests for other types of publications (for example, copies of journal articles).

Affiliations with Other Groups

Peter Rotar from the University of Hawaii will act as general contact person for the Tropical Soils Consortium. He additionally asked CIDNET

persons to help him identify (as they work with their own collections and identify materials for the 211-d libraries or bases) non-journal publications about tropical and subtropical agriculture, that is, food production and delivery, including range work and agricultural economics. Citations for such references along with information on the location of the document will be put into a special base being developed for tropical agriculture work.

At the suggestion of Dorothy Parker, CIDNET will also contact several International Institutes and organizations (listed below) to advise them about the existence of CIDNET and some of the special collections and bases, and to seek more detailed information on how CID universities could utilize the organizations.

International Rice Research Institute
Manila, Philippines

International Center for the Improvement of Maiz and Wheat
Mexico City, Mexico

International Center for Tropical Agriculture
Cali, Colombia

International Crops Research Institute for the Semi-arid Tropics
Hyderabad, India

International Potato Center
Lima, Peru

International Laboratory for Research on Animal Diseases
Nairobi, Kenya

Centre International de L'elevage pour Afrique
Addis Adaba, Ethiopia

International Institute for Tropical Agriculture
Ibadan, Nigeria

Asian Vegetable Research and Development Center
Shanhua, Tainan County, Republic of China

International Institute for Scientific Agriculture
Turrialba, Costa Rica

Inter-Asian Corn Program
The Rockefeller Foundation
Bangkok, Thailand

Instituto de Nutricion para Central America y Panama
Guatemala City, Guatemala

Instituto de Ciencias y Tecnologia Agricola
Guatemala City, Guatemala

Instituto Nacional de Investigaciones Agropecuarias
Guayaquil, Ecuador

Programa Cooperativa Centroamericano para el Mejoramiento de
Cultivos Alimenticios
San Salvador, El Salvador

Central Contact Point

When communicating with users (both U.S. and international), persons will be urged to contact directly the particular CIDNET member best able to handle the information query. For other users who are unsure about which member to contact, the University of California at Riverside has agreed to serve temporarily as the central contact point.

Items for Future Consideration

The initial information activities and services of CIDNET are restricted by funding available for such activity in the current 211-d grants. In order to provide additional services, more funding will be needed. With that in mind, CIDNET plans to write a proposal for additional activities. The University of California at Riverside has assumed the responsibility of writing the first draft for this proposal, and will have it ready by the January 1976 meeting of CID.

There are a variety of activities which can be included in this draft. Some concrete suggestions made at the workshop for future consideration are as follows:

- ways are needed to speed up the exchange of materials from one CIDNET member to another;
- after a preliminary period, agreements should be made regarding the exchange of reference service activities;
- CIDNET should investigate ways to further serve regional and international libraries, such as the International Institutes;
- methods should be established to obtain input into the special CIDNET bases for materials published by or written in other countries; and
- CIDNET can function in an advisory capacity on information services, for example, by providing training on development of special information systems.

APPENDIX TO PROCEEDINGS

Comments on Information Management and Networking

prepared for the

**Consortium for International Development (CID)
Workshop on Information Networking
Double Tree Inn
September 22-25, 1975**

by

**John L. Hafenrichter
Documentation Coordinator
Division of Evaluation, Utilization and
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PREFATORY NOTE

The phrase awareness services used in the following denotes announcement and abstracting services designed to serve as a basis for selection in libraries and information outlets.

Document delivery, in contrast, denotes systems whereby copies of materials desired can be obtained.

I am grateful to Dr. Charles J. Dove, Editor, A.I.D. Research and Development Abstracts for reactions to points made throughout this set of comments; and in particular, for his help in describing usage made of the A.I.D. Document Distribution System (ADDS).

J.L.H.
September 8, 1975

Introduction: a CID/AID Shared Focus

"Some of the network's activities will be oriented towards the university personnel in the CID universities, but I am also concerned with providing various information services in other countries who may not have access to libraries, etc." Extracted from a letter, Ms. Linda White to Hafenrichter, July 12, 1975.

The two levels of activity proposed in the extract above are well-chosen themes for the CID Workshop on Information Networking. Together they highlight an area of mutual concern, shared by information staffs in CID institutions, and by staff here in the Division of Evaluation, Utilization, and Technical Information, Office of Program Planning and Utilization located in the Technical Assistance Bureau, A.I.D. (In the interest of brevity I will use the acronym TA/PPU/EUI in references below to my organization unit).

We, together, are concerned that, at the base-level, American competencies and research experience in key subject areas affecting national development be known and rendered accessible. Insofar as your institutions have allied themselves with A.I.D., our mutual concern, at the next stage, focuses particularly on developing nations.

In giving purpose to our respective concerns, individual action programs will inevitably differ. Our preoccupation with information management spans key problem areas identified in the Bureau's annual authorization and appropriation. Our networking affiliations, at the moment, touch ca. 200 contractors/grantees on the producing-end, and some 7,000 addressees to whom we distribute the A.I.D. Research and Development Abstracts (ARDA); of this consumer-total, ca. 5,000 addressees represent developing country contacts.

Our acquisitions are limited to documentation produced in contracts and grants funded by the Technical Assistance Bureau, and attributed by the producers either in whole or in part to this funding stimulus. The essentially complete collection here involved will reach a total of around 7,500 titles by mid-1976. Thereafter, it is expected that it will grow at an annual rate of 1,000 titles, dependent, of course, on Congressional funding levels.

In its subject scope it will conform to the A.I.D.-identified spectrum of key problem areas focused specifically on subject areas relevant to developing countries. In this context the collection will represent American academic thought and research applied selectively to Agency concerns.

CID information management, in contrast, covers the substantive area of water resources and management comprehensively. Your acquisition policies are international in their coverage and there is no limit imposed in terms of time or date. Subsequent processing and services which can be offered as a result are responsive to in-depth requests from a varied range of clientele.

In the main, clientele served to date comes from the "normal" users of your university library and information outlets. The scope of information networking activities aimed at developing country clientele appears to me at this date, to figure as a definitional matter which the Workshop hopes to address. And it is at this juncture specifically that our shared interests intersect.

To facilitate interface, in the first instance; and to achieve something in the way of directed outreach, productive of utilization of information to resolve developmental problems, in the second, these comments are forwarded. I want to describe carefully our information system and its current operational status; in your deliberations concerning networking, in particular, there are clear opportunities you may wish to take advantage of. We, in turn, wish to utilize the opportunity which the Workshop affords to solicit reactions and advice on several points aimed generally at improving our system and procedures.

The organization of these remarks runs as follows: in section one, I treat our handling of current titles presently being produced by active contracts and grants funded through the Technical Assistance Bureau. This is followed in section two by a description of our automated, comprehensive data base which comprises both retrospective R&D production dating to 1962 as well as current materials; this mass of documentation has emerged from over 400 funding arrangements sponsored by this Bureau. In the third section a series of issues involved in our collaborative operation are aired. Some of these are procedural in nature; others are bibliographical; and still others are ideas only which have surfaced here.

TA/PPU/EUI INFORMATION SYSTEM: CURRENT R&D MATERIALS

In July, 1973, the first issue of A.I.D. Research and Development Abstracts (ARDA) made its appearance; to date a total of ten issues announcing ca. 1,200 titles, together with abstracts, have been issued. With very few exceptions, all titles carry issuance dates of 1972 and later. Over 90 percent of these materials emerged from Bureau-funded contracts and grants; the remaining titles were produced either within the Technical Assistance Bureau itself, or in one of the other Agency Bureaus, by the contract/grant mechanism or in-house.

ARDA is distributed at present to over 5,000 developing country institutional addressees contained in a computerized mailing list known as A.I.D. Document Distribution System (ADDS), and to an additional 1,500 addresses made up of A.I.D.'s contractor and grantee institutions, A.I.D. Mission staffs, and selected international organizations. Distribution has grown from a total of ca. 5,500 addressees in July, 1973, to around 7,000, as of September, 1975.

A survey of developing country recipients is being made at present by questionnaire; and descriptive data concerning each unit is being input into ADDS as completed forms are returned.

The preponderant proportion of titles announced and abstracted in ARDA is produced in institutions which have been awarded contracts and/or grants by the Technical Assistance Bureau. Allied with the Agency in this manner, these institutions have involved themselves in training, research, and various related activities which focus on the 31 Agency-identified, key problem areas (a listing of which follows on the next page). Both the retrospective and current ranges of programs grouped within these combined thrusts have been described in two directory-type publications*.

Since July, 1974, the announcement service, provided to developing country institutions by ARDA, has been backed up by document delivery underwritten by this Bureau. Recipients, whose address codes in ADDS begin with numbers 3-5, are encouraged to order hard-copy reproductions or microfiche editions needed in their operations and listed in any given issue of ARDA. Provisions governing the ordering and delivery process are explained in each issue of ARDA at the back.

Orders from developing country recipients for hard copy and/or fiche, averaging \$12,000 per quarter, have been handled by the A.I.D. Distribution Center (a contract operation) since initiation of this service. A total of approximately 6,000 orders for hard copy and 4,000 for fiche has been supplied on demand during the 12 months ending June 30, 1975 to developing country clientele.

The survey of ADDS-addressees now being made will render the overall list increasingly more targeted on those developing country units active in fields given priority by the Agency. Researchers, educators, library/information professionals, and appropriate governmental offices throughout the developing world comprise our target audience. As data from the questionnaire are input, we will be better able to analyze usage indicated by requests both overall (our present capability) and by types of units (probably a capability by mid-1976).

With the presently existing stabilization of the awareness, distributional, and document delivery components (ARDA, ADDS, and the drawing fund, respectively), acquisition routines have had to be addressed. Revised reporting guidelines have been sent out to 211(d) grantees (August, 1974) and to research contractors (July, 1975). The specifics of these guidelines will change from time to time. Sketched here are essentially five kinds of assistance from contractors/grantees needed by our acquisition function:

*The A.I.D. Research Program 1962-1971, Project Objectives and Results. March, 1971. xvii, 115 p.

A.I.D. Research 1971-1973. Dec., 1973. vi, 97 p.

A Directory of Institutional Resources Supported by Section 211(d) Grants; U.S. Centers of Competence for International Development. June, 1972. vi, 124 p. -----Jan., 1975, vi, 163 p.

KEY PROBLEM AREAS (KPAs)

Worldwide Technical Assistance and Research

- KPA No. 1 - Agricultural Economic Analysis
- No. 2 - Crop Production Methodology
- No. 3 - International Agricultural Research Centers
- No. 4 - Water and Tropical Soils Management
- No. 5 - Livestock Production
- No. 6 - Agricultural Management and Support
- No. 7 - Natural Resources for Agricultural
Title XII Program Grants
- No. 8 - Low Cost Nutritious Food
- No. 9 - Reaching the Pre-School Child
- No.10 - National Nutrition Planning and Motivation
- No.11 - Health Delivery Systems
- No.12 - Health Planning
- No.13 - Environmental Health
- No.14 - Educational Technology
- No.15 - Non-Formal Education
- No.16 - Educational Finance and Measurement
- No.17 - Higher Education
- No.18 - Urban Development
- No.19 - Science and Technology Inst. Dev.
- No.20 - Natural Resources Assessment and Development
- No.21 - Reducing Public Investment Costs
- No.22 - Social and Economic Research and Development
- No.23 - Title IX Program
- No.24 - Other Worldwide Technical Assistance
- No.25 - International Fertilizer Development Centers
- No.26 - Stimulating Reimbursable Program
- No.27 - Aquaculture
- No.28 - Pest Management
- No.29 - Reducing Food Losses
- No.30 - Development Administration
- No.31 - Intermediate Technology

- 1) R&D results are needed as promptly as possible after issuance title-by-title*;
- 2) Good copy for micrographic processing is essential;
- 3) An abstract, preferably author-prepared, needs to be submitted with each title;
- 4) An attribution as to the appropriate contract or grant needs to be made in the issuing institution;
- 5) A bibliographical recapitulation of submissions made throughout the reporting year needs to appear in the Annual Report**.

The guidelines sent to 211(d) grantees emphasize preparation of the annual report at the expense of the need to identify and to submit other materials generated by these very general grants. The recent guidelines sent to research contractors given a better fix on what is needed in reporting; and we have probably erred in becoming too detailed. Hopefully, an edition of these guidelines, yet to be prepared and issued, will strike a via media at some future point, perhaps mid-year 1976.

TA/PPU/EUI INFORMATION SYSTEM: INCLUSIVE DATA BASE

During the past fiscal year (FY 1975) the Division undertook to consolidate all R&D documentation produced by Technical Assistance Bureau contracts (dating to 1962) and grants (dating to 1966) in a comprehensive data base. The project provides for:

*Discussion papers, occasional contributions, non-copyrighted theses and dissertations: materials not submitted for publication and peer-review, can be announced in ARDA within three to six months of issuance, if promptly submitted to us. If we are to announce titles submitted for formal publication in preliminary draft form submitted to us, this should be specified. Reprint series ought probably not to be submitted, unless the author(s) of the articles(s) reprinted within the series are affiliated with the contract/grant.

**Of presently active contracts/grants, bibliographic control exercised by the Land Tenure Center, University of Wisconsin is exemplary. In the Annual Report 1973/1974, for example, totalled documentation output is shown clearly and completely. This includes production from the original research contract (1963-1969) and the insuing 211(d) grant (1969-).

- 1) An automated data base queriable by subject categories and descriptors, authors, and contract/grant institutions;
- 2) A printed catalogue arranged by subject categories with full title citations given under all descriptors; and author and contract/grant indices; (the initial catalogue will span the period 1962 to the end of 1975);
- 3) A microfiche-back up file of all materials input into the data base for on-demand document delivery.

The first inputs for the data base were dispatched to the contractor for automated processing on March 10, 1975; since that date ca. 2,500 titles have been input. All documentation in the broad areas of food and nutrition (CID production is here included) generated in the 13 year period is targeted for input by the end of calendar year 1975, and the first volume of the printed catalogue should appear early in 1976. Materials documenting the remaining key problem areas are targeted for input in sequence, so that the final volume of the catalogue will be issued roughly six months after appearance of the first.

The catalogue will cumulate titles announced in ARDA numbers issued through calendar year 1975. It will also supersede an earlier listing of 2,000 titles produced by research contractors only which appeared in two volumes during 1973-1974.

Considerable maneuverability is made possible by the forthcoming catalogue and the microfiche back-up file. We are now investigating the possibility of judicious deposits of microfiche decks in key regional library/information centers, balanced by reasonably wide distribution of the catalogue in regions served. In this manner, responsibility for document delivery can be shared; and use of materials will be facilitated. Further, such an information input in appropriate regions will serve, in the overall, to stimulate networks beginning to function, and to render their programs of services more effective. Only slightly further into the future exists the possibility of magnetic data base tape exchange with key regional centers, which can lead to their fielding and handling of data base queries

COMMENTS ON METHODOLOGY AND COLLABORATION

1. The information system described in the foregoing has the capability to assist CID outreach in the following ways:
 - a. R&D documentation generated in individual contracts/grants can be given wide announcement and essentially no charge delivery to developing country clients;
 - b. These materials can be announced to selected clientele in developed countries and international agencies as well, and delivered at 7¢ per page, hard copy reproduction; 95¢ per 98-frame microfiche (prices as of September, 1975);

c. opening of networking opportunities with key international research and information centers available to CID through A.I.D.-deposit of R&D documentations; the following units figure as priority outlets in present TA/PPU/EUI thinking: IICA-CIDIA, IRRI, CIAT IITA, ICRISAT, and SEARCA*:

d. The printed catalogue of R&D findings, to be issued by mid-1976, will provide a comprehensive review of an important collection of developmental literature; the queriable data base will facilitate information retrieval; all titles will be permanently available in hard copy or in microfiche on demand.

2. CID collaboration is needed to render the system current in an on-going manner, and to enhance its quality and usefulness. Policies uniformly applicable concerning informational operations both at the Consortium level and at the institutional-level need to be framed. Critical to planning for functions and direction in this area is defined responsibility within the contract/grant. The focus needed should be able to deal with the following activities and concerns:

a. Bibliographic planning and controls:

- What kinds of materials are needed in developing countries in the subject areas defined in the basic contract/grant?
- How are preparation and issuance phases of R&D information outputs monitored and managed?
- Can transmission of materials be handled routinely to TA/PPU/EUI? thus bringing them into world-wide notice?

*Institutional names for acronyms used:

IICA-CIDIA=Instituto de Ciencias Agrícolas de la OEA, Centro Interamericano de Documentación e Información Agrícola, Turrialba, Costa Rica
IRRI=International Rice Research Institute, Los Baños, Philippines
CIAT=Centro Internacional de Agricultura Tropical, Cali, Colombia
IITA=International Institute of Tropical Agriculture, Ibadan, Nigeria
ICRISAT=International Crops Research Institute for the Semi-Arid Tropics, Hyderabad, India
SEARCA=Southeast Asian Regional Center for Graduate Study and Research in Agriculture, Los Baños, Philippines

Is the informational output of the contract/grant evaluated in composite at least annually within the institution? within CID? and is it highlighted adequately in the annual reporting document?

b. Analysis and evaluation of information outreach:

Is ADDS being used as effectively as possible by the contract/grant in reaching developing country clientele active in the broad areas of concern to the institution involved? to CID?

What key developing country units functioning now or potentially need to be reached? Because of regional and/or international scope, do some of these units require priority attention from CID?

Have plans or discussions been undertaken within CID as to how priority units can be strengthened and stimulated?

Have evaluative techniques been developed within CID whereby achieved institutional experience in informational outreach can be measured, shared, and publicized?

c. Active participation in strengthening and developing information competencies in key regional/international units; are any of the following activities feasible within the CID program:

- Assistance in collection building?
- Academic and/or in-service training of information staff?
- Assistance to researchers in modern bibliographic techniques?
- Dialogue concerning introduction and application of new information techniques?
- Dialogue concerning linkages with key U.S. resources, as well as with user-clients within developing regions served by key units?
- Assistance in developing evaluative techniques whereby key centers can measure, improve, publicize, and secure support for their own outreach services?

3. The strategy implicit in comments set down in this section recognizes the following organizational thrusts:

- a.1 Both information management and information networking undertaken by CID within the contract/grant context should make as extensive use as possible of TA/PPU/EUI awareness and document delivery services developed on behalf of an extended range of developing country clientele;

- .2 In-depth, direct services to developing country units sharing CID's subject specialization need to be spearheaded by CID institutions, using experience derived from the broad canvass initiated by TA/PPU/EUI;
- .3 These objectives will be facilitated by formation of a more formalized CID information focus (both at the Consortium and the institutional levels) able:
 - Jointly to discuss and implement with TA/PPU/EUI continued development and utilization of ADDS;
 - Efficient processing into ARDA of planned informational outputs generated by the contracts/grants.
 - Selection by CID of key developing country institutions most in need of networking affiliations on a permanent, on-going basis;
- .1 Facilitating a joint AID/CID focus on key developing country information outlets functioning on multi-national and/or regional bases; achievements in this thrust encourage:
 - Stabilization of regional information networks which can multiply and handle precise distribution and outreach involved in technology transfer insofar as documentation aspects are concerned;
 - Development of a limited number of key, viable information foci overseas in which the costs of staffing and applications of newest information technologies can be justified.

CONCLUSION

Targets addressed in these remarks (if indeed such they can be considered) aim at putting together a common basis for present and subsequent action. Our collaboration at present ought to serve well in getting a specially designed body of materials to bear now on the problems of national development. And from this shared experience should emerge, in the future, fruitful planning for yet subsequent stages of informational activities.

At this point in time establishment of an informational focus within the institutions of CID, somewhat uniform in scope and operations, will facilitate short and long-range programming and implementation. We in TA/PPU/EUI need such a CID-resource for its inputs and for its advice. We believe our developing informational apparatus can be utilized profitably ad interim by CID, as the definition and activation of an information component in CID moves to undertake on-going and permanent reaching out into the developing world.