

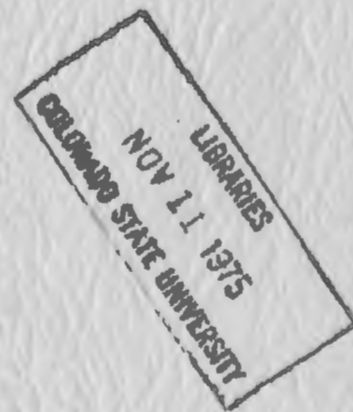
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COLORADO STATE UNIVERSITY  
FORT COLLINS, COLORADO

ANNUAL TECHNICAL REPORT  
1970-71

IMPROVING CAPACITY OF CUSUSWASH UNIVERSITIES  
FOR WATER MANAGEMENT  
FOR AGRICULTURE

REPORT NUMBER II  
VOLUME II  
APPENDIX B  
COLORADO STATE UNIVERSITY



Contract No. AID/csd 2460  
August 31, 1971

CER 01-24-1018-00

ANNUAL TECHNICAL REPORT  
1970-71

IMPROVING CAPACITY OF CUSUSWASH UNIVERSITIES  
FOR WATER MANAGEMENT  
FOR AGRICULTURE

REPORT NUMBER II  
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APPENDIX B  
COLORADO STATE UNIVERSITY



Contract No. AID/csd 2460  
August 31, 1971

## FOREWORD

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## FOREWORD

This is the second (Report Number II) consolidated annual report on the section 211(d) Grant made to three of the member universities of the Council of U.S. Universities for Soil and Water Development in Arid and Sub-Humid Areas (CUSUSWASH): The University of Arizona (Contract AID/csd 2459), Colorado State University (Contract AID/csd 2460), and Utah State University (Contract AID/csd 2459), for the purpose of enhancing the competence of these universities in the field of water management for agriculture. These programs were initiated July 1, 1969. CUSUSWASH provides a mechanism for joint planning and review of accomplishments for the three programs and coordinated leadership for the inter-university aspects of the program. Besides the three recipient universities, CUSUSWASH also includes the University of California.

The report consists of two volumes. Volume I contains four parts. Part I deals with the overall CUSUSWASH program, and Parts II, III, and IV report the activities of the three universities. The four parts are under one cover.

Volume II consists of three separate appendices by the three universities. Each appendix is under a separate cover. This report constitutes Appendix B of Volume II.

For

This grant is for the institutional development grant to the University of Colorado State University. The grant is for the purpose of developing a water delivery and removal system in the state of Colorado. The grant is for the purpose of developing a water delivery and removal system in the state of Colorado. The grant is for the purpose of developing a water delivery and removal system in the state of Colorado.

II. Name of Applicant: Colorado State University  
 The grant is for the purpose of developing a water delivery and removal system in the state of Colorado. The grant is for the purpose of developing a water delivery and removal system in the state of Colorado. The grant is for the purpose of developing a water delivery and removal system in the state of Colorado.

SECTION I

AID INSTITUTIONAL DEVELOPMENT GRANT

The grant is for the purpose of developing a water delivery and removal system in the state of Colorado. The grant is for the purpose of developing a water delivery and removal system in the state of Colorado. The grant is for the purpose of developing a water delivery and removal system in the state of Colorado.

Final Proposal  
For  
AID Institutional Development Grant

- I. Title: Optimum Utilization of Water Resources:  
with special emphasis on  
Water Delivery and Removal Systems and Relevant Institutional  
Development
- II. Name of Applicant: Colorado State University
- III. Program Director: Maurice L. Albertson  
Linwood L. Hodgdon, Associate Director
- IV. Duration: Five years from date established by the Grant
- V. Amount of the Grant: \$750,000
- VI. Action Officer:

Summary:

This Proposal is one of three being submitted by each of three universities on different aspects of water resources utilization. This Grant will strengthen the already existing competence of Colorado State University in water delivery and removal systems and in development of institutions which are relevant to the various aspects of optimum utilization of water resources.

The competence of Colorado State University in these subjects exists in several departments whose staff members constitute the basic capability and interest. The Grant will be used to expand both the depth and breadth of this capability in its application to the less developed countries. Specifically, the grant would be used to support the salary of staff members and graduate students, and their travel and other expenses related to this activity.

As a Land Grant University, Colorado State University has a long tradition of research, education, and service for agricultural areas and their needs both in the United States and abroad. This Grant will help to expand these activities more effectively into and for the less developed countries.

## Background

This proposal is one of three being submitted by each of three universities (University of Arizona, Colorado State University, and Utah State University), which are coordinating their efforts through the Council of U. S. Universities for Soil and Water Development in Arid and Sub-Humid areas -- later referred to as Council. These three universities are among the most competent in the field of water management in the United States.

Colorado State University will emphasize the development of its competence with special emphasis on "water delivery and removal systems and relevant institutional development", Utah State University in "on farm water management" and the University of Arizona, "water shed management". This deviation of emphasis reflects their respective current special competencies and major field of interest in United States' water management problems. In addition, each of these universities has special geographic experiences and interests in less developed countries. Utah State University is active in several Latin American countries; Arizona is working for AID in Brazil; and Colorado State University is active in Pakistan and Southeast Asia. All three of the universities have contacts and experience in several other locations throughout the less developed world and have general interests in water management problems in less developed countries.

Activities under the Grants to these three universities will be coordinated through the Council in order to maximize development of competencies under the Grants and to facilitate usefulness of these competencies to AID and other appropriate agencies.

Because irrigation agriculture is concentrated in relatively few states, special U.S. competence in irrigation water management is limited to relatively few U. S. universities. However, irrigation is of extreme importance to the agriculture of a large proportion of the less developed countries. Therefore, the increased competence in water management to be created through these Grants for conditions found in the less developed countries, will be of central importance to optimum agricultural development in many of the less developed countries of all the major continents of the world.



## Capacity and Commitment

Shortly after the Land Grant Act was signed by President Lincoln, the Land Grant College for Colorado was created in Fort Collins to work with the people in the rural areas through its extension service programs, and to provide higher education for the common man. The Colorado Agricultural Experiment Station was also created at Fort Collins as an integral part of the college to conduct research and experiments on problems confronting the farmer. Colorado State University thus has a long-standing interest in and commitment to the problems of development--particularly in arid agricultural areas where water resources are in short supply or not yet fully developed.

This very practical beginning for what is now Colorado State University has continued to be the central theme, a strong program in research, education, and service. The primary aspect of this program is in Water Resources Development, including agriculture, engineering, watershed management, geology, and various aspects of biological and social sciences. The various water resources programs of research and education at Colorado State University constitute the largest such graduate programs in the world, and a number of these programs are heavily involved in various types of foreign activities, such as the Asian Institute of Technology in Bangkok, and a research program on Water Management in Pakistan.

Well over 100 faculty, and more than 300 graduate students from both the United States and abroad, are now involved in the foregoing programs in the various departments of Colorado State University.

Colorado State University has developed within its institutional structure a Center for Natural Resources, an Office of International Programs and a Center for Latin American Studies. Each of these centers and offices will assist in the development of this project and will be strengthened by their involvement in assisting in the addition of faculty, students, courses, and service activities to broaden the scope of the water resources program at the University as it relates to the less developed countries. These offices and centers have been and are now involved in projects or programs that focus on the professional and technical needs of the less developed countries including specific geographical areas; Latin America, South and Southeast Asia, and Africa.

Colorado State University also has a tradition of working on research, education, and service activities related to water resources with many different agencies of the United States Government and various state agencies, such as:

1. U.S. Geological Survey
2. U.S. Bureau of Public Roads
3. U.S. Agricultural Research Service
4. U.S. Economic Research Service
5. U.S. Soil Conservation Service
6. U.S. Forest Service
7. U.S. Rocky Mountain Forest and Range Experiment Station



8. U.S. Bureau of Reclamation
9. U.S. Bureau of Sport Fisheries and Wildlife
10. U.S. Public Health Service
11. Colorado Water Conservation Board
12. Colorado Cooperative Wildlife Research Unit
13. Colorado Game, Fish, and Parks Department
14. Colorado State Forest Service

Colorado State University has a large number of courses related directly or indirectly to water resources. These courses have been expanded steadily to meet additional requirements in each of the many departments which are interested in the optimum utilization of water resources.

When AID and SEATO were interested in establishing a graduate school in Southeast Asia ten years ago, with special emphasis on water resources, they came to Colorado State University which has taken the responsibility for the initial design of the School and the coordination of the United States contribution ever since that time. The School is located in Bangkok, Thailand and is now known as the Asian Institute of Technology with a continually expanding scope of activities.

Many of the Colorado State University faculty are serving periodically as consultants to various governments, agencies, and other organizations abroad with regard to water resources problems.

Colorado State University has been expanding, at an ever increasing rate, its level of support, both in breadth and in depth, in the various aspects of water resources. Furthermore, it expects to continue this expansion in the future. In addition, in support of this Grant, the University will provide:

1. The office, classroom, laboratory, and library space for faculty, students, and foreign visitors.
2. The basic facilities and equipment required for research, instruction, and service--such as analog and digital computers and certain basic laboratory equipment.
3. The usual administrative and technical supervision and counsel by the various administrators.
4. The advise and assistance of faculty and other staff throughout the University who have special competence which bears on the needs of the program.

## Objectives and Scope of Proposed Program

With the funds from the Grant, Colorado State University will improve its level of excellence with respect to planning, development, management, and utilization of water resources with special emphasis on water delivery and removal systems and relevant institutional development related to the needs of the less developed countries. This will be accomplished through the following steps:

1. Expand its professional staff in the various departments of the University which are now involved, or which would like to be involved, in water resources activities related to the needs of the less developed countries.
2. Expand its number of graduate students in these departments from, or interested in, the less developed countries.
3. Expand its departmental research programs and activities related to the needs of the less developed countries.
4. Expand its course offerings in these departments --- including interdisciplinary courses --- which are related to the less developed countries.
5. Expand special activities, and initiate new ones, in the United States and abroad which are related to research, teaching, and service -- e.g. seminars, exchange programs, institutes, conferences, and publications which are concerned with the less developed countries.
6. Help to alleviate the critical shortage of qualified professional personnel with international interests, experience, and expertise, and with cross-cultural insights.
7. Expand its capability to serve in advisory and consulting capacity to various individuals, government agencies, industries, business, and other organizations who have an interest in activities abroad. It would be understood, however, that substantial specific services in this area will be funded by AID and any other sponsoring agencies under separate contractual arrangements.
8. Improve its understanding of the nature of the less developed societies, and find ways and means of assisting them to resolve crucial problems relating to water resources development and management.
9. Develop an exchange of personnel and publications, and other programs of interaction, which will help to establish steady and effective lines of communication between Colorado State University and the less developed countries.

The subject areas of specialization include the following as related to the needs of the less developed countries:

1. Development of water supplies from various sources.
2. Conveyance, delivery, and drainage of water in open and closed conduits, including rivers, canals, irrigation ditches, tunnels, and pipelines.
3. Storage and use of water in reservoirs, both above and below ground.
4. Control and measurement of water in storage, and water being conveyed either for delivery or for drainage.
5. Control of erosion and sedimentation with respect to storage.
6. Use of wells as a source of water or for storage of water underground.
7. Use of systems engineering for development of optimum solutions to problems of water resources utilization.
8. Understanding social, economic, political, and cultural factors in technological change, and the processes of developmental change.
9. Analysis of prevailing social systems, their structural-functional characteristics within specific less developed countries to determine:
  - a. The kinds of structural changes necessary for maximizing water resource development and management, including the use of necessary new inputs.
  - b. The sources of resistance to these necessary changes, and
  - c. Effective ways of dealing with social resistance
10. To analyze specific organizational and administrative structures for agricultural development in specific less developed countries to determine needed changes for better water utilization in maximizing agricultural production.
11. To conduct economic analyses, including input response studies, and including the analysis of delivery and removal systems, to achieve efficient and economic allocation of water for agricultural purposes in selected areas of the less developed countries.

12. By use of systems analysis, develop case studies analyzing and documenting the above relationships in selected areas of the less developed countries for instructional research, and training purposes in a multidisciplinary setting.

### Operational Plan

The details of the operational plan will be developed with the help of an interdisciplinary advisory committee from several departments and areas of administration. The broad aspects of the plan, however, are as follows:

1. Assemble and analyze existing information on water delivery and removal systems related to the less developed countries.
2. Assemble and analyze existing information on development of institutions relevant to optimum utilization of water resources in the less developed countries.
3. Prepare plans for additional research programs which will increase the knowledge of methods, techniques, and procedures for optimizing the utilization of water resources in the less developed countries.
4. Increase the breadth and depth of teaching and educational materials for the subjects of this proposal and for the situations in various less developed countries.
5. Solicit especially well qualified graduate research assistants, from both the United States and the less developed countries, who expect to work in some aspect of international development upon completion of their training.
6. Expand the library collection, especially with respect to the problems of the less developed countries.
7. Develop a program of student and faculty exchange with certain less developed countries.
8. Plan, initiate, and expand an interdisciplinary seminar on development and the interrelationship of the many factors involved in development--especially in the less developed countries.
9. Conduct short courses, institutes, seminars, and other activities to stimulate other personnel to become more deeply and actively involved, and to help in continuing education for those already involved in various aspects of international development.

The first year of this program will be devoted to analysing and developing the details of the total program, integration of on-going programs, selection and orientation of new staff and graduate students, and establishing the interdisciplinary components of courses, seminars, research projects, and service activities. It is expected that approximately 16% of the total grant will be spent the first year, and that this percentage will gradually increase to more than 20% the fourth and fifth years. Throughout the period of the grant the proportion spent for each line item will remain approximately the same from year to year.

Following the submission of the annual technical report, AID will initiate a review of the activities under the Grant. Such a review will include an evaluation of progress, administrative and financial considerations, and plans for the coming year. The discussion will include ways in which the accomplishment may be utilized in the AID program and other areas where technical assistance may be needed.

Date of Application: 21 April 1969

## BUDGET

### AID Institutional Development Grant

#### Five Years Duration

Salaries:	\$280,000.00
Stipends and Dependency Allowances:	\$280,000.00
Travel:	\$ 80,000.00
Equipment:	\$ 40,000.00
Office expense & computer time	\$ 50,000.00
Library and publications	\$ 20,000.00
Total	<u>\$750,000.00</u>



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Department of Agricultural Engineering  
Arthur T. Corey  
Gibbert J. Corey  
Wayne Givins  
Judson M. Harper  
William E. Hart  
David B. McWhorter  
Gaylord V. Snodgrass

Department of Agronomy  
Robert E. Danielson  
William T. Franklin  
M. Hassler Malik  
John O. Reuss  
Willard R. Schmidt  
Robert E. Whitney

## SECTION II

Department of Civil Engineering  
Maurice J. Albrecht  
J. W. Dean  
Warren A. Hall  
Albert G. Jones  
Hubert J. Moore  
Everett V. Johnson  
Edmund W. Smith  
Dwight E. Smith  
George I. Smith  
L. Scott Tucker  
Vernon V. Young

REPRESENTATIVE BIODATA OF CSU STAFF WITH  
EXPERIENCE RELATED TO GRANT OBJECTIVES  
INCLUDING REPRESENTATIVE PERSONS FROM  
THE DEPARTMENTS OF AGRICULTURAL ENGINEERING,  
AGRONOMY, CIVIL ENGINEERING, ECONOMICS,  
POLITICAL SCIENCE, AND SOCIOLOGY AND ANTHROPOLOGY

Department of Economics  
Huntley H. Higgs  
Kenneth C. Noble  
George E. Radosevich  
Ronald Lee Timmerster

Department of Political Science  
Henry P. Canfield, Jr.  
Phillip O. Foss  
Garth M. Jensen  
John A. Strasser

Department of Sociology and Anthropology  
Hart L. Ellendogen  
David M. Freeman  
Linwood L. Hodgson  
Evan C. Vlachos



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Ronald Lee Tinnermeier	74
Department of Political Science	76
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## AGRICULTURAL ENGINEERING

## AGRICULTURAL ENGINEERING

Biographical Data for  
Arthur T. Corey  
May 1969

Title: Professor and Agricultural Engineer

Birthdate: April 8, 1919

Education: ASTP, Advanced (diploma, not degree)  
Civil Engineering  
Pennsylvania State University, 1943

B.S. in Agriculture (soils major)  
University of Maryland, 1947

M.S. in Engineering (irrigation option)  
Colorado State University, 1949

Ph.D. in Soils (soil physics option)  
Rutgers University, 1952

Teaching Experience: 14 years on faculty at Colorado State University,  
including two years spent in Bangkok, Thailand, on Colorado State  
University Research Foundation contract with SEATO Graduate  
School of Engineering

Professional and Honorary Societies:

American Society of Civil Engineers, Member  
Soil Science Society of America, Member  
Sigma Xi -- Scientific Honorary  
Gamma Sigma Delta -- Agricultural Honorary

Professional Experience:

Physicist, Gulf Research and Development Company, 1952-1956  
Research concerning multi-phase flow in porous rocks

States in which registered: Colorado

Consulting Work: Consultant for the Petroleum Research Corporation,  
Denver

**Gilbert Lee Corey**  
**Biographical Data**

**Name:** Gilbert Lee Corey

**Title:** Professor of Agricultural Engineering and Chief of Party for  
Water Management Contract in Pakistan

**Birthdate and Place:** Olathe, Colorado -- 7 February 1923

**Education:** B.S. 1948, Colorado State University, Fort Collins, Colorado  
M.S. 1949, Colorado State University, Fort Collins, Colorado  
Ph.D. 1965, Colorado State University, Fort Collins, Colorado

**Professional Experience:**

**A. Teaching**

1957-August 1970. Teaching in Department of Agricultural Engineering on 1/2 time basis. Have taught fluid mechanics, irrigation engr., drainage engr., open channel hydraulics, hydrology, advanced hydrology, conservation engineering.

August 1970-date. Professor of Agricultural Engineering and Chief of Party, Lahore, Pakistan.

**B. Research**

1949-1954. Irrigation Research on Aberdeen Branch Exp. Sta., Univ. of Idaho Research on Water Management for crops in Idaho.

1954-1955. Irrigation research with ARS-USDA, Los Angeles, Calif.

1957-1970. Professor of Ag. Engr., Univ. of Idaho research on 1/2 time basis. Research on consumptive use of irrigation water, infiltration, irrigation efficiency, drainage, pumping economics.

1970-date. Chief of Party for Water Management Contract in Pakistan.

**C. Design and Consulting**

Not much - Have appeared as expert witness on irrigation water use problems. Designed irrigation system layouts.

**D. Other**

Head of Department of Agricultural Engineering, University of Idaho, 1966 to August 1970.

Acting Director of Idaho Water Resources Research Institute, September 1969 to August 1970.

## **Professional and Honorary Societies:**

**American Society of Agricultural Engineers**  
**American Society on Engineering Education**  
**National Society of Professional Engineers**  
**Idaho Society of Professional Engineers -**  
**Northern Chapter President 1967**  
**State Director 1968-1970**

## **Field of Specialization:**

**Irrigation Engineering**

## **Special Honors, etc.**

**Sigma Xi - Outstanding research paper award, Idaho 1967**  
**Sigma Tau**  
**Phi Kappa Phi**

## **Publications:**

1. **Hydraulic Properties of Well Screens, M.S. Thesis, CSU 1949.**
2. **Light Frequent Irrigations Best, Reclamation Era, 1952.**
3. **Phosphorus Uptake by Potatoes, Soil Science, 1954.**
4. **Irrigation of Russett Burbank Potatoes in Idaho, Idaho Agri. Exp. Sta. Bul. 246, 1955.**
5. **Irrigation of Field Beans in Idaho, Idaho Agri. Res. Bul. 37, 1957.**
6. **Evaporation Studies in California, Calif. Div. of Water Resources 1956.**
7. **Irrigation of Snap Beans Grown for Seed in Idaho, Idaho Agri. Exp. Sta. Bul. 336, 1960.**
8. **Measurement of Water over Silted-In Weirs, Agri. Exp. Sta. Res. Bul. 47, 1960.**
9. **Infiltration Patterns from Irrigation Furrows, Idaho Agri. Exp. Sta. Res. Bul. 59, 1962.**
10. **Evaluating Water Use on a New Irrigation Project, Idaho Agri. Exp. Sta. Res. Bul. 62, 1964.**
11. **Effects of Flow-System Geometry on Furrow Infiltration, Idaho Agri. Exp. Sta. Res. Bul. 65, 1965.**
12. **Similitude for Non-Steady Drainage of Partially Saturated Soils, PhD dissertation, Colo. State Univ., 1965.**
13. **Similitude for Non-Steady Drainage of Partially Saturated Soils, Hydrology Paper No. 9, CSU, 1965.**
14. **Similitude for Drainage of Soils, Journal of the Irrigation and Drainage Division, Proceedings of the Amer. Soc. of Civil Engineers, September 1967.**
15. **Size of Farm in Relation to Irrigation Pumping Costs, Transactions of the ASAE, Vol. 12, No 6, 1969.**
16. **Agricultural Consumptive Irrigation Water Needs, Planning Report Number Five, Idaho Water Resource Board, 1970.**
17. **Consumptive Irrigation Requirements for Crops in Idaho, Idaho Agricultural Experiment Station Bulletin No. \_\_\_, 1970.**

## **WAYNE CLYMA**

**Associate Professor, Department of Agricultural Engineering  
Colorado State University**

### **Birth**

**August 1, 1935**

### **Social Security Number**

**441-36-8689**

### **Education**

**B.S. Oklahoma State University, Stillwater, Oklahoma,  
Agricultural Engineering**

**M.S. Oklahoma State University, Stillwater, Oklahoma  
Agricultural Engineering**

**Ph.D. University of Arizona, Tucson, Arizona  
Hydrology**

### **Professional Experience**

**1958-1964 U.S.D.A., Agricultural Research Service,  
Bushland, Texas**

**1964-1966 Oklahoma State Contract, College of  
Agriculture, Alemaya, Ethiopia**

**1966-1971 University of Arizona, Tucson, Arizona**

**1971-Present Colorado State University, Fort Collins,  
Colorado**

### **Scientific, Professional, and Honorary Societies**

**American Society of Agricultural Engineers**

**American Geophysical Union**

**Sigma Tau**

**Alpha Zeta**

### **Publications**

**See attached list.**

PUBLICATIONS

1. Jensen, M. E., and Clyma, W. What happens to sediments in playa lake water when used for underground recharge in wells. The Cross Section, 5 (8). January 1959.
2. Clyma, Wayne and Jensen, M. E. Flocculent used to remove sediments from playa lake water used for groundwater recharge. Texas Agri. Expt. Sta. Progress Report 2144. May 16, 1960.
3. Bilbro, J. D., Jr., Clyma, Wayne, Newman, J. S., Jensen, M. E., and Sletten, W. H. A preliminary evaluation of the leaf-color change method as an indicator of the optimum time to irrigate cotton on the hardlands of the High Plains. Texas Agri. Expt. Sta. Progress Report 2159. October 24, 1960.
4. Clyma, Wayne, and Broadhurst, W. L. Clarification of playa lake water by aerial application of a flocculating agent. Texas Agri. Expt. Sta. Progress Report 2168. January 20, 1961.
5. Clyma, Wayne, Artificial recharge of ground water by a multiple purpose well. Paper presented at the Southwest Section meeting, Amer. Soc. of Agri. Engr., April 14-15, 1961. Texarkana, Texas.
6. Clyma, Wayne. Research conducted on clarification of playa water using a flocculent. Crops and Soils. August-September 1961.
7. Clyma, Wayne. Highlights from ASAE Winter Meeting, Session on Groundwater Hydrology. Agri. Engr., 44(2), pp. 82-83, February 1963.
8. Clyma, Wayne. Patterns of radar echoes of convective precipitation, High Plains of Texas, 1961. Unpublished Masters Thesis, Oklahoma State University, Stillwater, August 1963.
9. Clyma, Wayne, and Lotspeich, F. B. Occurrence and Use of Water Resources in the High Plains of Texas and New Mexico. Paper presented at the Winter Meeting, Amer. Soc. of Agri. Engr., December 1963.
10. Clyma, Wayne, Crow, F. R., Fry, W. E. Coordinate Method of Converting Radar Echoes to Digital Form. Jour. of Geophysical Res. 69(8), pp. 1497-1500, April 15, 1964.
11. Clyma, Wayne. Artificial Groundwater Recharge by a Multiple Purpose Well. Texas Agri. Expt. Sta. Misc. Pub. 712, May 1964.
12. Clyma, Wayne, and Lotspeich, F. B. Occurrence and Use of Water Resources in the High Plains of Texas and New Mexico. U. S. Dept. of Agri., ARS-41-114, January 1966.
13. Clyma, Wayne and Amann, Victor F. Engineering and Economic Feasibility of a Two-Wheel Tractor on Small Commercial Farms in Ethiopia. Imperial



## PUBLICATIONS (CON'T)

Ethiopian College of Agriculture and Mechanical Arts, Mis. Pub. No. 16, May, 1966.

14. Clyma, Wayne. Agricultural Surveying for Soil and Water Conservation. Imperial Ethiopian College of Agriculture and Mechanical Arts. (Mimo) 138 pp., ill., June 1966.
15. Clyma, Wayne. Rainfall Intensities for Small Watershed Hydrologic Designs in Ethiopia. Ethiopian Geographic Journal, Vol. VI, No. 2, pp. 30-36, December 1966.
16. Clyma, Wayne and Shaw, Richard J. A Program of Basic Data Collection for Ground Water Resources in Developing Countries. Proceedings International Conference on Water for Peace, May 23-31, 1967.
17. Clyma, Wayne. Concepts of Water Conservation and Efficient Water Use as Related to Water Policy. Agri. Engr. 50(3), pp. 133-139, March 1969.
18. Clyma, Wayne and Shaw, Richard J. Natural Recharge in the Tucson Basin. Progressive Agriculture in Arizona, March-April 1968.
19. Clyma, Wayne, Rebuck, Ernest C., and Shaw, Richard J. Hydraulic Properties of the Tucson Basin From Short-Term Pumping Tests. Paper presented at the Pacific Coast Region, Amer. Soc. of Ag. Engrs., April 1968.
20. Clyma, Wayne and Young, Robert A. Environmental Effects of Irrigation in the Central Valley of Arizona. Paper presented at the Annual Meeting of the Amer. Soc. of Civil Engrs., May 1968.
21. Clyma, Wayne. Engineering, Economic and Educational Factors to Consider in Changing from Animal to Tractor Power in Developing Countries. Paper presented at Annual Meeting, Amer. Soc. of Ag. Engrs., June 1968.
22. Clyma, Wayne and Warrick, A. W. Soil Moisture Transfer and Linear Systems Theory. Paper Presented to the American Society of Agronomy, August 20, 1970, Tucson, Arizona.
23. Clyma, Wayne. 1971. Analysis of Soil Heat Transfer for the Evapotranspiration System. Ph. D. Dissertation, university of Arizona Library, Tucson, 135 pp.
24. Clyma, W. Stapleton, H. N. and Fangmeier, D. D. 1971. The Evapotranspiration System: I. Definition. ASAE Paper No. 71-229 for Presentation at the Summer Meeting, Amer. Soc. of Agri. Engrs., Pullman, Wash.
25. Clyma, W., Watson, F. L. and Wanjura, D. F. 1971. System Identification by Convolution. ASAE Paper No. 71-533 for presentation at the Summer meeting, Amer. Soc. of Agri. Engrs., Pullman, wash.

**WAYNE CLYMA**

**10. Teaching Experience**

**Haile Sellassie I University**

**Agricultural Surveying (Twice)**  
**Rural Water Supply and Sanitation**  
**Soil and Water Conservation Engineering (Twice)**  
**Farm Machinery Maintenance**  
**Principles of Farm Machinery**  
**Farm Power**

**University of Arizona**

**205 - Irrigation Principles (Twice)**  
**206 - Applied Hydraulics**  
**122 - Water Control in Agriculture**  
**223 - Agricultural Systems**  
**305 - Drainage of Agricultural Lands**

**JUDSON M. HARPER**

**Professor and Head, Department of Agricultural Engineering  
Colorado State University**

**Birth**

**August 25, 1936**

**Social Security Number**

**485-36-7332**

**Education**

**B.S. Iowa State University, Chemical Engineering, 1958.**

**M.S. Iowa State University, Food Technology and Bacteriology, 1960.**

**Ph.D. Iowa State University, Food Technology, Chemical Engineering, and Mechanical Engineering, 1963.**

**Professional Experience**

**1970 - Present Colorado State University, Fort Collins, Colorado, Professor and Head, Department of Agricultural Engineering (Organized and directed new departmental orientation to food process engineering as well as providing administrative direction to the department.)**

**1969 - 1970 General Mills, Inc., Minneapolis, Minnesota, Venture Manager, Industrial Venture Team, Corporate Research. (Responsible for the development, testing, scale up and marketing of a new non-food consumer product line.)**

**1969 - 1970 Elected and served as director on the School Board of Independent District #283, St. Louis Park, Minnesota.**

**1968 - 1969 General Mills, Inc., Minneapolis, Minnesota, Department Head, Process Development Department, Corporate Engineering. (Responsible for the translation of research work from concepts to commercial feasibility. This requires effort from bench scale through pilot plant start up.)**

**1964 - 1968 General Mills, Inc., Minneapolis, Minnesota, Research Associate, Cereal-Snak Development, Corporate Research, Head of Engineering-Science group. (Solved special engineering**

problems in extrusion, drying, puffing, and control. Installed computer data collection and control system for semi-works plant. Provided economic analysis for new process development.)

- 1963 - 1964 Iowa State University, Ames, Iowa, Assistant Professor, Department of Dairy and Food Industry. (Taught and developed Dairy Equipment course and Elementary Food Analysis. Associate member of Graduate Faculty and member of Department Curriculum Committee.)
- 1958 - 1963 Iowa State University, Ames, Iowa, Instructor, Department of Dairy and Food Industry. (Taught Food Process Engineering courses.)
- Summer 1957 Esso Standard Oil, Bayonne, New Jersey, Junior Engineer. (Refinery trouble shooting and evaluation of proposed projects.)

#### Professional, Scientific, and Honorary Societies

American Society of Agricultural Engineers  
Tau Beta Pi  
Sigma Xi  
Gamma Sigma Delta  
Institute of Food Technology  
American Institute of Chemical Engineering  
American Association for the Advancement of Science  
Professional Engineer, State of Minnesota

#### Patent Applications

On-line product density measuring device.  
Continuous tristimulus color meter.  
Agitated salt bed puffing device.  
Continuous regeneration of frying oil.

#### Publications

See attached sheets.

#### Research Interests

New food sources and fortified foods.  
Food systems analysis, including waste recycling and control.  
Thermal processes.

## PUBLICATIONS OF JUDSON M. HARPER

- Harper, J. M., Bird, E. W., and Caulfield, W. J. Modification of a Swenson Research Spray Drier and its Operational Characteristics. Food Technol. 16 (9):140-144 (1962).
- Harper, J. M. An Apparatus for Measuring Bulk Density of Dried Milk. Food Technol. 16 (9):144 (1962).
- Harper, J. M. and Hammond, E. G. M63--Effect of Solid Support Characteristics on the Gas Chromatography of Model Flavor Compounds. J. Dairy Sci. 47:678 (1964).
- Harper, J. M. Solid Support Characteristics and Plate Height in Gas Chromatography. Dissertation Abstr. 24:3949 (1964).
- Harper, J. M. and Hammond, E. G. Evidence of Coupled Eddy Diffusion in Gas Chromatography. Anal. Chem. 37:486-489 (1965).
- Harper, J. M. and Hammond, E. G. Solid Support Characteristics and Plate Height in Gas Chromatography. Anal. Chem. 37:490-495 (1965).
- Harper, J. M. Justification for Computer Control of Batch Processes. Presented at Instrument Society of America, North Central Area Instrumentation Symposium, Minneapolis, Minn., February 3, 1966.
- Harper, J. M. The Use of Mathematical Models in Quality Definitions, Optimization and Control. Presented at American Society of Quality Control, 23rd Midwest Q. C. Conference, Milwaukee, Wisc., October 12, 1968. Published in Food Quality Control, No. 27:12-16, July 1969.
- Harper, J. M., Rhodes, T. P., and Wanninger, L. A. Viscosity Model for Cooked Cereal Doughs. Presented at the American Institute of Chemical Engineers Meeting, Portland, Ore., August 27, 1969. Published in Chemical Engineering Progress Symposium Series No. 108 67:40-43 (1971).
- Harper, J. M. and Wanninger, L. A. Process Modeling and Optimization. I. Experimental Design. Food Technol. 23 (9):49-51 (1969).
- Harper, J. M. and Wanninger, L. A. Process Modeling and Optimization. II. Modeling. Food Technol. 24 (3): 60-62 (1970).

## PUBLICATIONS OF JUDSON M. HARPER

Harper, J. M. and Wanninger, L. A. Process Modeling and Optimization. III. Optimization. Food Technol. 24 (5):82-87 (1970).

Bateson, R. N. and Harper, J. M. Apparatus and Process for Puffing Food Products. Patent applied for December 1970.

Harper, J. M. and Harmann, D. V. Food Engineering -- Agricultural Engineering's New Challenge. Presented at the American Society of Agricultural Engineers Rocky Mountain Region Meeting, Logan, Utah, April 3, 1971.

Harper, J. M. Needs for Engineers in the Food Industry. Presented at the American Society for Engineering Education Meeting, Annapolis, Maryland, June 24, 1971.



WILLIAM E. HART

Associate Professor, Department of Agricultural Engineering  
Colorado State University

Birth

March 19, 1926

Social Security Number

564-22-1699

Education

B.S. University of California, Berkley and Davis, Agricultural Engineering, 1951.

M.S. University of California, Berkley, Mechanical Engineering, 1960.

Ph.D. University of California, Davis, Civil Engineering, 1971.

Professional Experience

1970-Present Colorado State University, Fort Collins, Colorado, Associate Professor.

1964-1970 University of California, Davis, California, Lecturer and Associate Specialist.  
(Teaching responsibilities include both graduate and undergraduate courses dealing primarily in the theory and design of field irrigation systems, and the direction of individual research of graduate students; research in field water distributions and the adaption of irrigation systems to the rolling, marginal lands of California's foothill areas.)

1963-1964 University of California, Davis, California, Assistant Engineer.  
(Research in hydrology and hydraulics.)

1960-1963 and  
1951-1959 Hawaiian Sugar Planters' Association, Honolulu, Hawaii, Project Engineer (last title).  
(Directed research in irrigation engineering for the Association; designed and developed sugar cane harvesting machinery.)

1959-1960 University of California, Berkley, California, Graduate Student.  
(Conducted research on the vertical discharge of a jet into a liquid of slightly higher density having a density gradient - a sewage outfall problem.)



Scientific, Professional, and Honorary Societies

Professional Engineer  
American Society of Agricultural Engineers  
Sigma Xi  
Tau Beta Pi  
Pi Tau Sigma  
Sprinkler Irrigation Association

Publications

See attached list.

Professional Experience

1970-Present  
Colorado State University, Fort Collins, Colo-  
rado, Associate Professor.

1964-1970  
University of California, Davis, California,  
Lecturer and Associate Specialist.  
(Teaching responsibilities include both grad-  
uate and undergraduate courses dealing primar-  
ily in the theory and design of fluid, trans-  
mission systems, and the direction of individual  
research of graduate students; research in  
fluid water distribution and the adaptation of  
irrigation systems to the rolling, mountain  
lands of California's foothill areas.)

1963-1964  
University of California, Davis, California,  
Assistant Engineer.  
(Research in hydrology and hydraulics.)

1960-1963  
Hawaii Sugar Planters' Association, Honolulu,  
Hawaii, Project Engineer (last title).  
(Directed research in irrigation engineering  
for the Association; designed and developed  
sugar cane harvesting machinery.)

1959-1960  
University of California, Berkeley, California,  
Graduate Student.  
(Conducted research on the vertical discharge  
of a jet into a liquid of slightly higher den-  
sity having a density gradient - a sewage out-  
fall problem.)

Publications - William E. Hart

1. van't Woudt, Bessel D. and William E. Hart, Sugar Cane Irrigation in the Hawaiian Islands - A Review, International Commission on Irrigation and Drainage, Annual Bulletin, pp 36-41, 1957.
2. Hart, William E., Overhead Irrigation Pattern Parameters, Agricultural Engineering, 42(7):354-355, July 1961.
3. Hart William E., Jet Discharge into a Fluid with a Density Gradient, Journal Hydrology Division, ASCE, 87(HY6):171-200, 1961.
4. Davis, John R. and William E. Hart, Efficiency Factors in Sprinkler System Design, Proc., Sprinkler Irrigation Association, pp 15-30.
5. Hart, W. E., Sprinkler Distribution Analysis with a Digital Computer, Transactions of ASAE, 6(3):206-208, 1963.
6. Amorocho, J. and W. Hart, A Critique of Current Methods in Hydrologic Systems Investigation, Trans., Amer. Geophy. Union, 45(2):307-321, June 1964.
7. Amorocho, J., T. Strelkoff, W. E. Hart, and A. Babb, Hydraulic Transients in the California Aqueduct, Water Science and Engineering Paper No. 1002:1-73, June 1964.
8. Hart, W. E. and W. N. Reynolds, Analytical Design of Sprinkler Systems, Trans., ASAE, 8(1):83-85, 89, 1965.
9. Hart, William E. and William N. Reynolds, Discussion of "Non-uniformity and Sprinkler Application Efficiency," by David T. Howell, Jour. Irrig. and Dr. Div., ASCE, 91(IR1):80-82, June 1965.
10. Amorocho, J. and W. Hart, The Use of Laboratory Catchments in the Study of Hydrologic Systems, Jour. of Hydrology, 3:106-123, 1965.
11. Sakkas, John G. and William E. Hart, Irrigating with Cut-back Furrow Streams, Jour. Irrig. and Dr. Div., ASCE, 94(IR1):91-96, March 1968.
12. Hart, William E., Day L. Bassett, and Theodor Stelkoff, Jour. Irrig. and Dr. Div., ASCE, 94(IR4):419-440, December.
13. Branscheid, Volker O. and William E. Hart, Predicting Field Distributions of Sprinkler Systems, Trans. ASAE, 11:(6):801-803, 808, November-December 1968.

Borrelli, John and William E. Hart, Mechanization of Foothill Pasture Irrigation, ASAE Paper No. PR 70-120, 1970.

Hart, William E. and John Borrelli, Mechanized Surface Irrigation Systems for Rolling Lands, University of California Water Resources Center Contr. No. 133, 1970.

1. Hart, William E., Overhead Irrigation Pattern Parameters, Agricultural Engineering, 42(7):354-355, July 1961.
2. Hart, William E., Jet Discharge into a Slope, Journal of Hydraulics, ASCE, 87(HY6):1171-1172, 1961.
3. Davis, John R. and William E. Hart, Efficiency Factors in Sprinkler System Design, Proc. ASAE, 1961, pp. 15-18.
4. Hart, W. E., Sprinkler Distribution Analysis with a Digital Computer, Transactions of ASAE, 6(2):206-208, 1963.
5. Amato, J. and W. Hart, A Critique of Current Methods in Hydrologic Systems Investigation, Trans. Amer. Geophys. Union, 45(2):307-311, June 1964.
6. Amato, J., T. Steinhilber, W. E. Hart, and A. Babb, Hydrologic Transients in the California Aqueduct, Water Science and Engineering Paper No. 1007:1-73, June 1964.
7. Hart, W. E. and W. W. Reynolds, Analytical Design of Sprinkler Systems, Trans. ASAE, 6(1):83-85, 1963.
8. Hart, William E. and William W. Reynolds, Discussion of "Uniformity and Sprinkler Application Efficiency," by T. W. T. Howell, Jour. Irrig. and Dr. Div., ASCE, 91(IRI):80-82, June 1965.
9. Amato, J. and W. Hart, The Use of Laboratory Calculations in the Study of Hydrologic Systems, Jour. of Hydrology, 2:109-113, 1965.
10. Sakka, John G. and William E. Hart, Irrigating with Contour Furrow Systems, Jour. Irrig. and Dr. Div., ASCE, 91(IRI):11-15, March 1965.
11. Hart, William E., Roy E. Bassett, and Theodore Steinhilber, Jour. Irrig. and Dr. Div., ASCE, 91(IRI):419-420, December 1965.
12. Steinhilber, Volker O. and William E. Hart, Predicting Field Distributions of Sprinkler Systems, Trans. ASAE, 11:61-603-605, November-December 1968.

**DAVID B. McWHORTER**

**Assistant Professor, Department of Agricultural Engineering  
Colorado State University**

**Birth**

**February 11, 1942**

**Social Security Number**

**524-54-2285**

**Education**

**Petroleum Engr. Colorado School of Mines, Petroleum Engineering, 1965.**

**M.S. Colorado State University, Civil Engineering, 1966**

**Ph.D. Colorado State University, Agricultural Engineering, 1970.**

**Professional Experience**

**Jun. 62-Sept. 62 Panhandle Eastern Pipeline Co., Liberal, Kansas, Roustabout.**

**Jul. 65-Sept. 65 Shell Oil Co., Denver, Colo., Exploitation Engineer.**

**Jan. 67-Sept. 68 Shell Oil Co., Denver, Colo., Exploitation Engineer.**

**Jan. 71-Present Colorado State University, Fort Collins, Colo., Assistant Professor.**

**Scientific, Professional, and Honorary Societies**

**Society of Petroleum Engineers of the AIME**

**Gamma Sigma Delta**

**Tau Beta Pi**

**Sigma Xi**

**Publications**

**See attached sheet.**

# Publications - David B. McWhorter

McWhorter, D. B. and Corey, A. T., Similitude for Flow in Two Fluids in Porous Media. IHS Proceedings, 1:136-140 (Sept. 1967).

Laliberte, G. E., Corey, A. T., Brooks, R. H., Corey, G. L., and McWhorter, D. B., Similitude for Partially Saturated Flow Systems. Proc. of Hydrology Symposium No. 6 Soil Moisture, Nov. 1967. National Research Council of Canada, Associate Committee of Geodesy and Geophysics, Subcommittee on Hydrology.

McWhorter, D. B., Corey, A. T., and Adam, K. M., Mass Transport of Entrapped Gas from Porous Media. Accepted for presentation at the joint AIChE-SPE Symposium on mathematical modeling of transport processes in porous media, Feb. 28-Mar. 4, 1971, Houston, Texas.

## Professional Experience

Jan. 62-Aug. 62 Panhandle Eastern Pipeline Co., Liberal, Kansas, Consultant.  
 Jul. 62-Sept. 62 Shell Oil Co., Denver, Colo., Exploration Engineer.  
 Jan. 67-Sept. 68 Shell Oil Co., Denver, Colo., Exploration Engineer.  
 Jan. 71-Present Colorado State University, Fort Collins, Colo., Assistant Professor.

## Scientific, Professional, and Honorary Societies

Society of Petroleum Engineers of the AIME  
 Gamma Sigma Delta  
 Tau Beta Pi  
 Sigma Xi

## Publications

See attached sheet.

Name:

Gaylord V. Skogerboe

Title:

Assistant Professor, Department of  
Agricultural Engineering

Birth:

April 1, 1935

Education:

B.S. University of Utah, Salt Lake City, Utah	1958
M.S. University of Utah, Salt Lake City, Utah	1959

Professional Experience

1957	Summer--California Dept. of Water Resources
1958	Waterworks Equipment Company, Salt Lake City, Utah
1959	Transportation Research Command, Fort Eustic, Va.
1960-1963	Utah Water and Power Board, Salt Lake City, Utah
1963-1968	Utah Water Res. Lab., Utah State Univ., Logan, Utah
1968	Agricultural Engineering Department, Colorado State University, Fort Collins, Colorado

Scientific and Professional Societies:

American Society of Civil Engineers  
Sprinkler Irrigation Association  
Society of Chi Epsilon  
National Society of Professional Engineers  
American Water Resources Association  
International Association for Hydraulic Research  
American Society of Agricultural Engineers  
Society of Sigma Xi

Publications

Economical Spillway Design for Small Dams. MS Thesis, University of Utah, 1959.

Riprap Sizing for Open Cannals. Seventh Biennial Report, Utah Water and Power Board, Salt Lake City, Utah. April 1961.

A Reservoir Project Becomes Feasible with Sprinkler Irrigation. Proceedings, 1963 Open Technical Conference, Sprinkler Irrigation Association, Denver, Colorado. March 1963.

Calibration of Irrigation Headgates by Model Analysis. With Dr. Vaughn E. Hansen. Report PR-EC50-1, Engineering Experiment Station, Utah State University, Logan, Utah. March 1964.





## BIOGRAPHICAL DATA

Robert E. Danielson

Professor, Agronomy Department. B.S. Degree in Soil Science, Colo. A & M, 1948; M.S. in Soil Science, Cornell University, 1949; Ph.D. in Soil Physics, University of Illinois, 1955.

Experience has included teaching the beginning and advanced courses in Soil Physics and the Irrigation Practice course at Colorado State University.

Research experience has included studies on water requirements of plants, efficiency of irrigation practices, effects of compaction and other surface treatments on plant growth and infiltration, time and depth patterns of water use by corn, penetration ability of roots as affected by soil conditions, and the effects of aeration and water content on the growth of corn and soybeans.

Over 20 publications in areas of soil aeration, water-soil-plant relations, irrigation, soil physics laboratory manuals, and soil structure. Seventeen years teaching undergraduate and graduate courses in soil science. Numerous university and regional committee assignments. Served as major professor for eight master degree and three Ph.D. degree candidates.

Member of the following organizations: Soil Science Society of America, American Society of Agronomy, Western Society of Soil Science, Who's Who in the West, Who's Who in American Education, American Men of Science, Sigma Xi, Beta Beta Beta, Alpha Zeta, Phi Kappa Phi and Gamma Sigma Delta.

**Biographical Data for  
William T. Franklin  
May 1969**

**Title: Assistant Professor of Agronomy (Soils)**

**Birth: 20 April 1923**

**Place of Birth: Helena, Montana**

**Education: Montana State University B.S. 1952**

**Washington State University M.S. 1955**

**Oregon State University - completed requirements for**

**Ph.D. degree, except thesis 1965**

**Thesis requirements expected to be  
completed August 1969**

**Major Research Interests: Salt-affected soil reclamation, water  
chemistry, soil minerology**

**Teaching: 1) Saline and Sodic Soils**

**2) Principles of Soils for Land Development (chemistry,  
salt-affected soils, and water quality sections of USBR  
Soil Scientist Training Institute - annual summer  
institute)**

**Both courses at graduate level**

**Professional and Honorary Societies:**

**American Society of Agronomy**

**Soil Science Society of America**

**Western Soil Science Society of America**

**Gamma Sigma Delta**

**Professional Experience:**

**1952-55 - Graduate Research Assistant, Soils Department,  
Washington State University**

**1955-62 - Assistant Agronomist and Project Leader, Saline-Sodic  
Soil Reclamation, San Luis Valley, Colorado, Colorado  
Agricultural Experiment Station**

**1962-64 - Sabbatical and educational leave spent at Oregon State  
University**

**1964-Present - Assistant Professor of Agronomy (Soils)  
Colorado State University**

**Publications:**

- 1. Franklin, W. T., Robert S. Whitney, W. E. Code, and R. C.  
Reeve, 1956, Reclamation of saline-alkali lands in the Mosca-  
Hooper area, San Luis Valley, Colorado Agricultural Experiment  
Station, General Ser. Paper No. 648.**

M. Bashir Malik, Ph. D.

8-L, Aggie Village

Fort Collins, Colorado 80521

303-484-6796

**PERSONAL:** Born 6-7-35, Pakistan Height: 5 ft. 4-1/2 in. Weight: 140 lbs.  
Married, one child.

**EDUCATION:** University of the Panjab, Pakistan, 1957  
B.S. Major, Chemistry and Agricultural Chemistry  
University of the Panjab, Pakistan, 1959  
M.S., Soil Chemistry  
University of the Philippines, Philippines, 1963  
Ph.D., Soil Science (Soil Chemistry)  
Colorado State University, Fort Collins, Colorado  
Post-Doctoral Research Fellowship  
Soil Chemistry, July 1970 - date

**SPECIAL TRAINING:** Application of Radioisotopes in Engineering,  
Chemistry, Biology and Agriculture, 4-1/2 months,  
Tokyo, Japan

**HONORS:** A. First class grades from Matriculation to M.S. Class,  
1950-1959  
B. Merit/College scholar from freshman to M.S. Class,  
1953-1959  
C. Post-Graduate SEATO Scholar, 1959-1963.  
D. U.N.F.A.O./I.A.E.A. Fellow, Tokyo, Japan, 4-1/2 months  
1964  
E. Post-Doctoral Fellowship, Colorado State University  
July 1970 - date.

**EXPERIENCE:** Analytical Inorganic Chemistry (soil chemistry)  
and soil fertility, 1957-date.

1957-1959: M.S. Thesis, "Amelioration of BARA Soils  
with Chemicals," used various instruments like flame  
photometer, pH meter and conductivity bridge.

1959-1963: Ph.D. Thesis, "The Phosphate Supply Pattern  
of Some Philippine Soils with High and Low Phosphorus  
Contents," used various instruments like spectrophotometers,  
centrifuge, pH meter and flame photometer.

1963-1969: Research experience in Soil Chemistry Division,  
Pakistan Atomic Energy Commission, use of radioisotopes  
and radiation in soil-plant relations.

## PROJECTS INVESTIGATED:

1. Correlation of chemically available phosphorus with "A" value.
2. Residual effect of phosphate fertilizer in soils.
3. Status of trace elements, iron, copper, zinc, manganese, molybdenum and boron in soils.
4. Evolving NPK balanced fertilizers for crops.
5. The application of radiation and isotopes in rice cultivation.
6. The application of radiation and tracer techniques to irrigation, soil moisture, drainage and salinity studies.
7. Water use efficiency studies by neutron probe.
8. Fertility relationships in salt-affected soils.

## PUBLICATIONS:

1. Malik, M. Bashir and Galvez, N. L., The availability of soil and fertilizer phosphorous in different soils by radioactive phosphorous. Proc. Pak. Sci. Conf. 16: A-92, 1964.
2. Malik, M. Bashir and Galvez, N. L., The phosphate supply pattern of some soils under water-logged conditions. Proc. Pak. Sci. Conf. 16: A-92, 1964.
3. Malik, M. Bashir and Tahir, Mohd., The phosphate supplying capacity of three types of Tando Jam Soils using P-32 labeled superphosphate. Proc. Pak. Sci. Conf. 17: A-119, 1965.
4. Ahmad, Shaukat, Azmi, A. R. and Malik, M. B., Uptake of fertilizer phosphorus and nitrogen by lowland rice in West Pakistan under different methods and time of application. Isotopes and radiation in soil-plant nutrition studies, IAEA Symposium, 1965.
5. Ahmad, Shaukat, Malik, M. Bashir and Tahir, Mohd., The use of P-32 labeled superphosphate to evaluate the most effective time of application of phosphorous to rice crop in Tando Muhammad Khan soil. Proc. Pak. Sci. Conf. 16: A-93, 1964.

## MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:

1. American Society of Agronomy
2. Pakistani Association for Advancement of Science

## BIODATA - JOHN O. REUSS

Early Life: Born October 10, 1927, Great Falls, Montana. Early life spent largely on farms near Lewistown and Forsyth, Montana. Attended Forsyth High School 1940-44.

Family: Married and presently residing at 1116 Robertson in Fort Collins with wife and 3 children and stepson.

Education: 1949 B.S. in Soils from Montana State College (now MSU)  
1957-58 M.S. in Soils from Montana State College  
1960-61 Attended Utah State University at Logan, Utah as USU research council fellow  
1963 Received Ph.D. from USU

Experience: 1949-56 Operated combination irrigated farm and stock ranch near Forsyth.  
1956-57 Employed as research technician at Huntley Branch Station, Huntley  
1957-60 Instructor and assistant in Soils at Montana State College, Bozeman. Duties included teaching general soils and research in mountain meadow fertility and reclamation of heavy textured saline and sodic soils  
1961 Employed at CSU as Extension Soils Specialist and Assistant Agronomist  
1965-67 Soil fertility specialist-plant physiologist with CSU Nigeria project in eastern Nigeria  
1967- Soil fertility research and teaching at CSU

Awards: Utah State University Research Council Fellowship

Professional Contributions: Research and publications in areas of restoring productivity of subsoil exposed by land leveling, zinc and iron responses in field crops, reclamation of saline and sodic soils, chemical nitrogen transformations in soils, as well as general soil fertility.

Affiliations: American Society of Agronomy; Soil Science Society of America; Western Society of Soil Science; Sigma Xi; Gamma Sigma Delta



**WILLARD R. SCHMEHL**  
**Biographical Data**

**Title: Professor of Agronomy (Soils)**

**Birthdate: 1918, Arlington, Nebraska**

**Education: B.S. Colorado State University 1940 Soils**  
**Ph.D. Cornell University 1948 Soils**

**Major Research Interests: Soil fertility, clay mineralogy, soil management**

**Teaching: Soil Chemistry and Soil Mineralogy - both courses at graduate level**

**Professional and Honorary Societies:**

**American Society of Agronomy**  
**Soil Science Society of America**  
**Clay Minerals Society of America**  
**American Society of Sugar Beet Technologists**  
**Sigma Xi**  
**Gamma Sigma Delta**  
**Phi Kappa Phi**

**Professional Experience:**

**1948 - Present Associate and Professor of Agronomy (Soils)**  
**Department of Agronomy**  
**Colorado State University**  
**1954 - 55 Sabbatical leave from Colorado State University**  
**Research at University of Wisconsin**  
**1946 - 48 Graduate Research Assistant**  
**Soils Department**  
**Cornell University**  
**1943 - 46 U.S. Navy**  
**1942 - 43 Hercules Powder Co.**  
**1940 - 42 Graduate Research Assistant**  
**Soils Department**  
**Cornell University**



## BIOGRAPHICAL DATA

Robert S. Whitney, Soil Scientist - Teaching, Research, Administration.

Place of Birth: Fort Collins, Colorado Date: 18 May 1912.

Education: Colorado State University, 1930-34, B.S. 1934; Cornell University, 1938-39, M.S. 1939; Univ. of California at Los Angeles, 1942-43; Cornell University, 1949-51, Ph.D. 1951.

Brief Career Summary: Asst. in Soils, 1935-36; Asst. Prof. and Asst. Agronomist (Soils) 1936-46; Assoc. Prof. and Assoc. Agronomist (Soils) 1946-52; Professor and Agronomist (Soils) 1952-59; Professor and Head, 1959-present; all at Department of Agronomy, Colorado State University, Fort Collins, Colo., 80521.

Professional Activities: Teaching and research in Soil Science, Colorado State University, 1935 to present; Head, Department of Agronomy, Colorado State University, 1959 to present. Member, Western Soil and Water Research Advisory Committee (1951 to present). Trustee, Colorado State University Research Foundation (1960-1965), Vice President (1960-1962, 1963-1965).

### Other Activities:

National: President of the American Society of Agronomy 1967. Member of Farm Resources and Facilities Research Advisory Committee, U.S.D.A. (1965 to 1970). Member, National Soil Research Committee (1958-1959). Member, United States Technical Study Group on Soil Salinity and Irrigation, Soviet Union, 1960. Colorado Collaborator, U. S. Salinity Lab, Riverside, Calif. (1955-1963). Member, Research Advisory Committee, U. S. Agency for International Development.

Awards: Recipient of the O. P. Pennock Outstanding Teaching Award, Colorado State University (1957).

Other Affiliations: American Society of Agronomy (Fellow 1961); Soil Science Society of America; International Society of Soil Science; American Association for the Advancement of Science (Fellow 1950); American Society of Sugar Beet Technologists; Soil Conservation Society of America; American Institute of Biological Science; Phi Kappa Phi, Sigma Xi, Gamma Sigma Delta.

Contributions: Over 35 publications. Research contributions include: Factors affecting soil reaction; Cation equilibria in soils: Nature and reclamation of saline and sodic soils; Plant nutrient-water relationships of irrigated and dryland soils; Improvement of plant growth on subsoils exposed by leveling or erosion. Books and contribution to books: Co-author, Field Crops in Colorado; contributing author, Land and Water: Planning for Economic Growth; Author or co-author of four laboratory manuals on Soil Science.

## CIVIL ENGINEERING

## BIOGRAPHICAL DATA

ALBERTSON, M. L., Professor of Civil Engineering, holds a B.S. degree in Civil Engineering from Iowa State College, M.S. and Ph.D. degrees in Hydraulic Engineering from the State University of Iowa, and the degree of Doctor of Physical Sciences from the Universite de Grenoble, France. He has had twenty-five years experience in fluid mechanics, hydraulic engineering, water resources research, and international development engineering. His experience has been primarily with problems involving design and development of hydraulic structures, energy dissipation, alluvial hydraulics, boundary layer studies and diffusion. He pioneered in the development of the use of a wind tunnel to study meteorological and climatological phenomena. He is co-author of a textbook Fluid Mechanics for Engineers, 1960. He has written or collaborated on numerous technical papers, and together with the other authors of the paper, was awarded the American Society of Civil Engineers Emil Hilgard Prize in 1951 for a paper on diffusion of submerged jets.

In 1948 he received the J. C. Stevens Award from the American Society of Civil Engineers for a discussion of a paper on evaporation. In 1964 he received the ASCE Croes Medal, with the co-author, for a paper on "Uniform Water Conveyance Channels in Alluvial Material." He is Principal Investigator for a national Study of the Research Needs and Requirements in Civil Engineering, co-sponsored by the National Science Foundation and the American Society of Civil Engineers. He was Principal Investigator for the Study of Cavitation, Vibration, and Noise in Valves for the Bechtel Corporation and the Metropolitan Water District of Southern California. He is the U. S. Coordinator for the Asian Institute of Technology in Bangkok, Thailand, and was Director of the 1960-61 Congressional study of the "advisability and practicability" of a Peace Corps. He is co-author on the book New Frontiers for American Youth--Perspective on the Peace Corps, 1961.

In 1966 he developed the Hydro-Machinery Laboratory at Colorado State University and directed a major study on cavitation in valves of various types and sizes and under various flow conditions. In 1966 he also conducted studies on transients in pipe lines for the City of Westminster, Colorado and the Johns-Manville Corporation - - the latter resulting in the definition and analysis of waterhammer in pipes occurring under initially static conditions.

Dr. Albertson is a Registered Professional Engineer in Colorado. He joined the staff on 1 September 1947. In 1958, he established the office of the Colorado State University Research Foundation and was its Director until 1963, and in 1963 he established the Office of International Programs, and was Director for one year. In 1964, he left administration to return to full-time research and teaching in fluid mechanics and hydraulic engineering.

**FEAD, J. W. N.**, Professor and Head of Civil Engineering.

Dr. Fead holds B.S. and M.S. degrees in civil engineering from the University of Alberta and a Ph.D. in civil engineering from Northwestern University. He has over twenty years experience in teaching and research at the University of Alberta, the University of Saskatchewan, South Dakota State University, Northwestern University, the University of California and Colorado State University. Dr. Fead has been structural and/or foundation design engineer for a number of engineering firms in the United States and Canada. His primary interest is in the field of structures. He joined the Colorado State University staff on September 10, 1957. He is a member of the American Society for Engineering Education, American society of Civil Engineers, American Concrete Institute, International Association for Shell Structures, International Association of Bridge and Structural Engineers, and is a licensed Professional Engineer in Colorado.

## **J. W. N. Fead - Publications**

**The Development and Decay of Seepage in Porous Masses, University Microfilms, Ann Arbor, Michigan, 1957.**

**Summary - The Development and Decay of Seepage in Porous Masses, Microfilm Abstracts, University microfilms, Ann Arbor, Michigan, 1957.**

**Apparatus for Repeated Load Tests on Soils, with H. B. Seed, ASTM Special Technical Publication No. 254, 1959.**

**Proceedings of the First Annual Bridge Engineering Conference, with M. E. Bender, presented at the First Annual Bridge Engineering Conference, Colorado State University, March 1960.**

**Proceedings of the Second Annual Bridge Engineering Conference, with Milton E. Bender and James R. Goodman, presented at the Second Annual Bridge Engineering Conference, Colorado State University, March 1961.**

**Proceedings of the Third Annual Bridge Engineering Conference, with Milton E. Bender and James R. Goodman, presented at the Third Annual Bridge Engineering Conference, Colorado State University, March 1962.**

**Proceedings of the Fourth Annual Bridge Engineering Conference, with James R. Goodman, presented at the Fourth Annual Bridge Engineering Conference, Colorado State University, March 1963.**

**Proceedings of the Fifth Annual Bridge Engineering Conference, with M. D. Vanderbilt, presented at the Fifth Annual Bridge Engineering Conference, Colorado State University, March 1964.**

**Proceedings of the Sixth Annual Bridge Engineering Conference, with M. D. Vanderbilt, presented at the Sixth Annual Bridge Engineering Conference, Colorado State University, March 1965.**

**Theoretical Analysis of Dynamic Pressure Propagation in the Pore Fluids of Soils," U. S. Naval Civil Engineering Laboratory, Technical Note N-776, October 1965.**

**Proceedings of the Seventh Annual Bridge Engineering Conference, with James R. Goodman and M. D. Vanderbilt, presented at the Seventh Annual Bridge Engineering Conference, Colorado State University, March 1966.**



**J. W. N. Fead - Publications (Continued)**

Proceedings of the Eighth Annual Bridge Engineering Conference, with James R. Goodman and M. D. Vanderbilt, presented at the Eighth Annual Bridge Engineering Conference, Colorado State University, March 1967.

Fundamental Cable Analysis, with George W. Middleton, Proceedings of the Tenth Midwestern Mechanics Conference, held at Colorado State University, August 21-23, 1967, Vol. 4.

Proceedings of the Ninth Annual Bridge Engineering Conference, with James R. Goodman and M. D. Vanderbilt, presented at the Ninth Annual Bridge Engineering Conference, Colorado State University, March 1968.

Proceedings of the Tenth Annual Bridge Engineering Conference, with James R. Goodman and M. D. Vanderbilt, presented at the Tenth Annual Bridge Engineering Conference, Colorado State University, March 1969.

Proceedings of the Eleventh Annual Bridge Engineering Conference, with James R. Goodman and M. D. Vanderbilt, presented at the Eleventh Annual Bridge Engineering Conference, Colorado State University, April 1970.

WARREN A. HALL

RESUMÉ OF EXPERIENCE AND EDUCATION

Born: Hot Springs, South Dakota -- August 12, 1919

Education: High School, 1931-35  
Crawford, Nebraska

A.A., Engineering, 1940 (Distinguished Alumnus Award, 1960)  
Santa Ana College, Santa Ana, California

B.S., Mechanical Engineering, 1942  
California Institute of Technology  
Pasadena, California

Ph.D., Engineering, 1952  
(Fluid Mechanics, Applied Mathematics, and Soil Mechanics)  
University of California, Los Angeles, California

Teaching:

Water Resources Systems Engineering, hydrology, fluid mechanics, soil mechanics, engineering economy, hydraulics, thermodynamics, statics, strength of materials, engineering drawing, and the engineer and his professional duties.

Research:

Systems analysis of water resources development, irrigation engineering, ground-water hydrology.

Present Position:

Director, Dry-Lands Research Institute (Universitywide), and Professor of Engineering, Department of Engineering, University of California, Riverside.

Current Special Appointments:

Chairman, Universities Council on Water Resources (UCOWR)  
Treasurer, Universities Council on Water Resources (UCOWR)  
Member, U. S. National Committee for the International Hydrological Decade (IHD)

Previous Positions:

Director, Water Resources Center (Universitywide), and Professor of Engineering, Department of Engineering, University of California, Los Angeles (1960-66).  
Assistant Dean for Undergraduate Studies, Engineering, UCLA (1956-60).  
Assistant Professor of Irrigation, University of California, Davis (1953-56).  
Assistant Professor of Engineering, University of California, Los Angeles (1952-53).  
Lecturer and Instructor, Engineering, University of California, Los Angeles (1947-51).  
Military Service, Ensign to Captain, USNR (Active duty, 1942-46 and 1951-52).



**MERCER, Albert G. - Civil Engineer**

Dr. Mercer received his Bachelor of Applied Science degree at the University of British Columbia and his Master of Science and Doctor of Philosophy degrees at the University of Minnesota.

His experience on hydro-electric and civil engineering work started with the St. Anthony Falls Hydraulic Laboratory in 1954 teaching courses in fluid mechanics and supervising model studies on the Derbendi Khan Dam in Iraq, Karadj Dam in Iran, Mangla Dam in Pakistan, Guri Dam in Venezuela, Brokopondo Dam in Surinam and the Wanapum and Priest Rapids Dams in the United States. He was also employed in Pakistan on the Indus Basin Projects for two years prior to joining the International Power and Engineering Consultant Firm in Vancouver B. C. At the IPEC he was head of the Hydraulics and Hydrology Section of the Hydro-Electric Division and was primarily engaged in the design of the hydraulic features of the Portage Mountain and Site 1 Developments on the Peace River.

He is a registered professional engineer in the Province of British Columbia and a Member of the American Society of Civil Engineers.

## Biography of Dr. Hubert J. Morel-Seytoux

Associate Professor of Civil Engineering. He holds a M. S. degree in Structural Engineering from Ecole Nationale des Ponts et Chausses, Paris, France, (July 1956) and a Ph. D. in Civil Engineering from Stanford University (April 1962) with a major in hydraulics and a minor in mathematics. His experience includes - Military Operations Research at Ecole Superieure de Guerre, Paris, France from November 1960 to April 1962; Research Engineer with Chevron Research Company in Oil Production Research Section from June 1962 to October 1966. He is a member of the American Society of Civil Engineers, the Society of Petroleum Engineers (American Institute of Mining, Metallurgical and Petroleum Engineers), the American Meteorological Society, the American Geophysical Union, and the Soil Science Society of America (American Society of Agronomy).

Professor of Civil Engineering and  
RICHARDSON, E. V., 'Administrative Engineer, Engineering Research Center,

Colorado State University. He holds B.S., M.S., and Ph.D. degrees in Civil Engineering from Colorado State University. His major fields of interest are experimental fluid mechanics, open channel flow, fluvial hydraulics and stream morphology. He has conducted water resources investigations in almost all the Western United States, research on sediment transport and resistance to flow in sand channels, model studies of control structures for sand channels and investigations on methods of measuring the discharge of water and sediment in natural streams. He has served as a consultant to the U. S. Geological Survey, Kentucky Highway Department, U. S. Park Service, Army Corps of Engineers, and private irrigation companies on alluvial channel and water measurement problems. He is presently active in the study of the characteristics of turbulence in open-channel flow.

He has authored or co-authored numerous papers and reports. These papers have been on sediment observations, water resources problems, mechanics of flow in alluvial channels, fluid mechanics, open channel flow, and turbulence. He is a member of Sigma Xi, International Association of Scientific Hydrology, UNESCO Earthquake Reconnaissance Mission, and American Society of Civil Engineers. He received the American Society of Civil Engineers J. C. Stevens Award in 1961 for discussion of a paper, "Resistance Properties of Sediment-Laden Streams," and is Chairman of the Sedimentation Committee of the Hydraulics Division, American Society of Civil Engineers.

**Name:** Edmund F. Schulz

**Birthplace:** Brighton, Colorado, USA, **Birthdate:** 19 March 1921

**Present Position:** Associate Professor of Civil Engineering

**Academic Qualifications:**

1. Bachelor of Science in Civil Engineering  
Colorado State College, Fort Collins, Colorado 1943
2. Master of Science in Irrigation Engineering,  
Colorado A and M College, Fort Collins, Colorado 1953

**Military Experience:**

1. U. S. Navy active duty 1944 to 1946, Line Officer  
Pacific Area.
2. Active in U. S. Naval Research Reserve Activities 1950  
to 1963; 1969 to date.

**Professional Experience:**

a. Lockheed Aircraft Corporation, Burbank, California, 1943-1944

1. Flight Test Engineer in experimental flight testing of new  
aircraft.
2. Performance evaluation of experimental aircraft.
3. Design of tests on new aircraft systems and components.
4. Preparation of evaluation reports.

b. Bureau of Reclamation in Denver, Colorado, Washington, D. C.,  
and Boulder City, Nevada, USA, 1946-1950.

1. Flood Hydrologist in Branch of Project Planning
2. Design Storm Studies in connection with a nation-wide  
Hydrometeorological Study
3. Operation study in connection with the construction and  
operation of a dam on the lower Colorado River by the  
United States and Mexico

c. Colorado State University, Department of Civil Engineering,  
Fort Collins, Colorado, 1950-1963; 1969 to date

1. Associate Professor of Civil Engineering taught courses  
in Hydrology

2. Participated in research in natural and deliberate recharging of natural aquifers
  3. Participated in research in Floods from Small Watersheds
  4. Development of a library of recorded flood events from small watersheds
  5. Developed a facility for testing seaworthiness of model ship hulls. (1953-1960)
  6. Supervised research in seaworthiness of model ship hulls as an outgrowth of Naval Research Reserve activity.
- d. University of the Witwatersrand, Johannesburg, South Africa, 1963-1965.
1. Recipient of a two-year grant under the Exchange-of-Persons Program of the U. S. Department of State.
  2. Research on applications of simulation methods on a digital computer for planning of water resources.
  3. Assist in development of research program on floods from watersheds.
- e. ASIAN INSTITUTE OF TECHNOLOGY (formerly SEATO Graduate School of Engineering), Bangkok, Thailand, 1965-1969.
1. Responsible for teaching and research program in Hydrology.
  2. Development of curriculum in Water Resources.
  3. Formerly Chairman of the Hydraulics Department. Planning of new study programs in Hydraulics Department.
  4. Formerly Chairman of Computer Committee which manages and controls the use of various digital computers available to the Graduate School. Plan for installation of new IBM 1130 computer for full time use at the Graduate School. Plan for the development and management of a new large scale computing facility at the Graduate School.
  5. Chairman of Library Advisory Committee which helped to plan computerized phases of Library operation. Helped to plan library at new AIT Building Site.

Membership in Societies:

American Geophysical Union, American Meteorological Society, American Society of Civil Engineers, American Water Resources Association, Colorado Water Congress, South African Geographical Society, South African Association for the Advancement of Science, Member of Sigma Xi, Listed in Who's Who in Engineering.



SIMONS, Daryl B.

Associate Dean for Engineering Research and Professor of Civil Engineering at Colorado State University. He holds a B.S. degree in Civil Engineering from Utah State (1947), an M.S. degree in Civil Engineering from Utah State (1948), and a Ph.D. degree from Colorado State University (1957). He has several years experience in teaching, consulting work, and research. He has written over 100 papers and is co-author of a Fluid Mechanics text and has written chapters for three other texts. His principal fields of interest are: hydraulics, river mechanics, hydraulic and river modeling, channel design and stabilization, hydrology and water resources development. He was a professor at the University of Wyoming from 1948 to 1957. In 1957 he accepted a job as Project Chief for the U. S. Geological Survey at Fort Collins to conduct research in fluvial hydraulics with emphasis on resistance to flow and sediment transport and erosion control and the design of hydraulic structures. In 1963 he accepted his present positions with Colorado State University.

Dr. Simons received the J. C. Stevens Award in 1960 and the Croes Award in 1964 from the American Society of Civil Engineers. He has continuously applied the results of his research to practical problems. He has served as hydraulic consultant on several important engineering projects for the United Nations, the Corps of Engineers and others dealing with river mechanics, flood control and navigation problems. He has served on several national and international panels delegated to outline research needs in hydraulics, irrigation and drainage. He is a registered professional engineer and is a member of several professional societies such as, ASCE, AGU, IAHR and ICID.

SMITH, George L., Assistant Civil Engineer and Assistant Professor of Civil Engineering, received his B.S. in Civil Engineering from the University of New Mexico (1947), his M.S. in Irrigation Engineering from Colorado State University (1957). He spent one year at the University of Iowa doing graduate work in Hydraulics and Fluid Mechanics. From 1949 to 1955 he was employed by the Corps of Engineers at Vicksburg, Mississippi, as a hydraulic engineer and as a hydrologist. His experience with the Corps of Engineers included design of both model and prototype flood control structures for the Mississippi River and development of statistical methods for determination of flood frequencies on the main stem of the Mississippi River. His experience at Colorado State University has included research on scour control at cantilevered culvert outlets by preshaped, armorplated stilling basins, scour control in alluvial channels by graded riprap, diffusion of submerged jets impinging upon a normal smooth boundary, and the design of hydraulic laboratory equipment for undergraduate and graduate instruction and an 800 ft. circular conduit with variable slope and roughness for studying unsteady flow in storm drains. He was a research associate on the study of the magnitude and frequency of floods from small watersheds in semi-arid areas. At present he is assisting in the development of an out-door research laboratory to include the following facilities: A hydrology model for simulating rainfall and runoff patterns, a dam breach and flood routing model, and a pumping plant having a capacity of 100 cfs. He is a Registered Professional Engineer in Mississippi and Colorado. He is also a Registered Land Surveyor in Colorado.



## **CURRICULUM VITA**

**L. Scott Tucker**  
**Research Associate**  
**Department of Civil Engineering**  
**Colorado State University**  
**Fort Collins, Colorado 80521**

**Birthdate:** August 25, 1939

**Education:**

<u>Institution</u>	<u>Degree</u>	<u>Year Conferred</u>	<u>Field</u>
University of Nebraska	BSCE	1962	Civil Engineering
University of Arizona	MSCE	1966	Civil Engineering

**Honors:**

Chi Epsilon--Civil Engineering Honorary  
Sigma Tau--Engineering Honorary  
Pi Mu Epsilon--Mathematics Honorary

**Major Interest Areas:**

Water Resource Systems, Urban Water and Environmental Engineering

**Professional and Research Experience:**

1. Research Associate, Department of Civil Engineering, Colorado State University, March 1970 to present.
2. Research Engineer, ASCE project, Harvard University, October 1966 to March 1970.
3. Graduate Student, University of Arizona, September 1965 to October 1966. Majored in Civil Engineering with emphasis on water resources.
4. Additional assignments: (1) Engineer, Engineering Design Company, March 1965 to September 1965. Structural design work. (2) American Telephone and Telegraph Company, July 1964-March 1965, Management Trainee. (3) United States Army, Corps of Engineers, First Lieutenant, July 1962-July 1964.

**Present Related Activities:**

1. Co-Principal Investigator for a National Science Foundation sponsored project on "Interdisciplinary Engineering for Public Works Projects." The goal of this project is to develop and formalize concepts, principles, and methods for "total engineering" of public works projects. The specific objective is to produce a treatise useful to managers, designers, and planners for implementing "total environmental design" concepts.

2. Project Manager for an Office of Water Resources Research supported project on "Metropolitan Water Intelligence Systems." The object is to develop criteria, rationale, and guidelines for use by planners, managers, and designers to determine feasibility and assist in design of automation and control facilities for combined sewers.
3. Involved in developing the Water Resource Systems Engineering Program of the Civil Engineering Department at Colorado State University. Courses that have been developed in this Program include: "Water Systems Engineering", "Foundations of Optimization", and "Principles of Systems Engineering". Also involved in working with graduate students in this Program.
4. Involved with Institutional Development Grant and a water management research project sponsored by the U. S. Agency for International Development. Both efforts are interdisciplinary in nature and involve six departments including Civil Engineering, Agronomy, Agricultural Engineering, Economics, Political Science, and Sociology. These efforts involve the application of systems analysis techniques to water resource problems.

#### Previous Related Projects:

1. Coordinator for one week course on urban water systems for World Bank, Pan American Health Organization, and Inter-American Development Bank.
2. Involved with the conduct of a two week Institute at CSU on Urban Water Systems during the summer of 1970.
3. Deputy Project Director for ASCE project on "Combined Sewer Separation Using Pressure Sewers" at Harvard University, sponsored by FWPCA.
4. Deputy Program Director for an American Society of Civil Engineers Urban Water Resources Research Program at Harvard University sponsored by the U. S. Geological Survey and the Office of Water Resources Research. Aspects of this program involved the input of six task committees, one of which was directed at application of systems analysis to urban water problems, and supervision of a subcontractor effort directed at urban water resource systems.

#### Committees:

1. Urban Water Resources Research Council, American Society of Civil Engineers
2. Urban Development Panel, Agency for International Development
3. Committee on Integrated Approaches to Water Management Problems, Agency for International Development

4. Committee on Water Resources. Component of Argonne proposal to NSF for a multidisciplinary environmental research program for the Upper Midwest.
5. Member CSU Environmental Resources Center.

Bibliography:

1. "Sewage Flow Variations in Individual Homes," by Tucker, L. S., American Society of Civil Engineers (ASCE), February 24, 1967.
2. "Pressure Tubing Field Investigations," by Tucker, L. S., ASCE, August 15, 1967.
3. "Hydraulics of a Pressurized Sewerage System and Use of Centrifugal Pumps," by Tucker, L. S., ASCE, November 15, 1967.
4. "Minimum Transport Velocity for Pressurized Sanitary Sewers," by McPherson, M. B., Tucker, L. S., and Hobbs, M. F., ASCE, November 16, 1967.
5. "Northwood Gaging Installation, Baltimore--Instrumentation and Data," by Tucker, L. S., ASCE, August 1, 1968.
6. "Oakdale Gaging Installation, Chicago--Instrumentation and Data," by Tucker, L. S., ASCE, March 16, 1969.
7. "Raingage Networks in the Largest Cities," by Tucker, L. S., ASCE, March 17, 1969.
8. "Sewered Drainage Catchments in Major Cities," by Tucker, L. S., ASCE, March 31, 1969.
9. "An Analysis of National Basic Information Needs in Urban Hydrology," by McPherson, M. B. and Tucker, L. S., ASCE, April 1969.
10. "Routing of Flows in Sanitary Sewerage Systems," by Tucker, L. S., ASCE, July 18, 1969.
11. "Non-Metropolitan Dense Raingage Networks," by Tucker, L. S., ASCE Urban Water Resources Research Program, January 1970.
12. "Availability of Rainfall-Runoff Data for Partly Sewered Urban Drainage Catchments," by Tucker, L. S., ASCE Urban Water Resources Research Program, March 1970.
13. "ASCE Urban Water Resources Research Program," by Tucker, L. S., presented at the April 10, 1970 session of the Nineteenth Southern Water Resources and Pollution Control Conference, Dunham, North Carolina.

14. "The Urban Water System," by Albertson, M. L., Taylor, D. C., and Tucker, L. S., presented at the Western Resources Conference, Denver, Colorado, July 1970.
15. "1970 Urban Water Systems Institute," by Tucker, L. S., Taylor, D. C., and Albertson, M. L., presented at the Joint Meeting, Rocky Mountain Section of American Water Works Association and Water Pollution Control Association, Vail, Colorado, September 21, 1970.

## BIOGRAPHY OF VUJICA YEVJEVICH

Graduated in 1936 from the University of Belgrade, Yugoslavia, and in 1939 from the School for Hydraulic Engineers, Grenoble, France. Obtained Doctor's degree in 1955 from Serbian Academy of Science, Belgrade. From 1946-1957 he taught at the University of Belgrade, and was involved in various engineering activities, consulting included, but primarily in research work in hydrology, hydraulics, hydraulic engineering and water resources development in Yugoslavia and in other countries. Since February 1958 he worked in the United States, first on various research projects with the U.S. National Bureau of Standards and U.S. Geological Survey, and then from September 1960 he became associated with Colorado State University, Fort Collins, Colorado, as Professor of Civil Engineering. Four of his books and about 90 of his papers and reports have been published. He is presently directing the graduate and research program in Hydrology in the Civil Engineering Department at Colorado State University. He is a fellow of American Society of Civil Engineers, and a member of American Geophysical Union, International Association for Hydraulic Research and Sigma-Xi Society.

graduated from the University of Colorado, Boulder, and in 1939 from the School for Hydraulic Engineering, Colorado State University, Fort Collins, Colorado.

Doctor Trivicki is 1939-1940 Research Fellow of the National Research Council, Boulder, Colorado. He has been in various capacities in the United States and in other countries. Since February 1938 he worked in the United States, first on various research projects with the U.S. National Bureau of Standards and U.S. Geological Survey, and then from September 1938 on

became associated with Colorado State University, Fort Collins, Colorado, as Professor of Civil Engineering. Four of his books and about 90 of his papers and reports have been published. He is presently directing the graduate and

## ECONOMICS

research program in Hydraulics in the Civil Engineering Department at Colorado State University. He is a fellow of American Society of Civil Engineers, and a member of American Geophysical Union, International Association for Hydraulic

Research and Sigma Xi Society.

Name: Huntley Hedges Biggs

Position: Assistant Professor of Economics

Address: Department of Economics, Colorado State University  
Fort Collins, Colorado 80521  
(since September 1968)

Telephone: 491-6657

Birthdate: June 15, 1939, Huntington, W. Va.

Marital Status: Married, one child

Military: Commissioned Officer USCGR

Citizenship: United States

Graduate Teaching Fields: Theories in Economic Development, Planning and Policies  
for Economic Development.

Undergraduate Teaching Fields: Principles, Economic Development, Latin American  
Economic Development, Comparative Economic Systems,  
and Institutions and Economic Development: Latin  
America.

Languages: Spanish (near fluency) and Portuguese (reading only)

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High School:

Episcopal High School

Alexandria, Virginia

1957

Undergraduate:

Washington and Lee University, B.S. in Commerce

1961

(Business Administration)

Graduate Studies:

Louisiana State University, M.A. in Latin American Studies

1965

(1963-64)

(economics, sociology, and geography)

Thesis: "The Central American Common Market"

Vanderbilt University,

Ph.D. in Economics

1970

Fields of Concentration: Economic Development, Economic Theory,  
Statistics, Agriculture Economics, Latin  
American Studies minor

Dissertation: "Devaluations, Inflation, and Relative Price Changes  
for Agricultural Exports: Argentina, 1959-1967"

Supervisor: William H. Nicholls, Dept. of Economics, Vanderbilt Univ.

Other Committee Members and References: Professors Werner Baer, Nicholas  
Georgescu-Roegen, and James S. Worley (all are members of  
Department of Economics, Vanderbilt University)

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Research: Fulbright-National Defense Education Act Fellow, dissertation research  
in Argentina (1966-67).

USAID sponsored CUSUSWASH Water Management Research Project (summer 1969).



AID-211 (d) Water Resources Institutional Grant to participate in "International Interdisciplinary Seminar on Water Resources Management" (1969-1971).

CUSUSWASH Water Management Research Project to conduct "Economic Analysis of On-Farm Input Use in West Pakistan" (1970-1971).

University activities:

Chairman of interdisciplinary seminar sponsored by Center for Latin American Studies - "Latin American Development Problems and Issues" (spring 1970).

Non-Salary Benefits Committee, and  
Center for Environmental Resources.

Professional and honorary memberships:

American Economics Association  
Latin American Studies Association  
Rocky Mountain Social Science Association  
Beta Gamma Sigma  
Omicron Delta Epsilon

Scholarships and Assistantships:

Louisiana State University: University Fellowship 1963-64.  
Vanderbilt University: NDEA, Title VI Fellowship, 1964-65, 1965-66.  
Fulbright-NDEA related Fellowship 1966-67, doctoral research in Buenos Aires, Argentina.  
Instructor-Research Assistant, Vanderbilt University, 1967-68  
Instructed "Latin American Economic Development" (one semester) and research (one semester).

# BIOGRAPHICAL SKETCH

NOBE, Kenneth C.

<u>TITLE OR RANK AND EMPLOYER:</u> Chairman and Professor Department of Economics Colorado State University	<u>BIRTHDATE:</u> October 26, 1930	<u>MARITAL STATUS:</u> Married
<u>PLACE OF BIRTH:</u> Venedy, Illinois	<u>NATIONALITY:</u> U. S.	<u>SEX:</u> Male

<u>EDUCATION:</u>		
<u>Institution and Location</u>	<u>Degree</u>	<u>Year</u>
Southern Illinois University; Carbondale, Illinois (Business and Professions)	B.S.	1953
Cornell University; Ithaca, New York (Economics of Agriculture)	M.S.	1954
Cornell University; Ithaca, New York (Natural Resource Economics)	Ph.D.	1959

<u>MAJOR FIELDS:</u> Natural Resource Economics, Economic Development, Agricultural Economics, and Environmental Economics
--

<u>AREAS OF PROFESSIONAL WORK:</u> Administration, Teaching, Research, and Extension
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<u>RELATIONSHIP TO PROPOSED PROJECT:</u>
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<u>PROFESSIONAL EXPERIENCE:</u>
---------------------------------

1. Chairman and Professor, Department of Economics, Colorado State University, Fort Collins, Colorado. Administration, teaching, research and extension, 1969-present.
2. Associate Professor, Department of Economics, Colorado State University, Fort Collins, Colorado. Teaching and research, 1966-69.
3. Chief, Agriculture and Economics Branch, Harza Engineering Company International, Lahore, West Pakistan. General Consultant on the economics of water resource development to the Water and Power Development Authority of West Pakistan, 1964-65.
4. Chief Economist and Chief, Federal Programs Review Branch, Bureau of Outdoor Recreation, U.S. Department of Interior, Washington, D.C. Administratively in charge of coordinating Federal outdoor recreation programs, 1963-64.
5. Chief, Economics Section, Colorado River Basin Project, Public Health Service, U.S. Department of Health, Education, and Welfare, Denver, Colorado. Directed economic base study of the Colorado River Basin, 1961-63.
6. Leader, Potomac Basin Party, A.R.S. Representative, Potomac Survey Field Advisory Committee, Agricultural Research Service, U.S. Department of Agriculture, Washington, D.C. Administrative responsibilities in cooperation with Corps of Engineers, Potomac River Basin Project, 1958-61.

# LIST OF TECHNICAL PUBLICATIONS

K. C. Nobe

## University Research Bulletins and Maps

- U-1. K.C. Nobe, An Improved Segmented Sampling System for Farm Management Surveys, A.E. 991, Department of Agricultural Economics, Cornell University, Ithaca, New York, July 1955.
- U-2. K.C. Nobe, Distribution of Dairy Cattle in St. Lawrence County, New York, Unnumbered Leaflet (map), Department of Agricultural Economics, Cornell University, Ithaca, New York, July 1955.
- U-3. K.C. Nobe, Economic Land Classification Map of St. Lawrence County, New York (Preliminary), Unnumbered map, Department of Agricultural Economics, Cornell University, Ithaca, New York, February 1956.
- U-4. K.C. Nobe, Generalized Economic State of Farming in St. Lawrence County, New York, Unnumbered map, Department of Agricultural Economics, Cornell University, Ithaca, New York, 1956.
- U-5. K.C. Nobe and H.E. Conklin, An Economic Classification of Farm Areas, St. Lawrence County, New York, Cornell Economic Land Classification Bulletin No. 5, New York State College of Agriculture, Cornell University, Ithaca, New York, April 1957.
- U-6. K.C. Nobe and K.H. Thomas, An Appraisal of Farming Areas in St. Lawrence County, New York, A.E. 1054, Department of Agricultural Economics, Cornell University, Ithaca, New York, December 1957.
- U-7. K.C. Nobe, E.E. Hardy, and C.P. Gratto, Agricultural Regions of New York State (Preliminary), Unnumbered map, Department of Agricultural Economics, Cornell University, Ithaca, New York, 1957.
- U-8. K.C. Nobe, E.E. Hardy, and C.P. Gratto, Agricultural Regions of New York State, A.E. 1090, Department of Agricultural Economics, Cornell University, Ithaca, New York, February 1958.
- U-9. H.E. Conklin, G.R. Dawson, and K.C. Nobe, Differences Among the Land Classes of St. Lawrence County According to Data From the North Country Farm Management Survey, A.E. 1092, Department of Agricultural Economics, Cornell University, Ithaca, New York, February 1958.
- U-10. K.C. Nobe and I.R. Starbird, An Annotated Bibliography of Background Material for the Description and Delineation of Agricultural Regions of New York State, 600 References Grouped by Subject Matter, Department of Agricultural Economics, Cornell University, Ithaca, New York, August 1958.

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- U-17. D.R. Allardice and K.C. Nobe, Evaluation of Efficiency in Allocating Contract Research Funds by the Colorado Water Conservation Board, NRE-1, Department of Economics, Colorado State University, Fort Collins, Colorado, December 1968.
- U-18. A.H. Gilbert and K.C. Nobe, "Surveys of Hunting and Fishing Expenditures: Uses, Abuses and Methodological Problems," Abstracts of Proceedings, Fifth Annual Short Course in Game and Fish Management, Colorado State University, Fort Collins, Colorado, February 1969.
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- U-20. K.C. Nobe (ed.), Selected Readings in Economics of Environmental Quality, NRE-4, Department of Economics, Colorado State University, Fort Collins, Colorado, May 1969.
- U-21. A.H. Gilbert and K.C. Nobe, Annual Gross Values of Hunting and Fishing Expenditures in Colorado, 1968, NRE-5, Department of Economics, Colorado State University, Fort Collins, Colorado, June 1969.

- U-22. R.K. Schaefer and K.C. Nobe, Economic Evaluation of the Land Purchase Program of the Colorado Division of Game, Fish and Parks, NRE-6, Department of Economics, Colorado State University, Fort Collins, Colorado, July 1969.
- U-23. G.E. Radosevich and K.C. Nobe, Use of Private Property for Outdoor Recreation: Legal Rights and Liabilities, Bulletin 467A, Cooperative Extension Service, Colorado State University, Fort Collins, Colorado, November 1969.
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- U-25. A.R. Dickerman, G.E. Radosevich, Foundations of Federal Reclamation Policies: An Historical Review of Changing Goals and Objectives, NRE-8, Department of Economics, Colorado State University, Fort Collins, Colorado, January 1970.
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- H-2. K.C. Nobe, Calculation of Net Agricultural Benefits for the Priority I Areas of Tarbela Reservoir (Prepared for WAPDA) Harza Engineering Company International, Lahore, West Pakistan, October 1964. 35 pp.
- H-3. M. Hussain and K.C. Nobe, A Preliminary Economic Analysis of Providing Supplemental Irrigation Water in the Las Bela District of the Porali Basin (Prepared for WAPDA) Harza Engineering Company International, Lahore, West Pakistan, November 1964. 21 pp.
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- H-14. "Chapter 10, Agriculture," Sanjwal Dam Project (Haro Dam) Feasibility Report Review (Prepared for WAPDA) Harza Engineering Company International, Lahore, West Pakistan, September 1965.

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- T-11. H.W. Dill, Jr., and K.C. Nobe, "New Resource Planning Data From the National Inventory of Conservation Needs," Journal of Soil and Water Conservation, September 1960.
- T-12. H.E. Conklin and K.C. Nobe, "Development of a Regional Concept for Farm Management Research in New York," Land Economics, Vol. XXXVII, No. 1, February 1961.
- T-13. K.C. Nobe, "Another Look at River Basin Planning," Journal of Soil and Water Conservation, Vol. 16, No. 5, September 1961.
- T-14. K.C. Nobe, "Use of Airphoto Interpretation in Agricultural Land Economics Research," Land Economics, Vol. XXXVII, No. 4, November 1961.

- T-15. K.C. Nobe, "The Use of Economic Reasoning in the Planning Function of Comprehensive Water Development and Pollution Control Program Undertaken by the Public Health Service," Paper presented at the Public Health Service Water Resources Comprehensive Planning Workshop, Sanitary Engineering Center, Cincinnati, Ohio, November 20-22, 1961.
- T-16. K.C. Nobe, "Urbanization Creates New Problems," Farm Policy Forum: Rural-Urban Fringe, Vol. 14, No. 4, September 1962.
- T-17. A.V. Kneese and K.C. Nobe, "The Role of Economic Evaluation in Planning for Water Resources Development," Natural Resources Journal, Vol. 2, No. 3, December 1962.
- T-18. K.C. Nobe, "Book Review," Land and Water: Planning for Economic Growth, Harold Amoss and Roma McNickle, Editors, Journal of Soil and Water Conservation, Vol. 18, No. 2, March-April 1963.
- T-19. K.C. Nobe, "Book Review," Land and Water Use, Publication No. 73 of the A.A.A.S., Journal of Soil and Water Conservation, Vol. 18, No. 5, September-October 1963.
- T-20. K.C. Nobe and D.L. Patton, "Integrating Recreation Values into Comprehensive River Basin Planning," Water Resources and Economic Development in the West, Report No. 12, Conference Proceedings, Committee on Water Resource Development, Salt Lake City, Utah, December 1963.
- T-21. K.C. Nobe, "Critical Areas in the Evaluation of Benefits--Recreation and Fish and Wildlife," Seminar on Economic Base Studies and Water Resource Economics, Conference Proceedings, Office of the Chief of Engineers, Corps of Engineers, Washington, D.C., January 1964.
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- T-25. K.C. Nobe and A.R. Dickerman, "An Economic Perspective of Fish and Wildlife in the Small Watershed Program," Seventeenth National Watershed Congress Proceedings, Denver, Colorado, June 1970.



## BIOGRAPHICAL SKETCH

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University of Wyoming, Laramie (Law)	J.D.	1968

**MAJOR FIELDS:**

Natural resources, law and institutions

**AREAS OF PROFESSIONAL WORK:**

Research Associate - Legal Specialist, Temporary Instructor

**RELATIONSHIP TO PROPOSED PROJECT:**

**PROFESSIONAL EXPERIENCE:**

Research Associate and Legal Specialist, Department of Economics, Colorado State University, 1969-present

Research Associate, Department of Economics, Colorado State University, 1968-1969

Vidakovich, Barney, and Radosevich, Attorneys at Law, Lander, Wyoming, 1968-present

**PUBLICATIONS:**

[See attached list]



Publications:

Radosevich, G.E. and K.C. Nobe, Legal Liabilities and Limitations When Private Property in Colorado is Used for Outdoor Recreation, NRE-3, Dept. of Economics, Colorado State University, April 1969.

Radosevich, G.E. and K.C. Nobe, Use of Private Property for Outdoor Recreation: Rights and Liabilities, Colorado State University, Extension Service Bulletin 467A, October, 1969.

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Dickerman, A.R., G.E. Radosevich, and K.C. Nobe, Foundations of Federal Reclamation Policies: An Historical Review of Changing Goals and Objectives, NRE-8, Department of Economics, Colorado State University, January, 1970.

Radosevich, G.E., "Legal Aspects of Urban Water Management," Proceedings of the Urban Water Systems Institute, June, 1970, Colorado State University.

Norgaard, Richard B., David Seckler and George Radosevich, "Pest Management: An Institutional Proposal," (In press).

Radosevich, G.E., "State Legal Structures and Institutional Arrangements for Water Resources Development," Western States Seminar on State Water Planning, Conference Proceedings, January 12, 1971, (in press, mid-1971).

Radosevich, G.E. and D. Hamburg, Colorado Water Laws, Compacts, Treaties and Cases, Colorado Division of Natural Resources, (in press, late 1971).

## BIOGRAPHICAL SKETCH

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Institution and Location	Degree	Year
Iowa State University, Ames (Vocational Agriculture)	B.S.	1958
Montana State University, Bozeman (Agricultural Economics)	M.S.	1961
University of Wisconsin, Madison (Agricultural Economics)	Ph.D.	1965

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Agricultural economic development, farm management and production, agricultural finance

### AREAS OF PROFESSIONAL WORK:

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### RELATIONSHIP TO PROPOSED PROJECT:

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Associate Professor, Department of Economics, Colorado State University, 1971-present  
Visiting Assistant Professor of Economics, Peru Agricultural Mission for North Carolina State University, Raleigh, 1967-1971  
Assistant Professor, Agricultural Economics, Iowa State University, Ames, 1965-1966  
Project Associate, Land Tenure Center, Madison, Wisconsin, 1962-1964  
Research Fellow, Land Tenure Center, Madison, Wisconsin, 1961-1962  
Research Fellow, International Cooperation Center, Montana State College, Bozeman, 1960-1961

Publications:

"Potentialities of Beef Feeding Cooperatives in Montana" (M. S. Manuscript)

"New Land Settlement in the Eastern Lowlands of Colombia" (Ph. D. Manuscript)

"The Role of the National Institute of Tobacco in Increasing Tobacco Production in Colombia" Land Tenure Center Research Paper #2, Madison, Wisconsin, 1964

"New Land Settlement in the Eastern Lowlands of Colombia" Land Tenure Research Paper #13, Madison, Wisconsin, 1964

"Manual de Administracion Rural para el Departamento de Puno" Iowa Universities, April 1967. pp. 98. (Farm Management Manual for the Department of Puno).

"An Evaluation of Selected Supervised Agricultural Credit Programs in Peru" North Carolina Mission, Credit Evaluation Report, Lima, Peru, June, 1968. pp. 216. (Also in Spanish).

"Algunos Aspectos Economicos sobre la Explotacion Avicola en Arequipa," North Carolina Mission, Credit Evaluation Report, September, 1968. pp. 76 (Some Economic Aspects of the Poultry Industry in Arequipa).

"Registro de Costos de Produccion Agricola," Manual No. 5, Ministerio de Agricultura, Agosto 1969. pp. 50. (Farm Record Keeping Manual).

"Normas para el Uso Optimo de los Fertilizantes en Algunos Valles de la Costa," Boletin No. 3, Ministerio de Agricultura, Agosto 1969. pp. 44. (The Optimum Use of Fertilizer for Selected Valleys of Peru's Coast).

"Estudio Economico de la Cooperativa Rafan-Chiclayo," Informe No. 4, Ministerio de Agricultura, Setiembre 1969. pp. 74. (An Economic Study of the Rafan Cooperative in Chiclayo, Peru).

"Estudio Economico de Algunas Empresas Comunales en la Sierra Central," Grupo de Evaluacion de Credito Supervisado, Mision Agricola de Carolina del Norte, Diciembre 1969. pp. 62. (An Economic Study of Selected Communal Enterprises in Peru's Central Sierra).

"Observations on Two AID-Financed Supervised Credit Programs in Colombia," Credit Evaluation Group, North Carolina State Agricultural Mission, Lima, February 1969. pp. 19.

"Observations of the AID-Financed Credit Program in Dominican Republic," Credit Evaluation Group, North Carolina State Agricultural Mission, Lima. October 1969. pp. 10.

Movimiento de Fondos del Programa de Credito Agricola Supervisada-Anos 1965-1970, Grupo de Evaluacion de Credito, Mision Agricola de Carolina del Norte, Informe No. 13, Ministerio de Agricultura, Marzo, 1971. (Statistical Summary of Peru's Supervised Agricultural Credit Program: 1965-1970).

**POLITICAL SCIENCE**

## POLITICAL SCIENCE

## Curriculum Vitae

Henry P. Caulfield, Jr.

### Born

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### Education

Los Angeles City Schools; graduate of Hollywood High School, June 1935

California Institute of Technology, Pasadena, California -- 1935-1936  
Institute Scholarship

Fields of concentration: Physics, Chemistry and Mathematics

Lingnan University, Canton, China -- 1936-37

Foreign Exchange Scholarship

Fields of concentration: Science, Social Anthropology, and  
Chinese History

Harvard College -- 1938-1940

S. B. degree cum laude, June 1940

Fields of concentration: Economics and Government

Harvard University, Graduate School of Public Administration --  
February 1948-March 1950

Worked toward joint degree in Political Economy and Government

Fields of concentration: Political Theory, Economic Theory,  
Constitutional Law and Industrial Organization and Control

MPA degree, June 1949

Passed General Examination, May 1950; Thesis not completed

Oxford University, Oxford, England; Summer School -- 1948

### Experience

Economist, Works Projects Administration, Research Division,  
Washington, D. C. -- July 1940-December 1941

Naval Officer (Ensign to Lieutenant Commander)

United State Navy, assigned to Office of the Secretary

Navy Department, Washington, D. C. -- January 1942-December 1945

Received Secretary's Commendation Award

Executive Assistant to Director, Office of War Mobilization and  
Reconversion, Washington, D. C. -- January-February, 1946

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Instructor in Economics, Williams College, Williamstown, Massachusetts--  
March-September 1946

Assistant for International Affairs to the Assistant Director for  
Statistical Standards, Bureau of the Budget, Washington, D. C. --  
October 1946-January 1948

Director, International Economic and Statistical Education Program,  
International Statistical Institute, London, England -- July 1950-June 1951

Economist, Office of the Secretary, Department of the Interior,  
Washington, D. C. -- June 1951-September 1955

Research Associate on Energy Policy, Resources for the Future,  
Washington, D. C. -- September 1955-February 1961

Assistant Director and then Director, Resources Program Staff,  
Office of the Secretary, Department of the Interior, Washington, D. C.  
February 1961-April 1966

Executive Director, Water Resources Council, Washington, D. C.  
April 1966 to September 1969

Professor of Political Science, Colorado State University, Ft.  
Collins, Colorado, September 1969 to present

Publications

"The Living Past in Federal Electric Power Policy", Annual Report  
for 1959, Resources for the Future, Inc., Washington, D. C.

"Getting the Most Out of Water Resources", jointly with Professor  
Irving Fox, a paper presented at the Interstate Conference on Water  
Problems, Chicago, Illinois, December 5-6, 1960; published as  
Reprint No. 28, Resources for the Future, Inc.; 1960

"Welfare, Economics, and Resources Development" in Land, Water  
Planning for Economic Growth, University of Colorado Press, 1961

"Municipal Water in Federal Programs" in Water: Development, Utili-  
zation, Conservation, University of Colorado Press, 1963

"Urban Waterfront Redevelopment", a paper presented at the White  
House Conference on Natural Beauty, May 1965 (published in the  
proceedings of the conference)



**Membership -- Professional Societies**

American Political Science Association  
American Society for Public Administration  
American Economic Association  
American Water Works Association  
American Water Resources Association  
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**Professional Committees**

Member, Scientific Advisory Committee, Rocky Mountain Center  
on Environment, 1970  
Member, Committee on Desert and Arid Zone Research, Southwestern  
and Rocky Mountain Division of the American Association for the  
Advancement of Science, 1970-71  
Chairman, Water Resources Committee, Environmental Resources Center,  
Colorado State University, 1969-present  
Member, Steering Committee on J.F.K. Airport Expansion Study,  
Environmental Studies Board, National Academy of Sciences, Summer 1970  
Panel Leader, Research Conference on the Evaluation Process in  
Water Resources Association, at University of Wisconsin, Milwaukee,  
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**Other Affiliations**

National Parks Association  
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## Vita

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Instructor, University of Oregon, 1955-57.

Assistant & Associate Professor, San Francisco State College, 1957-62.

Associate Professor, Colorado State University, 1962-64.

Professor, Colorado State University, 1964-present.

Chairman, Department of Political Science, Colorado State University, 1965-present.

### III. Publications.

1. Book, Politics and Grass, University of Washington Press, 1960.
2. Book, Federal Agencies and Outdoor Recreation, U.S. Government Printing Office, 1962.
3. Book, Education in Natural Resources, editor, C.S.U. Printing Service, 1964.
4. Book, Politics and Policies: the Continuing Issues, with Duane W. Hill, Wadsworth Publishing Company, 1969.
5. Book, Outdoor Recreation, Chelsea House Publishers, 1969.
6. Book, Public Land Policy, Editor, 1969.
7. Monograph, The Grazing Fee Dilemma, University of Alabama Press, 1960.
8. Monograph, The Battle of Soldier Creek, University of Alabama Press, 1961.
9. Monograph, Reorganization and Reassignment in the California Highway Patrol, University of Alabama Press, 1962. Reproduced in Frederick C. Mosher, Governmental Reorganizations, Bobbs-Merrill, 1967.
10. Article, "The Determination of Grazing Fees on Federally Owned Range Lands," Journal of Farm Economics, August, 1959.

11. Article, "Public Land Policies in the West," in Report #4, Western Agricultural Economics Research Council, 1962.
12. Article, "Federal Management of Natural Resources for Recreation," Natural Resources Journal, May, 1965.
13. Article, "The Issues Underlying Outdoor Recreation Policy," Trends in Parks and Recreation, January 1967.
14. Article, "The Public Lands and the Public Land Law Review Commission," Western Political Quarterly, March, 1967.

#### IV. Contributions to the University.

1. Member, Faculty Council
2. Member, Graduate Faculty
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4. Chairman, Seminar Series on Education in Natural Resources, funded by the Conservation Foundation, 1963-64.
5. Chairman of the Council, Natural Resources Center, 1964-67.

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1. Oregon State Rural Electrification Association, "Taxation of REA Cooperatives," 1956.
2. University of Oregon, School of Dentistry, "The ILWU-PMA Dental Program," 1957.
3. Bureau of Public Administration, University of California, "Reorganization of the California Highway Patrol," 1960.
4. Outdoor Recreation Resources Review Commission, "The Role of Federal Agencies in Outdoor Recreation," 1961.
5. Bureau of Land Management, U.S. Department of the Interior, "Administration of State Grazing Districts," 1964-65.
6. Office of Water Resources Research, U.S. Department of the Interior, "Organizational Adaptations to Changes in Public Objectives for Management of the Cache La Poudre River System," 1965.

#### VI. Management Consultant or Instructor in Management for:

Oregon State Civil Service Commission, 1957-58.

California State Personnel Board, 1958-62.

City of San Francisco, 1959.

U.S. Air Force, 1960.

Sonoma (California) State Hospital, 1961.

California Department of Conservation, 1961.

California State Compensation Insurance Fund, 1962.

Bureau of Land Management, U.S. Department of the Interior, 1964-65, 1969.

**VII. Papers Presented and Other Contributions to Professional Organizations.**

1. Presented paper, "Home Rule on the Federal Range," Western Political Science Association Conference, 1957.
2. Panel Chairman, "Contemporary Federalism and Natural Resources," Western Political Science Association, 1958.
3. Presented paper, "Public Land Policy in the West," Western Farm Economics Association Conference, 1962.
4. Member, Western Resources Conference Planning Committee, 1963, 1964.
5. Program Chairman, Political Science, Rocky Mountain Social Science Association, 1965.
6. Member, Program Planning Committee, Western Interstate Water Conference, 1965.
7. Panel Chairman, "Politics and Efficiency in Water Development," Western Resources Conference, 1965.
8. Presented paper, "The Public Lands and the Public Land Law Review Commission," Western Political Science Association Conference, 1966.
9. Presented paper, "The Issues Underlying Outdoor Recreation Policy," National Conference on Policy Issues in Outdoor Recreation, 1966.
10. Presented paper, "Outdoor Recreation: the Underlying Issues," Rocky Mountain - High Plains Park and Recreation Conference, 1966.
11. Keynote address, Sixth Annual Governor's Conference on Parks and Outdoor Recreation, 1967.
12. Chairman, 10th Annual Western Resources Conference, theme "Public Land Policy," 1968.
13. Member, Board of Editors, Western Political Quarterly, 1963-66.
14. Member Executive Council, Western Political Science Association, 1967-69.
15. Member, National Academy of Sciences study team on Outdoor Recreation, 1969.

# VIII. Supervision of Graduate Students

Served on approximately 50 graduate committees at the master's level and six at the doctoral level.

# IX. Military Service

Army Air Corps, 1942-46.

U.S. Air Force, 1951-53.

Presently, Lt. Colonel, Air Force Reserve.

### BIOGRAPHIC DATA

**Name:** Garth N. Jones **Date:** November, 1969  
**Position:** Senior Specialist **Project:** Scholar in Residence  
East-West Center  
Honolulu, Hawaii **Location:** Honolulu, Hawaii  
**BIOGRAPHIC DATE:** DAB: February 25, 1925; Salt Lake City, Utah  
Married, Three Sons

### EDUCATION:

1943-47 Utah State University - B.S., Political Science and Economics  
1947-48 University of Utah - M.A., Political Science and Economics  
1948-49 Pennsylvania State University  
1950-51 University of Utah - Ph.D., (1954) Political Science and Economics  
Also, University of Utah Special Certificate, Public Administration (1948)

### CAREER

9/69 - 6/70 Senior Specialist, East-West Center, Honolulu, Hawaii. Invited as one of twenty-four Asian, European, and American scholars to spend nine months at the East-West Center researching and writing upon particularly the two following topics:  
1. "Role of Bureaucracy in Planned Development: A Comparative Study of Indonesia and Pakistan."  
2. "Planned Organizational Change: A Study of the Change Process through Marginal Utility and Social Exchange Analyses."  
6/67 - 8/69 Chief, Public Administration Division FSRO-2, Pakistan Responsible for supervising a broadly designed technical assistance in public administration which centered on three development goals:  
(a) strengthening economic decisionmaking,  
(b) strengthening key development agencies, and  
(c) strengthening local government  
Supervised five contract operations as well as direct agency activities. These included 25-30 professionals.  
10/64 - 6/67 Chief of Party, University of Southern California Contract in Pakistan. Associate Professor.



From October 1964 to June 1965 USC Party Representative in Lahore with the primary responsibility of developing an academic program at the Department of Administrative Science, University of the Panjab. On July 1, 1965 appointed Chief of Party of the Contract. The contract provided for assistance to three National Institutes of Public Administration, located at Karachi, Dacca, and Lahore; Department of Administrative Science at the University of the Panjab, and the Civil Service Academy at Lahore.

9/61 - 10/64

Associate Professor

School of Public Administration, USC, Los Angeles. Position equally divided between teaching and administrative activities. Subjects of instruction Finance Administration, Local Government Administration, Modernization of Administration in Emerging Countries, and Organizational Theory and Behavior. Faculty Student Advisor for the Pakistan Project. Also served as Peace Corps Liaison Coordinator.

12/56 - 2/62

Public Administration Advisor, FSRO-3 US/AID Indonesia, Djakarta. Planned and implemented an administrative management education and training program; initiated and assisted in carrying out management improvement projects for more efficient operation of provincial and local governments. Projects were undertaken to establish a bureau of reconstruction and development, bureau of statistics and planning, and an integrated department of finance. In the absence of the Chief, assumed his responsibilities; prepared and implemented necessary program and related documents; and undertook reconnaissance and research type activities as to the nature and scope of the Indonesian Public Administration, particularly in the field of fiscal and financial management.

8/53 - 12/56

Assistant Professor (Public Administration)

Brigham Young University, Provo, Utah.

Delivered lectures in Public Administration, Municipal Administration, American Heritage and related subjects. During 1955-56 taught a Personnel Management course to Air Force Reserve Officers at Clearfield, Utah. Also served as Research Associate, Local Government Survey Commission. Acted as consultant to Utah Municipal League and Utah State Association of County Officials.

4/53-- 9/54

Research Consultant

Utah Foundation, Salt Lake

Utah Foundation is private research organization concerned with government problems. Prepared studies on public finance, tax administration, and state and local government organization and administration.

- 12/51 - 4/53      Food and Drug Inspector  
Department of Agriculture, Salt Lake City, Utah  
Responsible for enforcement of pure food and drug laws of State of Utah entailing review of written reports from seven regional food and drug inspectors; determination of measures to be taken against business concerns or persons who violated the law; inspection of food and drug processing plants; and preparation of monthly and periodic reports for submission to Board of Agriculture and special advisory bodies.
- 5/51 - 12/51      Administrative Assistant to District Administrator, Ponape District, Eastern Carolines, Department of Interior. Responsible for establishment of records and record keeping systems; gathering data, doing research and performing other related activities for preparation of economic and other reports; assisting heads of other units in developing necessary report forms; routing of all incoming mail; preparation and review of correspondence relating to administrative matters. Handled all necessary local personnel action and served as reviewing officer for efficiency rating system. Assisted in preparation of budgets; made field trips; and in absence of District Administrator, supervised the district.
- 6/50 - 4/51      Research Specialist and Consultant, Utah Municipal League and Utah State Assoc. of County Officers and Officials, Salt Lake City, Utah  
Periodically called upon to make studies and advise on various legal and administrative problems confronting local governments.
- 9/49 - 6/50      Research and Teaching (Staff Member), University of Utah
- 9/48 - 6/49      Teaching and Research (Staff Member), Political Science Department, Pennsylvania State College
- 9/47 - 6/48      Research Assistant  
Political Science Department  
University of Utah
- 4/48 - 8/48      Research Specialist  
County of Salt Lake, Salt Lake City, Utah  
Employed to make studies on "Daily cost of Patients in Salt Lake County Hospital" and "Record Management in County Recorder's Offices."

#### HONORS AND FELLOWSHIPS

##### a. Utah State, Logan, Utah

1. Sears Scholarship, 1943-44
2. Selected for Who's Who in American Colleges and Universities, 1947
3. Elected Blue Key Fraternity, 1946

**b. University of Utah**

1. Graduate Research Fellowship in Political Science, 1947-48
2. Graduate and Teaching Fellowships, 1949-50

**c. Pennsylvania State University**

1. Graduate Teaching Fellowship in Political Science, 1948-49

**d. University of Southern California**

1. Professor of the Year, School of Public Administration, 1962

**e. East-West Center, Honolulu, Hawaii**

1. Senior Specialist, September 1969-June 1970

**TEACHING AND RESEARCH INTERESTS**

**1. Teaching:**

Organizational Theory and Behavior  
Comperative and Development Administration  
Public Finance Administration  
Local Government Administration

**2. Research Interests:**

Planned Organizational Change  
Comparative Study of Pakistan and Indonesian Bureaucracy  
Modernization of Financial Management

**RECENT GRANTS**

1. Comparative Administration Group of the American Society for Public Administration, Grant of \$3,000 to study planned organizational change.
2. Research Committee, University of Southern California Grant of \$500 to study planned organizational change.
3. East-West Center, Honolulu, Hawaii. Provides assistance in services valued \$5,000 besides a grant equivalent to \$24,000 year salary.

**JOHN ADRIAN STRAAYER**

**VITA - 1969**

**Name:** John A. Straayer, Assistant Professor, Colorado State University

**Born:** January 16, 1939

**Office Address:** Department of Political Science  
Social Science Building  
Colorado State University  
Fort Collins, Colorado 80521  
Phone - 303-491-5369

**Home Address:** 1113 Hillcrest Drive  
Fort Collins, Colorado 80521  
Phone - 303-484-7034

**Family:** Married - Judith Ann Graham, December 21, 1962  
Two Children - Katherine Ann, David Graham

**Education:** Western Michigan University: B.S. - 1963  
Western Michigan University: M.A. - 1964  
University of Arizona; Ph.D. - 1967

**Thesis Topics:** M.A.; The Role of the City Manager in Decision-Making  
Ph.D.; The Politics of Water Management in Tucson, Arizona

**Areas of Teaching and Research Specialization:**

American Government and Politics (Urban, State, Administration,  
Public Policy, Natural Resources)

**Teaching Experience:**

University of Arizona, Teaching Assistant, 1964; Teaching Associate,  
1965; Instructor, Summer, 1965.

Colorado State University, Assistant Professor, 1967 to present.

**Research Experience:**

Western Michigan University, Research Assistant, Institute of  
Public Affairs, 1963.

University of Arizona, Research Associate, Water Resources  
Research Center and Department of Government, 1966-1967.

**Research Grants and Affiliations:**

Research Associate, University of Arizona Water Resources Research  
Center and Department of Government, associated with study of  
"The Economic Implications of Water Policy in Arizona," funded  
by OWRR, Professor M.M. Kelso, University of Arizona, Department  
of Agricultural Economics, Chief Investigator, 1966-67.

Political Scientist on Colorado State University staff for study of "Fish and Wildlife Resources on Public Lands," funded by Public Land Law Review Commission, Professor G.A. Swanson, Colorado State University, Department of Fishery and Wildlife Biology, Coordinator, 1968.

Recipient of two Colorado State University Faculty Improvement Committee grants to study "Race Relations and Civil Disorder," 1967-68 and 1968-69.

Director, Institute on "Intergovernmental Relations In Water Resources Planning," at Colorado State University, funded by U.S. Army Corps of Engineers, 1969.

Senior Resident Faculty Project Associate, Department of Political Science, Colorado State University, "Project for Research on Water Management in West Pakistan," 1969-1970, funded by A.I.D.

**Publications:**

Fish and Wildlife Resources on Public Lands, (contributor with G. Swanson, R.B. Held, J. T. Shields and others) prepared for The Public Land Law Review Commission, 1969.

"The American Policy Process and The Problems of Poverty and the Ghetto," forthcoming, Western Political Quarterly.

"Bureaucratic Power and Bureaucratic Direction: A Fusion of Two Theories of Organization," submitted.

"Public Problems and Non-Decision-Making," submitted.

**Memberships:** American Political Science Association  
Pi Sigma Alpha  
American Society for Public Administration  
Graduate Faculty, Colorado State University  
Natural Resources Center, Colorado State University







## VITA

**Bert L. Ellenbogen**, Department of Sociology and Anthropology

**C-240 Social Science Building**  
**Colorado State University**  
**Fort Collins, Colorado 80521**  
**Telephone: 491-6044**  
**Born: July 5, 1917**  
**Married, one child**

### Academic Training

**B. A. University of Wisconsin, Sociology, 1948**  
**M. A. University of Wisconsin, Rural Sociology, 1950**  
**Ph. D. University of Wisconsin, Rural Sociology, 1957**

### Professional Experience

1948-50	Research Assistant, Department of Rural Sociology, University of Wisconsin
1951-52	Research Associate (Division of Mental Hygiene), Wisconsin State Department of Public Welfare
1952-53	Rural Sociologist, Consejo Bienestar Rural, Caracas, Venezuela
1953-55	Research Associate (Division of Mental Hygiene), Wisconsin State Department of Public Welfare
1955-60	Assistant Professor, Department of Rural Sociology, Cornell University
1960-66	Associate Professor, Department of Rural Sociology, Cornell University
1962-64	Visiting Professor, Institute of International Studies, University of California at Sao Paulo, Brazil (On leave from Cornell University)
1966-68	Professor, Department of Sociology, University of Minnesota

Bert L. Ellenbogen (continued)

1968 - Chairman and Professor, Department of  
Sociology and Anthropology, Colorado State  
University

Professional Activities

1956-66 Consultant to Committee on Rural Medical  
Services, Medical Society of New York State

1957-65 Director, Cornell Health Survey, Financed by  
\$200,000 grant from National Institutes of Health  
to study: Changes in the Availability, Use, and  
Knowledge of Health Services in Six Upstate  
New York Counties

1958-66 Member of Latin American Studies Program  
Committee, Cornell University

1959-66 Member of Board of Directors, Empire State  
Health Council, New York

1959-60 Associate Managing Editor, Journal of Rural  
Sociology

1960-61 Managing Editor, Journal of Rural Sociology

1960-62 Member of Board of Directors Social Science  
Research Center, Cornell University

1962-64 Associate Director, Sociologia (Journal of  
Sociology published by Foundation School of  
Sociology and Politics, Sao Paulo, Brazil)

1966 Director of the Cornell University Conference:  
Development of the Highland Communities of  
Latin America

1967-68 Member of the Advisory Board, Mid-Western  
Institute for Comparative Sociology

1966-67 Member of the Program Planning Committee,  
Rural Sociology Society

1967-68 Chairman, Latin American Studies Program,  
University of Minnesota

**Bert L. Ellenbogen (continued)**

- 1969- Member of Faculty Council, Colorado State Univ.
- 1969- Vice-Chairman, Human Relations Committee,  
Colorado State University
- 1970- Member of University Steering Committee,  
Colorado State University
- 1970- Member of Rural Sociology - Agency for Inter-  
national Development Liason Committee, Rural  
Sociology Society
- 1970 Chairman, Arrangements Committee for National  
Meetings of Rural Sociology Society, Denver, 1971

**Overseas Experience**

- 1952-53 Twelve months in Venezuela as a member of a  
multi-disciplinary team which undertook a social  
and economic survey of the Andean Region
- 1961 Six weeks in Brazil as consultant for the Agency  
for International Development
- 1962-64 Eighteen months in Brazil as a member of a  
multi-disciplinary team of social scientists from  
the Institute of International Studies, University of  
California, located at the Foundation School of  
Sociology and Politics, Sao Paulo, Brazil
- 1967 Consultant to Federal University in Parana, Brazil  
in developing research project on the diffusion of  
educational practices; spent one month in Brazil
- 1968 Consultant to University of Minnesota project in  
Chile in developing research project on the diffusion  
of agricultural practices; spent 6 weeks in Chile

(In addition, brief visitations have been made to Colombia, Costa Rica, Paraguay, and Peru.)

## **PERSONAL VITAE**

**David M. Freeman**

**Birthplace:** Glendive, Montana

**Birthdate:** January 27, 1939

**Present Address:**

809 Pitkin Street  
Fort Collins, Colorado 80521

**Educational Background:**

B.A. Rocky Mountain College, Billings, Montana. (1957-1961)

M.P.I.A. Graduate School of Public and International Affairs,  
University of Pittsburgh. (1961-1962)

Ph.D. Graduate School of International Affairs, University of Denver.  
(1964-1967)

**Professional Employment:**

Peace Corps Operations Officer in the Near East/South Asian Programs  
Division. Specific responsibility for programs in Ceylon and Nepal.  
(1962-1964)

Research Assistant at the Graduate School of International Studies.  
(January/March, 1965).

Teaching Assistant at the Graduate School of International Studies  
(September/December, 1966). Policy Formulation and Execution.

Temporary Instructor, Temple Buell College, Denver, Colorado. (January/  
June, 1967) Senior Seminar in International Relations and Social  
Development.

Assistant Professor, Sociology/Anthropology Department, Colorado State  
University, Fort Collins, Colorado (September 1967/Present). Areas of  
Special responsibility are Sociology of Development with focus on dif-  
fusion of innovation in the context of social conflict, and planning.

**Honors and Awards:**

B.A. Summa Cum Laude.

Clark Memorial Scholarship, Rocky Mountain College, 1960-1961.

H. J. Heinz Fellowship for International Studies, University of  
Pittsburgh, 1961-1962.

Graduate School of International Studies Fellowship, University of Denver,  
1964-1966.

David M. Freeman (continued)

Ford Foundation Grant for Dissertation Research, University of Denver,  
1966-1967.

**Professional Associations:**

American Political Science Association

Society for International Development

**Publications:**

"Peace Corps Training For Overseas Operations: A Critique,"  
Masters Thesis. University of Pittsburgh, 1964.

"Value Aggregation and the Language Dispute in Ceylon,"  
Doctoral Dissertation. University of Denver, 1967.

"Developmental Change, Valuation, and the End of Ideology"  
Paper presented to the Rocky Mountain Social Science Association,  
Lubbock, Texas, May 2, 1969.

Linwood L. Hodgdon  
Associate Director

B. A. (American International College), M. A.  
(Michigan State University), Ph. D. (Michigan  
State University)

Director, Office of International Programs;  
Professor of Sociology

1962-64 Consultant in Community Development;  
Ford Foundation (India)

1961-62 Acting Chief, Community Development  
Branch, Rural Development Division, U. S.  
Operations Mission/Korea

1961-62 Staff, University of Maryland, Far East  
Division, Army Education Center, Seoul,  
Korea

1960-62 Consultant in Community Development,  
U. S. Operations Mission/Korea, Seoul,  
Korea

1958-59 Fulbright Lecturer, Agra University  
(India), Institute of Social Sciences

1957-58 Professor, Kansas State University,  
Manhattan, Kansas

1954-57 Associate Professor, Kansas State  
University, Manhattan, Kansas

1949-54 Assistant Professor, Kansas State  
University, Manhattan, Kansas

Sociology of development, community development,  
rural social surveys and research

Publications: Community Development in Korea:

An Evaluation of the NACOM Grant-in-Aid  
Program, USOM/Korea, 1961; A Survey of  
the Income/Expenditure Patterns of Korean  
Rice Farmers, USOM/Korea, 1961; "Rural  
Community Development in India: Its Problems  
and Its Future," Social Action, Roona, India,  
1963; Adoption of Agricultural Practices in  
Madhya Pradesh (India), National Institute of  
Community Development, Hyderabad, India,  
1964; Numerous publications dealing with  
problems of developing societies and with  
national programs of rural development.

Foreign experience: India, Korea, Philippines,  
Nigeria, Australia, Oceania



Name: VLACHOS Evan  
Last First

Date of birth: 1935 November  
Year Month

Degrees held, with granting institutions, date received:

<u>Degree</u>	<u>Institution</u>	<u>Date Received</u>
LL.B.	University of Athens	1959
M.A. in Sociology	Indiana University	1962
Certificate of Russian Studies	Russian and East European Institute Indiana University	1964
Ph.D. in Sociology	Indiana University	1964

Academic employment (prior to C.S.U.), include assistantships, temporary appointments, etc.

Teaching Assistant, Department of Sociology, Indiana University, 1961-1963

Assistant Professor of Sociology, Pierce College, Athens, Greece, 1964-1966

(Chairman, Department of Sociology, Pierce College, 1965-1966)

Lecturer, Maryland University, European Division, 1965-1966.

Assistant Professor of Sociology, University of Colorado, Boulder, 1966-1967

Evan Vlachos (continued)

**Membership in professional societies (regional and/or national) and dates:**

<u>Name of society</u>	<u>Date</u>
American Sociological Association	1966
American Academy of Political and Social Science	1967
Rocky Mountain Social Science Association	1967
American Association for the Advancement of Slavic Studies	1968
Center of Neo-Hellenic Studies, University of Texas	1967

**Membership on professional committees (regional and/or national) and dates:**

<u>Name of committee and society</u>	<u>Date</u>
Subcommittee on Liaison with East European Sociologists, Committee on International Cooperation (Am. Soc. Assoc.)	1967 -

**Area of teaching specialization (rank in order of your preference):**

1. Methodology
2. Demography and Urban Studies
3. Comparative Social Structure

Other

Russian and East European Societies

**Research experience throughout professional career**

<u>Title of project</u>	<u>Role on project</u>	<u>Sponsoring organization</u>	<u>Date</u>
Population Change in Developing Areas	Research Associate	International Research Center, Indiana University	1963-64
Leisure Time Study	Research Associate	Athenian Institute of Anthropology, Athens, Greece	1964-66
Recent Greek Emigration	Research Director	Social Sciences Center and Greek Govt., Athens, Greece	1964-66
Regional Development of the island of Lesbos, Greece	Research Consultant	Greek Government	1965
The Greater Athens Master Plan	Research Associate	Town Planning Division of Greater Athens and Greek Government	1965-67
Juvenile Delinquency Demonstration Project	Research Associate and Action Program Supervisor	U.S. Dept. of Health, Education, and Welfare, Office of Juvenile Delinquency and Youth Development	1966-67
New Community Development Criteria	Research Specialist	Department of Housing and Urban Affairs	1968

**Areas of research specialization (in rank order of your preference):**

1. Urban Studies
2. Demography and Population Analysis
3. Southeastern Europe

Other

**Professional experience (e.g. consulting, teaching, research, etc.) in cultures outside the U.S., indicate nation and date:**

<u>Type of experience</u>	<u>Nation</u>	<u>Date</u>
Research	Greece	1964-66
Consulting	Greece	1964-66
Teaching	Greece	1964-66

July 1970 - June 1971

Section III. Publications Added to Library

DAWS-PAKISTAN NEWSPAPER

REGIONAL DEVELOPMENT BANK

PUBLIC ADMINISTRATION IN PAKISTAN: A CRITICAL APPRAISAL  
AND AN OUTLOOK FOR THE FUTURE, M. A. A.

DEVELOPMENT ADMINISTRATION IN DEVELOPING ASIA: A COMPARATIVE STUDY  
OF THE ADMINISTRATION OF RICE PRODUCTION IN INDONESIA, SOUTH KOREA,  
THE PHILIPPINES AND THAILAND, M. A. A.

INSTITUTION BUILDING IN AN EMERGING NATION: PAKISTAN, H. W. W. W.

SECTION III

FINAL REPORT ON TECHNICAL ASSISTANCE TO THE EAST PAKISTAN WATER  
AND POWER DEVELOPMENT AUTHORITY, M. A. A.

PUBLICATIONS ADDED TO LIBRARY

APPENDIX TO FINAL REPORT ON TECHNICAL ASSISTANCE TO THE EAST  
PAKISTAN WATER AND POWER DEVELOPMENT AUTHORITY, M. A. A.

DURING 1970-71 FISCAL YEAR

THE TRAINING OF OFFICERS AND VILLAGERS FOR RURAL DEVELOPMENT,  
Khan, Akhtar Hamid

BUILDING INSTITUTIONS TO SERVE AGRICULTURE, M. A. A.

THE UNIVERSITY-URBAN RELATIONSHIP, M. A. A.

REVENUE MANUAL, Public Works Dept., Punjab, Irrigation Branch  
Peshawar: West Pakistan Government Press

INSTITUTIONAL FACTORS LIMITING PROGRESS IN THE LESS DEVELOPED  
COUNTRIES, Long, Ervin J.

PLANNING, DEVELOPMENT AND CHANGE: A BIBLIOGRAPHY OF DEVELOP-  
MENT ADMINISTRATION, Ali, Jones, Barber and Chambers

JUDICIAL CONTROL OF ADMINISTRATIVE ACTION IN INDIA AND PAKISTAN  
(A COMPARATIVE STUDY OF PRINCIPLES AND REMEDIES), M. A. A.

PUBLIC ADMINISTRATION TRAINING IN PAKISTAN, A CRITICAL APPRAISAL,  
Abbas, M. B. A.

### Section III. Publications Added to Library During 1970-71 Fiscal Year

Each publication is given a catalog number as it is added to the

library. The categories are listed below:

Administration

Miscellaneous

Agriculture

Operations, Research

Economics

Political Science

Education

Sociology

Engineering

Soils

Government of Pakistan

University of  
Pakistan

Industry

Water Resources

Literature

Viet Nam

A complete listing of publications added during the 1970-71  
fiscal year is included in the remainder of this section.

**WATER MANAGEMENT LIBRARY Additions**

**July 1970 - June 1971**

**DAWN-PAKISTAN NEWSPAPER, 1 year's subscription**

**REGIONAL DEVELOPMENT BANKS; Singh, Manmohan**

**PUBLIC ADMINISTRATION TRAINING IN PAKISTAN: A RESTROSPECT  
AND AN OUTLOOK FOR THE FUTURE; Abbas, M. B. A.**

**DEVELOPMENT ADMINISTRATION IN SOUTHEAST ASIA: A COMPARATIVE STUDY  
OF THE ADMINISTRATION OF RICE PROGRAMS IN INDONESIA, SOUTH KOREA,  
THE PHILIPPINES AND THAILAND; Gable, Richard**

**INSTITUTION BUILDING IN AN EMERGING NATION: PAKISTAN; Bjur, Wesley E.**

**FINAL REPORT ON TECHNICAL ASSISTANCE TO THE EAST PAKISTAN WATER  
AND POWER DEVELOPMENT AUTHORITY; Dept. Water Resources, The  
Resources Agency, State of California**

**APPENDIX TO FINAL REPORT ON TECHNICAL ASSISTANCE TO THE EAST  
PAKISTAN WATER AND POWER DEVELOPMENT AUTHORITY, Dept. Water  
Resources, The Resources Agency, State of California**

**THE TRAINING OF OFFICERS AND VILLAGERS FOR RURAL DEVELOPMENT;  
Khan, Akhter Hameed**

**BUILDING INSTITUTIONS TO SERVE AGRICULTURE; Baldwin, I. L.**

**THE UNIVERSITY-USAID RELATIONSHIP; Lee, Gordon C.**

**REVENUE MANUAL, Public Works Dept., Punjab, Irrigation Branch  
Peshawar: West Pakistan Government Press**

**INSTITUTIONAL FACTORS LIMITING PROGRESS IN THE LESS DEVELOPED  
COUNTRIES; Long, Erven J.**

**PLANNING, DEVELOPMENT AND CHANGE: A BIBLIOGRAPHY ON DEVELOP-  
MENT ADMINISTRATION; Ali, Jones, Barber and Chambers**

**JUDICIAL CONTROL OF ADMINISTRATIVE ACTION IN INDIA AND PAKISTAN  
(A COMPARATIVE STUDY OF PRINCIPLES AND REMEDIES); Fazal, M. A.**

**PUBLIC ADMINISTRATION TRAINING IN PAKISTAN, A CRITICAL APPRAISAL;  
Abbas, M. B. A.**



**WATER RESOURCE MANAGEMENT ( A COURSEBOOK IN LAW AND POLICY);**  
Meyers, Charles J. and Tarlock, A. Dan

**FERTILIZER TRIALS IN FARMERS' FIELDS; Wahhab, A.**

**CERES, FAO Review**

**REPORT OF THE JOINT PAKISTAN-AMERICAN AGRICULTURAL RESEARCH TEAM; Qureshi, Hashmi, Parker, Badruddoza, Moseman, Price, Konnerup**

**THE INTERNATIONAL RICE RESEARCH INSTITUTE ANNUAL REPORT 1968;**  
The International Rice Research Institute, Los Banos, Laguna, Philippines

**THE RESEARCH REPORTS OF THE OFFICE OF RURAL DEVELOPMENT;**  
Office of Rural Development, Ministry of Agriculture and Forestry, Suwon, Korea

**PLAN OF WORK 1966- NIGERIA PROJECT; Colorado State University, Ministry of Agriculture, GOEN**

**A PARTNERSHIP TO IMPROVE FOOD PRODUCTION IN INDIA; Streeter, Carro**

**AID AND ITS AGRO-INDUSTRY PROGRAM; Kust, Matthew J.**

**BORGIO A MOZZANO AND THE WORLD BEYOND: RURAL DEVELOPMENT PROJECTS IN OTHER COUNTRIES INSPIRED BY THE PRINCIPLES ESTABLISHED IN TUSCANY BY SHELL ITALIANS S. P. A.; Cox, I. H.**

**WORLD WAR ON HUNGER; Hearings before the Committee on Agriculture, House of Representatives, 89th Congress**

**RECENT AGRICULTURAL CHANGE EAST OF MOUNT KENYA; Bernard, Frank E.**

**THE AGRICULTURAL DEVELOPMENT COUNCIL; Report for 1969**

**POSSIBILITIES FOR CEREAL FORTIFICATION; Rosenfield, Gershoff and Schert**

**THE PUEBLA PROJECT; Bruner, Richard**

**BUILDING AGRICULTURAL RESEARCH SYSTEMS IN THE DEVELOPING NATIONS;**  
Moseman, Albert

**JOBS AND AGRICULTURAL DEVELOPMENT; Shaw, Robert A.**

**WEED CONTROL PROJECT; Second Annual Progress Report**

WHEAT IN TURKEY; USAID, Turkey, March 1969

RICE IN SOUTH VIETNAM; USAID, Vietnam, March 1969

RICE IN THE PHILIPPINES; USAID, Philippines, March 1969

LAND REFORM, THE ECONOMIC CASE FOR LAND REFORM; Dorner and Kanel

LAND REFORM, POLITICAL DIMENSIONS OF LAND REFORM; Huntington, Samuel

LAND REFORM, COLONIZATION AS AN ALTERNATIVE TO LAND REFORM;  
Domike, Arthur

LAND REFORM, URBANIZATION AS AN ALTERNATIVE TO LAND REFORM;  
Bachmura, Frank

LAND REFORM ECONOMIC RESULTS OF LAND REFORM, Dovering Folke

THE CRITICAL PERIOD OF APPLYING IRRIGATION WATER TO WHEAT;  
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