

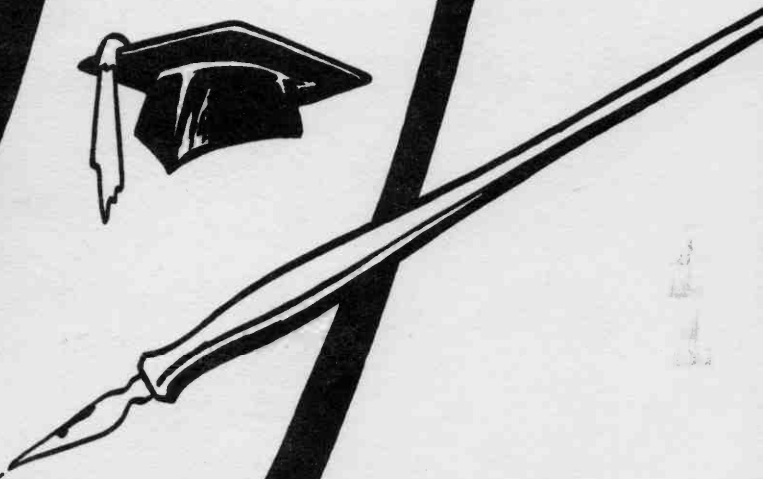
**PUBLICATIONS
OF THE FACULTY
AND STAFF**

**College of
Agriculture**

The University of Arizona
Tucson, Arizona



Series P-18



Publications of the Faculty and Staff

COLLEGE OF AGRICULTURE

(From July 1, 1969
to
June 30, 1970)

Published by
Agricultural Experiment Station
and
Cooperative Extension Service

P-18

THE UNIVERSITY OF ARIZONA

INTRODUCTION

These publications of the faculty and staff of The University of Arizona College of Agriculture reflect some of our college's efforts in three major areas:

1. Training future agriculturists, agri-businessmen, home economists, and others who need agricultural knowledge.
2. Research, both basic and applied, aimed at improving the conditions under which man lives.
3. Direct service to the people of Arizona.

The three areas of endeavor function as one. Basic research, largely theoretical, often builds steps that lead to applied research with practical results. What the Agricultural Experiment Station learns in the laboratories and in the fields frequently moves quickly into our classrooms through Resident Instruction. Likewise, through teamwork, the same knowledge is harnessed in direct service to man by the Cooperative Extension Service.

While this is not a complete listing of publications for the year cited (thousands of articles printed in newspapers, popular magazines and other publications are not included), it does show commendable efforts by our faculty and staff.

The basic purpose of this publication is to provide a reference point for scholars still probing the frontiers of knowledge.

Harold E. Myers

Harold E. Myers, Dean
College of Agriculture, and
School of Home Economics



Dean Myers

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COLLEGE OF AGRICULTURE

PUBLICATIONS COMPLETED

From July 1, 1969 to June 30, 1970

AGRICULTURAL BIOCHEMISTRY

Publications During the Year

A. Books and Monographs

None.

B. Chapters in Books

None.

C. Articles

Altenburger, E. R., Berry, J. W., and Deutschman, A. J., Jr.
"Synthesis of Methyl Stercolate," Journal of the American Oil Chemists' Society, 47 (September, 1969), 77-78.

Ashby, C. T., Berry, J. W., and Deutschman, A. J., Jr.
"A Variable-Volume Silver Liner For High Pressure Hydrothermal Crystal Growth," Accepted for publication in American Mineralogist, (November, 1969).

Bemis, W. D., Berry, J. W., Deutschman, A. J., Jr., Reid, B. L., and Weber, C. W.
"Protein Evaluation of Two Species of Curcubita Seeds," Proceedings of the Society of Experimental Biology and Medicine, 130 (1969), 761-764.

Berry, J. W., and Deutschman, A. J., Jr.
"Growth of Cactus Seeds," Accepted for publication in Cactus and Succulent Journal, (February, 1970).

Berry, J. W., Deutschman, A. J., Jr., Reid, B. L.
"Studies on Carbon-14 Tagged Fatty Esters," Poultry Science, 48 (November 1969), 2182-2184.

Hariharasubramanian, V., Zaitlin, M., Siegel, A.
"A Temperature-Sensitive Mutant of TMV with Unstable Coat Protein," Virology, 40 (March, 1970), 579-589.

Hefferan, P. M., Goodnight, K. C.

"Determining Glucose and Glycogen from a Single Sample of Meat," Journal of Food Science, 34 (1969), 353-4.

Jaworski, A., Whitfeld, P. P., Siegel, A.

"Characterization of Chloroplast DNAs of Higher Plant Species," Biochimica Biophysica Acta (submitted).

Kircher, Henry W.

"The Distribution of Sterols, Alkaloids and Fatty Acids in *Senita Cactus Lophocereus Schottii* (Englemann) Britton and Rose, Over Its Range in Sonora, Mexico," Phytochemistry, 8 (1969), 1481-1488.

Kircher, Henry W.

"Sterols in the Leaves of the *Cheirodendron gaudichaudii* Tree and Their Relationship to Hawaiian *Drosophila*," Ecology, Journal of Insect Physiology, 15 (1969), 1167-1173.

Matsuda, K., Siegel, A., Lightfoot, D.

"Variability in Complementarity for Chloroplastics and Cytoplasmic Ribosomal Ribonucleic Acids Among Plant Nuclear Deoxyribonucleic Acids," Plant Physiology, 45 (in press).

Miller, A. M, Sheehan, E. T., Vavich, M. G.

"Prenatal and Postnatal Mortality of Offspring of Cyclopropenoid Fatty Acid-Fed Rats," Proceedings of the Society for Experimental Biology and Medicine, 131 (1969), 61-66.

Rappaport, I., Zaitlin, M.

"Conformational Changes in the Antigenic Determinant of Tobacco Mosaic Virus Protein Resulting from Polymerization of the Sub-Units," Virology, 41 (June, 1970).

Smith, M. R., McCaughey, W. F., Kemmerer, A. R.

"Biological Aspects of Honey," Journal of Agricultural Research, 8 (2), (1969), 99-110.

Zaitlin, M., Hariharasubramanian, V.

"An Improvement in a Procedure for Counting Tritium and Carbon-14 in Polyacrylamide Gels," Analytical Biochemistry, (May or June, 1970).

Zaitlin, M., Hariharasubramanian, V.

"Proteins in Tobacco Mosaic Virus - Infected Tobacco Plant," Biochemical and Biophysical Research Communications, (June, 1970).

D. Monographs in a Series

None.

E. Papers Presented (Unpublished)

Goldberg, R., D. Lightfoot, W. Bemis and A. Siegel
Taxonomic Significance of the Genomic Content of DNA Complementary to Ribosomal RNA. Paper presented at Pacific Slope Biochemical Conference, La Jolla, California, June 23-25, 1970.

Kemmerer, A. R.
Effect of Extraction Procedures on Stability of Safflower Oil. Paper presented at 61st Annual Meeting of American Oil Chemists' Society, New Orleans, April, 1970.

Kircher, Henry W., Goodnight, Kenneth C.
Utilization and Metabolism of Sterols in Drosophila. Paper presented at 61st Annual Meeting of American Oil Chemists' Society, New Orleans, April, 1970.

McCaughey, W. F.
Biochemistry of Enzymes. Talk presented to Salpointe High School Chemistry Class, May 5, 1970.

Ratajczak, Helen V.
Tissue Culture. Talk and film presented to Salpointe High School Senior Chemistry Class, May 8, 1970.

Siegel, A. and Rosella Huber
Complementary Regions to TMV-RNA Present in Host DNA. Paper presented at Pacific Slope Biochemical Conference, La Jolla, California, June 23-25, 1970.

Stanfield, Alice B.
Tissue Cell Culture as an Investigative Tool in Rheumatoid Arthritis. Paper presented to the Agricultural Faculty Club, University of Arizona, December, 1969.

Stanfield, Alice B.

During the time Mrs. Stanfield was on sabbatical leave, she presented papers and showed films of the research on rheumatoid arthritis at the following places:

Oxford University, England.

Red Cross Canadian Hospital, now a Research Center at Taplow.
Trudeau Research Institute, Saranac Lake, New York.

Stanfield, Alice B.

Tissue Culture Techniques in the Study of Rheumatoid Arthritis. Paper presented at American Medical Laboratory Association Meeting at College of Medicine, University of Arizona, Tucson, May, 1970.

Thornburg, William and A. Siegel

Repeated Sequences in the DNA of Higher Plants. Paper presented at the Pacific Slope Biochemical Conference, La Jolla, California, June 23-25, 1970.

Zaitlin, Milton and V. Hariharasubramanian
Proteins in Tobacco Mosaic Virus and Potato Spindle Tuber Virus
Infected Plants. Paper presented at Pacific Division Meeting,
A.A.A.S., Berkeley, California, June 21-25, 1970.

Zaitlin, Milton and R. G. Jensen
Photosynthetic CO₂ Fixation and Other Metabolic Activities
of Isolated Tobacco Cells. Paper presented at Pacific Division
Meeting A.A.A.S., Berkeley, California, June 21-25, 1970.

F. Abstracts

None.

G. Book Reviews

None.

AGRICULTURAL CHEMISTRY AND SOILS

Publications During the Year

A. Books and Monographs

None.

B. Chapters in Books

None.

C. Articles

Bohn, H. L.

"The EMF of platinum electrodes in dilute solutions and its relation to soil pH." Soil Sci. Soc. Am. Proc. 33 (1969), 639-640.

Bohn, H. L., D. B. Fenn, and W. J. Moore.

"Electrode potentials of nitrogen and sulfur half-reactions." Soil Sci. 108 (1969), 95-101.

Bohn, H. L., and M. Peech.

"Phosphatoiron (III) and phosphatoaluminum complexes in dilute solutions." Soil Sci. Am. Proc. 33 (1969), 873-875.

Bohn, H. L.

"Comparisons of measured and theoretical Mn^{++} concentrations in soil suspensions." Soil Sci. Am. Proc. 34 (1970), 195-197.

Enfield, C. G., and D. D. Evans

"Conductivity instrumentation for In Situ Measurement of Soil Salinity." Soil Sci. Soc. Am. Proc. 33 (Sept-Oct., 1969), 787-789.

Fuller, W. H., and M. F. L'Annunziata

"Movement of Algal- and Fungal-Bound Radiostrontium as Chelate Complexes in a Calcareous Soil." Soil Sci. 107 (1969), 223-230.

Moench, A. F., and Evans

"Real Thermal Conductivity and Diffusivity of Soil Using a Cylindrical Heat Source." Soil Sci. Soc. Am. Proc. 34 (May-June, 1970).

Qashu, H. K.

"Infiltration and Water Depletion Coefficients in Lysimeters." Soil Sci. Soc. Proc. 33 (1969) 775-778.

Qashu, H. K., and F. Lyford

"Infiltration rates as affected by desert vegetation." Water Resources Res. 5 (1969) 1373-1376.

Qashu, H. K., and D. D. Evans

"Practical Implications of Water Repellency of Soils." Prog. Agr. 21 (1969) 3-5.

Warrick, A. W., and Don Kirkham
"Two-Dimensional Seepage of Ponded Water to Full Ditch Drains."
Water Resources Res. 5 (June-July 1969), 685-693.

D. Monographs in a Series

None.

E. Papers Presented (Unpublished)

Bohn, H. L.

"Inorganic Phosphate Ion Species in Natural Waters"
Western Phosphate Work Group, Riverside, California, March 19-20,
1970.

Evans, D. D. and Harshbarger, J. W.
Curriculum Development in Hydrology. Int. Seminar for Hydrology
Professors, Urbana, Illinois, July 13-25, 1969.

Evans, D. D. and Warrick, A. W.
Time in Transient of Water Moving Vertically for Ground Water
Recharge. Symposium on Grand Water Salinity, AAAS, Las Vegas,
New Mexico, May, 1970.

Gardner, B. R.
Petiole Analysis and Nitrogen Nutrition of Cantaloupe.
Western Growers Association, Phoenix, October 30, 1969.

Gardner, B. R.
Nitrogen Fertilization of Lettuce. Wellton-Mohawk Growers,
Wellton, Arizona, January 28, 1970.

Chesnin, L, and G. V. Johnson
The Effects of Soil Moisture and Temperature on the Release of
Copper and Zinc. Amer. Soc. of Agron. Annual meetings, Detroit,
Michigan, November, 1969.

G. V. Johnson and L. Chesnin.
The Effects of Soil Moisture and Temperature on the Release of
Iron and Manganese. Amer. Soc. of Agron. Annual meetings,
Detroit, Michigan, November 1969.

Warrick, A. W.
A Mathematical Solution to a Hillside Seepage Problem.
Amer. Soc. of Agron. Meetings, Detroit, Michigan, November 1969.

Warrick, A. W. and D. D. Evans.
Measurement of Soil Water. Abiotic Meeting of Desert Biome, IBP,
Tucson, March, 1970.

Williford, J. W., T. C. Tucker and R. L. Westerman.
Movement of Nitrogenous Fertilizers through Soil Columns.
National Fall Meetings, Amer. Geophysical Union, San Francisco,
California, 1969.

F. Abstracts

Chesnin, Leon, and Gordon V. Johnson.

"The Effects of Soil Moisture and Temperature on Release of Copper and Zinc." Agron. Abs., Nov. 1969.

Evans, D. D., and A. W. Warrick.

"Time in Transient of Water Moving Vertically for Ground Water Recharge," Abstracts: 46th An. Meetings of SW and Rocky Mountain Div. of AAAS, Las Vegas, N.M., April 24, 1970.

Macgregor, A. N.

"Amount of Chemically Extracted ATP from Intact Fungi and an Actinomyceete." Bact. Proc., 1970 (A91, p. 14).

Shaffer, M. J., Dutt, G. R., and W. J. Moore

"Predicting Changes in Nitrogenous Compounds in Soil-swater Systems," Tran. Am. Geophysical Union, 1969 (50:611).

Warrick, A. W.

"A Mathematical Solution to a Hillside Seepage Problem," Agron. Abs., Nov., 1969.

Williford, J. W., T. C. Tucker and R. L. Westerman.

"Movement of Nitrogenous Fertilizers through Soil Columns," Trans. Amer. Geophys. Union V50, No. 11, Nov. 1969 (Abstract No. H-20).

G. Book Reviews

Warrick, A. W.

Review of Physical Principles of Water Percolation and Seepage by J. Bear, D. Zaslavsky, and S. Irmay. Soil Sci. Soc. of Amer. Proc., 32 (Nov.-Dec., 1968), iv.

AGRICULTURAL ECONOMICS

Publications During the Year

A. Books and Monographs

Angus, Robert C.
Alfalfa Hay Baling and Cubing Costs in Arizona and New Mexico.
New Mexico State University: Western Regional Bulletin, April,
1970. With J. D. Canaday, G. M. Burke, and J. R. Gray.

Fox, Roger W.
Multi-County Development Areas in Arizona. Experiment Station
Report in progress. With Alan R. Gozner.

Riggs, James F.
Arizona Citrus and Grape Acreage, by Type and Age Group.
Phoenix, Arizona: The University of Arizona, College of
Agriculture, and Statistical Reporting Service, U.S.D.A., 1969.
(The survey was made in the fall and winter of 1968-69, and
published June 1969. A follow-up survey was conducted in the
fall and winter of 1969-70, and data will be updated and
published in June 1970.)

Wildermuth, John R.
The Arizona Farm Management Game, Central Arizona Farms,
Participants' Manual. Tucson, Arizona: University of Arizona,
Department of Agricultural Economics, September 1969.

B. Chapters in Books

None.

C. Articles

Angus, Robert C.
"Consumer Attitudes toward Filled Milk Substitutes," Proceedings
Forty-Second Annual Meeting Western Agricultural Economics
Association (July 1969). With J. W. Stull.

Angus, Robert C.
"Consumer Attitudes toward Milk Substitutes," American Journal of
Agricultural Economics, Vol. 51, No. 5 (December 1969).
With J. W. Stull.

Angus, Robert C.
"Consumer Attitudes toward Milk Substitutes," Progressive
Agriculture in Arizona, Vol. XXI, No. 4 (July-August 1969).
With J. W. Stull.

Angus, Robert C.

"Cost and Profit Comparisons of Baling and Cubing Alfalfa Hay," Progressive Agriculture in Arizona (forthcoming). With D. M. Newman.

Firch, Robert S.

"Government Payment Limitations: A Threat to the Agriculture of Arizona and Especially That of Pinal County," Progressive Agriculture in Arizona, Vol. XXI, No. 5 (September-October 1969), pp 6-7.

Firch, Robert S.

"Indications of Relative Efficiency in Growing Cotton in Major Cotton Growing States and the Counties of Arizona," Progressive Agriculture in Arizona, Vol. XXII, No. 1 (January-February 1970), pp. 2-5.

Fox, Roger W.

"Agricultural Bargaining Power: Myth and Reality," Agricultural Bargaining, Resource Report 11, University Extension, University of Wisconsin (July 1969), pp. 21-27.

Fox, Roger W.

"Arizona Citrus Acreage: Approaching 50,000!," Progressive Agriculture in Arizona, Vol. XXI (September-October 1969), pp. 14-15, 24.

Fox, Roger W.

"Intraseason Transportation Models: An Application to Fresh Grapefruit," Proceedings 1969, Western Agricultural Economics Association, Forty-Second Annual Meeting (July 20-22, 1969), pp. 71-75. With James E. Ramey.

Fox, Roger W.

"The Use of Debates and Oral Examinations in Teaching Agricultural Policy," NACTA Journal, Vol. 13 (December 1969), pp. 82-83.

Gum, Russell L.

"Hedging on the Live Cattle Futures Contract," Proceedings of 1969 Western Agricultural Economics Association Annual Meeting (forthcoming). With John R. Wildermuth.

Gum, Russell L.

"On Institutional Obsolescence and Innovation; Background for Professional Dialogue on Public Policy--Not a Comment but a Challenge," Fourteen Variations on a Theme, University of Missouri (August 1969). With John R. Wildermuth and William E. Martin.

Gum, Russell L.

"Profits: Feeder Calves or Feeder Steers," Western Livestock Journal, Vol. 47 (March 1969), pp. 12-16. With John R. Wildermuth.

Hillman, Jimmye S.

"Problems of Agri-Management," Arizona Farmer-Ranchman, Vol. 49, No. 3 (February 7, 1970), pp. 22-24.

Hillman, Jimmye S.

"Role of Irrigation in the West's Expanding Economy."

A discussion of a paper by Floyd E. Dominy, published in the Journal of the Irrigation and Drainage Division, Proceedings of the American Society of Civil Engineers, Discussion of Proceedings Paper 6930 (IR4) (December 1969), pp. 611-616. With M. M. Kelso, W. E. Martin, and R. A. Young.

Kelso, Maurice M.

"Role of Irrigation in the West's Expanding Economy," Journal of the Irrigation and Drainage Division, Proceedings of the American Society of Civil Engineers, Discussion of Proceedings Paper 6930 (IR4) (December 1969), pp. 611-616. With J. S. Hillman, W. E. Martin, and R. A. Young.

Menzie, Elmer L.

"Developments in Production and Consumption of Livestock and Meat in the World," Progressive Agriculture in Arizona, Vol. XXII, No. 2 (March-April 1970).

Menzie, Elmer L.

"Developments in International Trade in Red Meat," Progressive Agriculture in Arizona (forthcoming).

Menzie, Elmer L.

"Agriculture in a Changing Environment," Progressive Agriculture in Arizona (forthcoming)

Menzie, Elmer L.

"Restructuring Forces in Agricultural Development," Proceedings Western Agricultural Economics Research Council (1969).

Wildermuth, John R.

"Considerations for More Effective Management," Proceedings of the 1970 Western Cotton Production Conference (forthcoming).

Wildermuth, John R.

"Costs and Returns for Arizona General Crop Farms," Progressive Agriculture in Arizona, Vol. XXI (September-October 1969), pp 22-23. With William E. Martin.

Wildermuth, John R.

"Hedging on the Live Cattle Futures Contract," Proceedings of 1969 Western Agricultural Economics Association Annual Meeting (forthcoming). With Russell L. Gum.

D. Monographs in a Series

Day, John C.

An Activity Analysis of Nonstructural Floodplain Management Alternatives. Madison, Wisconsin: The University of Wisconsin, Water Resources Center, September 1969 (Technical Report OWRR B-00Z-WIS).

Firch, Robert S.

Upland Cotton Allotments in Arizona and Potential Effects of Government Payment Limitations. Tucson, Arizona: The University of Arizona, Department of Agricultural Economics, November 20, 1969 (Mimeograph Report).

Firch, Robert S.

Appendix A - Upland Cotton Allotments in Arizona and Potential Effects of Government Payment Limitations - Maricopa County. Tucson, Arizona: The University of Arizona, Department of Agricultural Economics, November 20, 1969 (Mimeograph Report).

Firch, Robert S.

Appendix B - Upland Cotton Allotments in Arizona and Potential Effects of Government Payment Limitations - Pinal County. Tucson, Arizona: The University of Arizona, Department of Agricultural Economics, November 20, 1969 (Mimeograph Report).

Firch, Robert S.

Appendix C - Upland Cotton Allotments in Arizona and Potential Effects of Government Payment Limitations - Yuma County. Tucson, Arizona: The University of Arizona, Department of Agricultural Economics, November 20, 1969 (Mimeograph Report).

Firch, Robert S.

Appendix D - Upland Cotton Allotments in Arizona and Potential Effects of Government Payment Limitations - Cochise and Graham Counties. Tucson, Arizona: The University of Arizona, Department of Agricultural Economics, November 20, 1969 (Mimeograph Report).

Riggs, James F.

Arizona Agricultural Statistics 1970. Phoenix, Arizona: The University of Arizona, College of Agriculture and Statistical Reporting Service, U.S.D.A., 1970 (Bulletin No. S-5). With Paul M. Williamson et al.

Wildermuth, John R.

Costs and Returns Data for Representative General Crop Farms in Arizona. Tucson, Arizona: Arizona Agricultural Experiment Station Report 253, September 1969. With William E. Martin and Victor A. Rieck.

E. Papers Presented (Unpublished)

Day, John C.

"Economic Aspects of Water Pollution." Paper presented to the Conference on Law and the Environment, Air and Water Pollution, University of Arizona Law School, Tucson, April 23, 1970.

Day, John C.

"Mathematical Optimization in Nonstructural Flood Damage Control." Seminar paper presented to the Office of the Chief of the U.S. Army Corps of Engineers, Washington, D.C., September 5, 1969.

Day, John C.

"The McKee Report and Smelter Air Pollution: An Economic Evaluation." Paper presented to the Fourteenth Annual Meeting of the Arizona Academy of Science, Phoenix, Arizona, April 17-18, 1970.

Gum, Russell L.

"Management Decisions Involving Forward Marketing Alternatives." Paper presented to Great Plains and Western Outlook Conference, Durango, Colorado, July 30-31, 1969.

Hillman, Jimmye S.

"Social and Political Dilemma of the Agricultural Industry and Agricultural Institutions." Paper presented to the Western Agricultural Economics Association, Corvallis, Oregon, July, 1969. With Maurice M. Kelso.

Kelso, Maurice M.

"Social and Political Dilemma of the Agricultural Industry and Agricultural Institutions." Paper presented to the Western Agricultural Economics Association, Corvallis, Oregon, July, 1969. With J.S. Hillman.

Menzie, Elmer L.

"United States Food Air Programs." Paper presented to faculty and students, Department of Agricultural Economics, University of Reading, Reading, England, December, 1969.

Menzie, Elmer L.

"University of Arizona's Brazil Project." Paper presented in a seminar at the University of Newcastle Upon Tyne, England, November 1969.

Wildermuth, John R.

"Attitudes Relating to Farm Finance in the 70's and Their Potential Impact on the Farm Credit System." Paper presented at W-104, GP-5 Joint Annual Meeting, Denver, Colorado, June 16, 1970.

Wildermuth, John R.

"The Transition from an Idealized to an Industrialized Agriculture." Speech presented at the 1970 Coolidge FFA Parent and Son Banquet, Coolidge, Arizona, May 1, 1970.

F. Abstracts

Day, John C.

"The McKee Report and Smelter Air Pollution: An Economic Evaluation," Journal of the Arizona Academy of Science, Proceedings, Vol. 6, April 1970.

G. Book Reviews

None.

AGRICULTURAL EDUCATION

Publications During the Year

A. Books and Monographs

Hamilton, James B.
Occupational Opportunities and Training Needs for Agricultural Employment in Selected Areas of Arizona, Tucson: University of Arizona, 1969. Agricultural Experiment Station Report 255.

McCormick, Floyd G.
Guidelines and Standards for Arizona Cooperating Teachers of Agricultural Education, Tucson: University of Arizona, 1970.

McCormick, Floyd G., Editor
Two Year Core Curriculum for Agricultural Education in Arizona, Tucson: University of Arizona, 1969. Service Bulletin No. 12.

B. Chapters in Books

None.

C. Articles

Jacobs, Clinton O.
"Teacher Education for Agricultural Mechanization".
Agricultural Education, Vol. 42, No. 7, (January, 1970)
p. 182-183.

D. Monographs in a Series

Hamilton, James B.
Resource Unit on Supervised Occupational Experience Programs for Core Curriculum. Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 17). With R. C. Sawyer and D. M. Parker.

Jacobs, Clinton O.
Resource Unit on Construction and Maintenance Skills for Core Curriculum. Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 11). With R. C. Sawyer.

Jacobs, Clinton O.
Resource Unit on Power and Machinery for Core Curriculum. Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 12). With R. C. Sawyer.

Jacobs, Clinton O.
Resource Unit on Electric Power for Core Curriculum. Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 13). With R. C. Sawyer.

McCormick, Floyd G.

Resource Unit on Farm-Firm Records for Core Curriculum. Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 14). With R. C. Sawyer.

Staff.

Resource Unit on Livestock Selection for Core Curriculum. Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 1

Staff.

Resource Unit on Livestock Health for Core Curriculum. Tucson, Arizona: University of Arizona, 1970, (Resource Unit No. 2).

Staff.

Resource Unit on Livestock Feeding for Core Curriculum. Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 3).

Staff.

Resource Unit on Livestock Production Management for Core Curriculum. Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 4).

Staff.

Resource Unit on Plant Growth and Development for Core Curriculum. Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 5

Staff.

Resource Unit on Plant Diseases for Core Curriculum. Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 6).

Staff.

Resource Unit on Insects for Core Curriculum. Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 7).

Staff.

Resource Unit on Weeds for Core Curriculum. Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 8).

Staff.

Resource Unit on Plant Production Management for Core Curriculum. Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 9).

Staff.

Resource Unit on Soils for Core Curriculum. Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 10).

Staff.

Resource Unit on FFA Organization for Core Curriculum. Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 15).

Staff.

Resource Unit on Personal Development Through FFA for Core Curriculum. Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 16).

Staff.

Resource Unit on Career Opportunities for Core Curriculum.
Tucson, Arizona: University of Arizona, 1970 (Resource Unit No. 18).

E. Papers Presented (Unpublished)

McCormick, F. G.

New Ideas, Projects and Plans in Vocational Teacher Education at the University of Arizona. Paper presented at the 1969 Arizona RCU Seminar. Casa Grande, Arizona, October 9, 1969.

McCormick, F. G.

Revising the Teacher Education Program to Meet Modern Needs. Paper presented at the 1969 American Vocational Association Convention. Boston, Mass., December 8, 1969.

McCormick, F. G.

A Concept of an Articulated Instructional Program in Agricultural Education. Paper presented at the Pacific Regional Seminar on Agricultural Education. Phoenix, Arizona, April 29, 1970.

F. Abstracts

Amator, Fred L.

"A Model Concept for Utilizing Land-Livestock Laboratories", Summaries of Studies in Agricultural Education, Research Committee, Agricultural Education Division, American Vocational Association.

Garver, Dan E.

"Factors Associated with Students Dropping From and Staying in Vocational Agricultural Programs", Summaries of Studies in Agricultural Education, Research Committee, Agricultural Education Division, American Vocational Association.

Williams, James E.

"Comparison of Major Area Problems by Leaders in Apache and Navajo Counties, Arizona," Summaries of Studies in Agricultural Education, Research Committee, Agricultural Education Division, American Vocational Association.

G. Book Review

None.

AGRICULTURAL ENGINEERING

Publications During the Year

A. Books and Monographs

Frost, K. R. (with C. H. Pair, W. W. Hinz, Crawford Reid)
Sprinkler Irrigation. Washington, D. C. Sprinkler Irrigation
Association 1969.

B. Chapters in Books

Harriott, B. L. (with E. S. Shepardson and R. E. Garrett)
"Lettuce Mechanization," in Fruit and Vegetable Harvest
Mechanization-Technological Implications. East Lansing,
Michigan. Rural Manpower Center, Michigan State University,
1969.

C. Articles

Barnes, Kenneth K.

"The Farm Labor Picture," Implement and Tractor, 84 (15)
(July 7, 1969), 13.

"Part Load Fuel Savings," Ibid., 84 (17) (August 7, 1969),
34.

"The Field Machine Index," Ibid., 84 (19) (September 7, 1969),
28.

"Magnetostriction," Ibid., 84 (21) (October 7, 1964), 32.

"The Status of No-Tillage Corn," Ibid., 84 (23) (November
7, 1969), 43.

"LP-Gas Overfueling for Diesel Engines," Ibid., 84 (25)
(December 7, 1969), 51.

"A New Kind of Market," Ibid., 85 (1) (January 7, 1970), 46.

"Coming: The Electric Compact," Ibid., 85 (4) (February 7,
1970), 27.

"The Quality Machine Operator," Ibid., 85 (6) (March 7, 1970),
18.

"A Grower's View," Ibid., 85 (9) (April 7, 1970), 63.

"Increasing Electric Motor Size on Farms," Ibid., 85 (11)
(May 7, 1970), 18.

"The Two Migrations," Ibid., 85 (13) (June 7, 1970), ___.

Barnes, Kenneth K. and Kenneth R. Frost

"Petroleum-Coke Heaters: Labor Requirements and Temperature Effects in Under-Tree and Between-Tree Placement." Proceedings of the First International Citrus Symposium. II (March, 1969), 525-528, University of California, Riverside.

Barnes, Kenneth K.

"What is Machinery Management," Summary Proceedings, Western Cotton Production Conference. (March 10-11, 1970), 17-18, National Cotton Council of America.

"Trends in Agricultural Engineering Curricula," Agricultural Engineering, 51 (4) (April, 1970), 230

Cannon, M. D. and G. D. Christenbury

"Precision Bedshaping and Planting for Cotton," Progressive Agriculture in Arizona, XXI (4) (July-August, 1969), 14-16.

Frost, K. R. (with G. W. Ware, et.al.)

Pesticide Drift, Part I: High Clearance versus Aerial Application of Sprays. Journal of Economic Entomology. 62 (4) (August, 1969), 840-843.

Pesticide Drift, Part II: Mist Blowers versus Aerial Application of Sprays. Ibid., 62 (4) (August, 1969), 844-846.

"Reclaiming Semi-Desert Land by Planting Perennials in Basins on Uncultivated Soils," Proceedings of CIGR (October, 1969), Baden-Baden, West Germany.

Harriott, B.L., R. E. Foster and J. H. Park

"Mechanisms, Culture, and Varieties for Selective Mechanical Cantaloupe Harvest," Transactions of the American Society of Agricultural Engineers, 13 (1) (January-February, 1970), 48-50.

Matlock, W. G.

"Small Diameter Wells Drilled by Jet-Percussion Method," Groundwater, 8 (1) (January-February, 1970), 6-9.

Matlock, W. G., D. D. Fangmeier, M. S. Leo and R. H. Hilgeman

"Subsurface Irrigation of Citrus," Progressive Agriculture in Arizona, 22 (3) (May-June, 1970).

Stapleton, H. N.

"Crop Production System Simulation," Transactions of the American Society of Agricultural Engineers, 13 (1) (January-February, 1970), 110-113.

D. Monographs in a Series

None.

E. Papers Presented (Unpublished)

Matlock, W. G.

"Solid State Control Devices for Poultry Housing," paper presented to the Annual Meeting, Arizona Poultry Federation, Tucson, Arizona, January 14, 1970.

"Mathematical Analysis of Groundwater Recharge," paper presented to the Annual Meeting, Pacific Region, ASAE. Bakersfield, California, February 12, 1970.

F. Abstracts

None.

G. Book Reviews

Wiersma, Frank

Review of Food Engineering Operations by J. G. Brennan and others. Choice, 6 (11) (January, 1970).

AGRONOMY

Publications During the Year

A. Books and Monographs

None.

B. Chapters in Books

None.

C. Articles

Briggs, Robert E.

"Narrow Row Spacing of Cotton," Beltwide Cotton Production Research Conferences - 1969 Proceedings, (1969), 102-103.
With Lloyd L. Patterson.

Buxton, D. R.

"Establishment of Perennial Forages. I. Subsequent Yields," Agronomy Journal, 62 (1970), 93-97. With W. F. Wedin.

Buxton, D. R.

"Establishment of Perennial Forages. II. Subsequent Root Development," Agronomy Journal, 62 (1970), 97-100.
With W. F. Wedin.

Day, A. D.

"Barley Production in Arizona," 1968 Barley Newsletter, 12 (March, 1969), 4. With R. K. Thompson.

Day, A. D.

"Don't Stress Your Wheat for Water," Progressive Agriculture in Arizona, 21 (September-October, 1969), 8-10. With Suhbawatr Intalap.

Dennis, R. E.

"Soybean Problems Told, Arizona Research Explained," Arizona Farmer Ranchman (November 1969).

Dennis, R. E.

"New Wheat Varieties Developed to Meet Arizona's Varied Needs," Arizona Farmer Ranchman (December 1969).

Dennis, R. E.

"Cotton's Growth, Full Story Told in New Bulletin," Arizona Farmer Ranchman (March 1970).

Dennis, R. E., et al.

"Phosphate Fertilization of Wheat," Annual publication of the National Council on Fertilizer Application, 1969.

Dennis, R. E.

"Evaluation of Tests to Predict Performance of Cottonseed," Proceedings of Beltwide Cotton Production Research Conference 1969, with L. L. Comer and Carl Hodges.

Dennis, R. E.

"Evaluation of Tests to Predict the Performance of Cottonseed," Proceedings American Society of Agronomy 1969, with L. L. Comer.

Dennis, R. E.

"Which Cotton Variety for Arizona in 1969?" Progressive Agriculture (January 1969) with Lee S. Stith and Warner D. Fisher.

Dennis, R. E.

"Agricultural Aspects of a Nuclear Powered Agro-Industrial Complex," Progressive Agriculture (July 1969), with J. W. Michel.

Dennis, R. E.

"Soybeans in Arizona," Soybean Digest, 1969.

Dennis, R. E.

"Growers Have Reversed the Harvest Trend," Cotton, a College of Agriculture Report, 1969 with C. R. Farr.

Dennis, R. E.

"Agronomists Suggest Varieties for Arizona Cotton Growers in 1969," California Farmer 1969, with L. S. Stith and W. D. Fisher.

Dennis, R. E.

"Records Back up Doubled Barley Yield" Western Livestock Journal 1969.

Dennis, R. E.

"Characteristics of Several Spring Wheat Varieties," University of California Agronomy Notes, 1969, with J. D. Prato.

Dennis, R. E.

"Feasibility of the Nuclear-Powered Agro-Industrial Complex," Thirteenth Arizona Academy of Science Meeting and Proceedings 1969.

Dennis, R. E.

"Agricultural Development in West Pakistan," Fourteenth Arizona Academy of Science Meeting and Proceedings 1970.

Dennis, R. E.

"Results of Adaptive Research in Arizona," Field Crop Production Handbook, (1969) 48 pp.

Dobrenz, A. K.

"Stomate Density and Its Relationship to Water-Use Efficiency of Blue Panicgrass (Panicum antidotale Retz.)," Crop Science, 9 (1969), 354-357. With L. Neal Wright, A. B. Humphrey, M. A. Massengale, and W. R. Kneebone.

Dobrenz, A. K.

"Efficiency of Water-Use and Seedling Drouth Tolerance of Boer Lovegrass (Eragrostis curcula Nees.)," Crop Science, 10 (January-February, 1970), 1-3. With L. Neal Wright.

Dobrenz, A. K.

"Yield and Protein Production of Alfalfa Cultivars," Progressive Agriculture in Arizona, XXI (May-June, 1969), 4-5, 20. With M. H. Schonhorst and R. K. Thompson.

Dobrenz, A. K.

"Stomate Density of Alfalfa (Medicago sativa L.)," Crop Science, 10 (January-February, 1970), 61-63. With D. F. Cole.

Hamilton, K. C.

"Directed Applications of Herbicides in Irrigated Cotton," Weed Science, 18 (1970), 85-88. With H. F. Arle.

Jackson, E. B. and F. M. Carasso

"Relationship of Date of Planting and Date of Harvest to Incidence of Disease, Stand Survival, Yield and Sugar Content of Sugarbeets at Yuma, Arizona", Journal of the American Society of Sugar Beet Technologists, 15, 6, (July 1969) 528-537.

Kneebone, W. R.

"Differential Responses of Cynodon dactylon (L.) Pers. Selections to Three Herbicides," Crop Science, 9 (Sept.-Oct., 1969), 599-601. With L. G. Anderson.

Kneebone, W. R.

"Stomate Density and Its Relationship to Water-Use Efficiency of Blue Panicgrass (Panicum antidotale Retz.)," Crop Science, 9 (May-June, 1969), 354-357. With L. Neal Wright, A. B. Humphrey, M. A. Massengale, and A. K. Dobrenz.

Massengale, M. A.

"Effect of Night Temperature on Growth and Development of Alfalfa (Medicago sativa L.)" Journal of the Arizona Academy of Science 5:(October, 1969) 227-231. With Gayland D. Robison.

Massengale, M. A.

"Stomate Density and Its Relationship to Water-Use Efficiency of Blue Panicgrass (Panicum Antidotale Retz.)" Crop Science 9 (1969). 354-357. With A. K. Dobrenz, L. N. Wright, A. B. Humphrey and W. R. Kneebone.

- McDaniel, R. G.
"Mitochondrial Heterosis in Barley," Bioenergetics Bulletin, 1 (1969), 82-83.
- McDaniel, R. G.
"Relationships of Seed Weight, Seedling Vigor and Mitochondrial Metabolism in Barley," Crop Science, 9 (1969), 823-827.
- McDaniel, R. G.
"Kinetics of Mitochondrial Complementation," Physiol. Plant, 23 (1970), 335-342. With I. V. Sarkissian.
- McDaniel, R. G.
"The Effect of Coenzyme A on Energy-Linked Reactions of Maize Mitochondria," Phytochemistry, 9 (1970), 303-309. With I. V. Sarkissian.
- Patterson, Lloyd L.
"Narrow Row Spacing of Cotton," Beltwide Cotton Production Research Conferences - 1969 Proceedings, (1969), 102-103. With Robert E. Briggs.
- Ramage, R. T.
"Translocation-Gene Linkages on Chromosome 5," Barley Newsletter, 13 (1970), 7-10.
- Ramage, R. T.
"The Use of Chromosome Aberrations in Producing Female Parents of Hybrids," Induced Mutations in Plants, (1969), 655-659. With G. A. Wiebe.
- Schonhorst, M. H.
"Relationship of Inbreeding Behavior to Heterosis in Forage Crops," AES Bulletin, 550 (1969), 1-49. With W. A. Riedl, O. J. Hunt, R. N. Peadar, A. E. Slinkard, Bill Melton, R. U. Frakes, and A. E. Carleton.
- Schonhorst, M. H.
"Yield and Protein Production of Alfalfa Cultivars," Progressive Agriculture in Arizona, XXI (May-June, 1969), 4-5, 20. With A. K. Dobrenz, and R. K. Thompson.
- Thompson, R. K.
"Barley Production in Arizona," 1968 Barley Newsletter, 12 (1969), 4. With A. D. Day.
- Thompson, R. K.
"Yield and Protein Production of Alfalfa Cultivars," Progressive Agriculture in Arizona, XXI (May-June, 1969), 4-5, 20. With A. K. Dobrenz and M. H. Schonhorst.

Wright, L. Neal

"Sampling and Clonal Variability in Seed Weight and Seed Yield of Blue Panicgrass, Panicum antidotale Retz," Journal of Arizona Academy Science, 5 (October, 1969), 245-247.

Wright, L. Neal

"Stomate Density and Its Relationship to Water-Use Efficiency of Blue Panicgrass, Panicum antidotale Retz," Crop Science, 9 (May-June, 1969), 354-357. With A. K. Dobrenz, A. B. Humphrey, M. A. Massengale, and W. R. Kneebone.

Wright L. Neal

"Efficiency of Water-Use and Seedling Drouth Tolerance of Boer Lovegrass (Eragrostis culvula Nees.)" Crop Science, 10 (January-February, 1970), 1-3. With A. K. Dobrenz.

D. Monographs in a Series

Briggs, Robert E.

Growth and Development of the Cotton Plant in Arizona. Tucson, Arizona: University of Arizona Cooperative Extension Service and Agricultural Experiment Station, 1969 (Bulletin A-64). With Robert E. Dennis.

Briggs, Robert E.

Effect of Narrow-Row Spacing on Cotton Fiber Properties and Boll Characteristics. Tucson, Arizona: University of Arizona Cooperative Extension Service and Agricultural Experiment Station, 1970 (Report Series p-17). With Lloyd L. Patterson.

Dennis, R. E.

What Upland Cotton Variety for Arizona in 1969? Tucson, Arizona: University of Arizona Cooperative Extension Service, (Folder 137), with L. S. Stith and W. D. Fisher.

Dennis, R. E.

Establishment and Management of Irrigated Pastures. Tucson, Arizona: University of Arizona Cooperative Extension Service (Bulletin A049) 1969.

Dennis, R. E.

Growth and Development of the Cotton Plant in Arizona. Tucson, Arizona: University of Arizona Cooperative Extension Service, 1969 (Bulletin A-64) with R. E. Briggs.

Hamilton, K. C.

Chemical Weed Control for the Irrigated Areas of Arizona - 1970. Tucson, Arizona: Cooperative Extension Service and Agricultural Experiment Station, 1970 (Bulletin A-1).

Hamilton, K. C.

Directed Applications of Herbicides in Cotton in Arizona Cotton. Tucson, Arizona: College of Agriculture, 1970 (Report P-17). With H. F. Arle.

Hamilton, K. C.

Response of Purple Nutsedge to Herbicide Combinations. Logan, Utah: Western Society of Weed Science, 1970 (Research Progress Report of Western Society of Weed Science).

Hamilton, K. C.

Preplanting Applications of Trifluralin to Reduce Diuron Injury in Cotton. Logan, Utah: Western Society of Weed Science, 1970 (Research Progress Report of Western Society of Weed Science). With H. F. Arle.

Kneebone, William R.

Fertilizer Trials on Bermudagrass as Recreational Trufgrass. Tucson, Arizona: Arizona Agricultural Experiment Station, 1969 (Report No. 257). With Garry L. Seitz.

Patterson, Lloyd L.

Effect of Narrow-Row Spacing on Cotton Fiber Properties and Boll Characteristics. Tucson, Arizona: University of Arizona Cooperative Extension Service and Agricultural Experiment Station, 1970 (Report Series P-17). With Robert E. Briggs.

Taylor, Brooks B.

Cotton Report 1970. Tucson, Arizona: University of Arizona Cooperative Extension Service and Agricultural Experiment Station, 1970. With D. F. McAlister.

Taylor, Brooks B.

Field Crop Varieties for Arizona. Tucson, Arizona: University of Arizona Cooperative Extension Service and Agricultural Experiment Station, (Bulletin A-4). With R. E. Dennis.

Wright, L. Neal

Improving Arizona Rangelands. Tucson, Arizona: University of Arizona Agricultural Experiment Station, 1969 (Bulletin No. A-58). With Arizona Interagency Range Technical Subcommittee.

E. Papers Presented (Unpublished)

Briggs, Robert E.

Fiber Properties and Boll Characteristics of Cotton Produced Under High Plant Population. Paper presented to the Beltwide Cotton Defoliation-Physiology Conference, Houston, Texas, 1970. With Lloyd L. Patterson.

Day, A. D.

Agricultural Potential for Sewage Effluent. A research paper presented to a joint meeting of personnel from The Salt River Project and the Maricopa County Extension Service, Phoenix, Arizona, October 7, 1969.

Jackson, E. B. and R. E. Dennis

Adaptation of Soybeans (Glycine max) to the Irrigated Southwest. Paper presented to the Annual Meeting of the American Society of Agronomy in Detroit, Michigan, Nov. 13, 1969.

Kneebone, W. R.

Water-Use Efficiency in Bermudagrass. Paper presented at American Society of Agronomy Meeting, Detroit, Michigan, Nov. 1969.

Nelson, John M.

Effect of Planting Date, Variety, Nitrogen Rate and Harvest Date on Lignin Content of Sugarbeet Roots. Paper presented to the Sixteenth General Meeting of the American Society of Sugar Beet Technologists, Denver, 1970.

Nelson, John M.

Sugarbeet Production on Wide Beds. Paper presented to the Sixteenth General Meeting of the American Society of Sugar Beet Technologists, Denver, 1970.

Nelson, John M.

Influence of Manure on Sprangling of Sugarbeets. Paper presented to the Sixteenth General Meeting of the American Society of Sugar Beet Technologists, Denver, 1970.

Patterson, Lloyd L.

Fiber Properties and Boll Characteristics of Cotton Produced Under High Plant Population. Paper presented to the Beltwide Cotton Defoliation-Physiology Conference, Houston, Texas, 1970. With Robert E. Briggs.

Ramage, R. T.

Mapping Chromosomes from the Phenotypes of Trisomics Produced by Interchange Heterozygotes. Paper presented to Second International Barley Genetics Symposium, Pullman, Washington, July 6-11, 1969.

Ramage, R. T.

Hybrid Barley. Paper presented to Second International Barley Genetics Symposium, Pullman, Washington, July 6-11, 1969. With G. A. Wiebe.

Ramage, R. T.

The Use of Chromosome Aberrations in Producing Female Parents of Hybrids. Paper presented to IAE0 and FAO Symposium on the Nature, Induction and Utilization of Mutations in Plants, Pullman, Washington, 1969. With G. A. Wiebe.

Thompson, Rex K.

Barley as a Cross-Pollinated Crop. Paper presented to the Second International Barley Genetics Symposium, Pullman, Washington, July 6-11, 1969.

F. Abstracts

Day, A. D.

"An Effective Student-Faculty Committee," Agronomy Abstracts, November, 1969.

Dobrenz, A. K.

"Yield Components and Transpiration in Alfalfa (Medicago sativa L.) and Their Relationship to Water-Use Efficiency," Western Society of Crop Science Abstracts, July, 1969. With D. F. Cole and M. A. Massengale.

Dobrenz, A. K.

"The Relationship of Stomate Density and Water-Use Efficiency of Alfalfa (Medicago sativa L.)," Agronomy Abstracts, November, 1969. With D. F. Cole.

Dobrenz, A. K.

"Water-Use Efficiency of Alfalfa," Western Society of Crop Science Abstracts, July, 1969. With D. F. Cole, M. A. Massengale, and L. Neal Wright.

Dobrenz, A. K.

"Water-Use and Seedling Drouth Tolerance of Lehmann Lovegrass," Agronomy Abstracts, November, 1969. With L. Neal Wright.

Kneebone, W. R.

"Water-Use Efficiency in Bermudagrass," Agronomy Abstracts, November, 1969.

Kneebone, W. R.

"Improved Forage Quality in a New Variety of Weeping Lovegrass," Proc. 20th Western Grass Breeders Work Planning Conference. With P. W. Voigt, E. H. McIlvain, and M. C. Shoop.

Massengale, M. A.

"Yield Components and Transpiration in Alfalfa (Medicago sativa L.) and Their Relationships to Water-use Efficiency." Western Society of Crop Science Abstracts. July 1969. With A. K. Dobrenz and D. F. Cole.

Massengale, M. A. .

"Water-Use Efficiency of Alfalfa" Western Society of Crop Science Abstracts. July, 1969. With D. F. Cole, A. K. Dobrenz, and L. N. Wright.

McDaniel, R. G.

"Synchronous Mitochondrial Replication in Barley," Plant Physiology, 1969.

McDaniel, R. G.

"Mitochondrial Biogenesis in Barley," Federation Proc., 1970. With B. G. Grimwood.

Rubis, D. D.

"Biological and Technical Basis for the Production of Hybrid Safflower Without Using Male Sterility," Agronomy Abstracts, November 1969.

Wright, L. Neal

"Water-Use Efficiency of Alfalfa, Medicago sativa L.," Western Crop Science Society Abstract, 1969. With D. F. Cole, A. K. Dobrenz, and M. A. Massengale.

Wright, L. Neal

"Water Use and Seedling Drouth Tolerance of Lehmann Lovegrass," American Society of Agronomy, Agronomy Abstracts, 1969. With A. K. Dobrenz.

G. Book Reviews

None.

ANIMAL PATHOLOGY

Publications During the Year

A. Books and Monographs

None.

B. Chapters in Books

None.

C. Articles

None.

D. Monographs in a Series

Reed, Raymond E.

Biologic Behavior - Bases for Comparative Studies of Disease.
Washington, D.C.: National Cancer Institute Monograph
No. 32, August, 1969.

Reed, Raymond E.

Spontaneous Hematopoietic Neoplasms of Nonhuman Primates.
Review, Case Report and Comparative Studies. Washington,
D. C.: National Cancer Institute Monograph No. 32,
August, 1969. With Carolyn H. Lingeman and F. M. Garner.

E. Papers Presented (Unpublished)

Dewhirst, L. W.

Parasites of Poultry. Paper presented to the Arizona Poultry
Federation Annual Meeting, Tucson, Arizona, January 14, 1970.

Dewhirst, L. W.

Lice, A Tax We can Avoid and Cattle Grubs Cost You Money.
Two papers presented to the Arizona Cattle Growers' Ranch
School, Tucson, Arizona, March 13, 1970.

Dewhirst, L. W.

Coccidiosis and Anaplasmosis, Are We Overlooking These.
Paper presented to Cattle Feeder Health Seminar, Tucson, Arizona.
May 6, 1970.

Hendershott, Richard D.

Costs of Feedlot Health. Paper presented to Cattle Feeder
Health Seminar, Tucson, Arizona, May 6, 1970.

Reed, Raymond E.

Calving Problems. Paper presented to the Arizona Cattle Growers'
Ranch School, Tucson, Arizona, March 13, 1970.

Reed, Raymond E.

Does Arizona Need a Diagnostic Laboratory? Paper presented to Cattle Feeders' Health Seminar, Tucson, Arizona, May 6, 1970.

Rokey, Ned W.

Bovine Enteric-Pneumonic Disease Syndrome. Paper presented to the Regional meeting on Feedlot Cattle Health Research, Amarillo, Texas, March 23, 1970.

Rokey, Ned W.

Blue Tongue: A Threat to the Feeder? Paper presented to Cattle Feeders' Health Seminar, Tucson, Arizona, May 6, 1970.

Sheldon, James J.

Costs of Preconditioning Native Calves. Paper presented to Arizona Cattle Growers' Ranch School, Tucson, Arizona, March 13, 1970.

Sheldon, James J.

Animal Health in Feedlot Research. Paper presented to the Regional Meeting on Feedlot Cattle Health Research, Amarillo, Texas, March 23, 1970.

Sheldon, James J.

Preconditioning Considerations - Native Cattle. Paper presented to the Cattle Feeders' Health Seminar, Tucson, Arizona, May 6, 1970.

Sheldon, James J.

Marek's Disease in Arizona. Paper presented to the Department of Poultry Science's "Poultry Day," Tucson, Arizona, May 8, 1970.

Watts, Raymond E.

Respiratory Diseases of Cattle. Paper presented to the Cattle Feeders' Health Seminar, Tucson, Arizona, May 6, 1970.

F. Abstracts

None.

G. Book Reviews

None.

ANIMAL SCIENCE

Publications During the Year

A. Books and Monographs

None.

B. Chapters in Books

Hale, William H.

"Sorghum Grain In Ruminant Nutrition," Sorghum Production and Utilization. The Avi Publishing Co., Westport, Connecticut, 1970.

Roubicek, Carl B.

"Water Metabolism," Animal Growth and Nutrition. E.S.E. Hafez and I. A. Dyer, Eds. Lea and Febiger, Philadelphia. 1969.

C. Articles

The following papers appeared in: Arizona Cattle Feeders Day Report, May 7, 1970, Series P-12. Department of Animal Science and Agricultural Experiment Station, The University of Arizona, Tucson.

Hale, W. H., Brent Theurer, J. A. Marchello, Bruce Taylor and Herb Essig.

Bird resistant milo and wheat in high concentrate steer fattening rations.

Hale, W. H., Brent Theurer, J. A. Marchello, Bruce Taylor and Herb Essig.

Effect of Alfalfa and cottonseed hulls fed at two levels and length of feeding period for a 90% concentrate ration fed to fattening steers.

Hale, W. H., Brent Theurer, Bruce Taylor and John Kuhn.

Alfalfa, bermuda straw and molasses in growing rations for steer calves.

Hale, W. H., Brent Theurer, B. R. Taylor and John Kuhn.

Methods of starting new feeder calves.

Hale, W. H., Brent Theurer, Bruce Taylor and John Kuhn.

Influence of forage harvesting and feeding methods on beef production.

Hale, W. H., Brent Theurer, J. A. Marchello and Bruce Taylor.

MHA and various levels of wheat in 90% concentrate fattening rations.

Hale, W. H., Brent Theurer and Bruce R. Taylor.
112-Day progress report: Various levels of alfalfa and
cottonseed hulls in 90% concentrate fattening rations.

McGinty, Don D.

Drylot cow-calf production: Production of feeder calves in
intensive management systems; Production of feeder calves in
total and partial confinement; Effect of age of calf at weaning
on 205-day weights; Milk production by crossbred and purebred
dams; Effect of breed on performance; Feedlot performance and
carcass characteristics of creep fed steers following weaning.

Parrott, Cal., W. H. Hale and Brent Theurer.

Effect of concentrate level and roughage type on dry matter
and digestible energy intake.

Ray, D. E., C. B. Roubicek, Frank Wiersma and John Kuhn.
Methods of alleviating heat stress in feedlot steers.

Theurer, Brent, W. H. Hale, John Marchello, Bruce Taylor and
Herb Essig.

Urea vs. cottonseed meal in high concentrate finishing rations.

Hale, W. H., Clayton Lambeth, Brent Theurer and R. E. Ray. 1969.
Digestibility and utilization of cottonseed hulls by cattle.
J. Animal Science 29:773.

Marchello, J. A. 1970.

Effect of mechanical and pharmacological stimuli on fat
deposition in the bovine.

Report: 23rd Annual Reciprocal Meat Conference.

Ray, D. E., W. H. Hale and J. A. Marchello. 1969.

Influence of season, sex and hormonal growth stimulants on
feedlot performance of beef cattle.

J. Animal Science 29:490.

Ray, D. E., C. B. Roubicek, O. F. Pahnish and J. S. Brinks. 1970.

Breeding merit of topcross parents for preweaning traits in
Hereford cattle. J. Animal Science 30:161.

Roubicek, C. B., D. E. Ray. 1969.

Genetic selection for adipisia and polydipsia in the rat.

J. Heredity 60:332.

Roubicek, C. B., D. E. Ray and W. H. Hale. 1970.

Blood creatinine and uric acid concentration in unsupplemented
range cattle. J. Animal Science 30:675.

Schuh, J. D., J. O. A. Lima, W. H. Hale and Brent Theurer. 1970. Steam Processed flaked grains vs. steam rolled grains for dairy calves. J. Dairy Science 53:475.

Theurer, C. Brent. 1969. Determinations of botanical and chemical composition of the grazing animal's diet. Proc. National Conference On Forage Quality Evaluation And Utilization. J1-17, Lincoln, Nebraska.

Trei, John, W. H. Hale and Brent Theurer. 1970. Effects of grain processing on in vitro gas production. J. Animal Science 30:285.

D. Monographs in a Series

None.

E. Papers Presented (Unpublished)

None.

F. Abstracts

Hale, W. H., Ted Loynachan, Brent Theurer, J. C. Parrott, III and Bruce Taylor, 1969. Reconstituted milo for fattening steers. J. Animal Science 29:159. (No. 225).

McGinty, D. D., J. K. Riggs and H. O. Kunkel. 1969. Factors affecting in vitro digestibility of sorghum grain. J. Animal Science 29:165 (No. 248).

McGinty, D. D., B. R. Taylor and J. A. Marchello. 1969. Effect of age of calf at weaning on 205-day weights. J. Animal Science 29:115 (No. 52).

Ray, D. E. and C. B. Roubicek. 1969. Behavior of feedlot cattle during two seasons. J. Animal Science 29:116 (No. 54).

Roubicek, C. B. and D. E. Ray. 1970. Selection for gain performance of the laboratory rat. J. Arizona Academy of Science 6:19.

Theurer, Brent, W. H. Hale and Tom Sawyer. 1969. Effect of intrajugular infusions of sodium propionate, butyrate or valerate on feed intake. J. Animal Science 29:173 (No. 279).

G. Book Reviews

None.

DAIRY SCIENCE

Publications During the Year

A. Books and Monographs

None.

B. Chapters in Books

None.

C. Articles

Angus, R. C. and J. W. Stull.

"Consumer Attitudes Towards Milk Substitutes,"
American Journal of Agricultural Economics, 51
(December, 1969), 1149-1153.

Brown, W. H., L. M. Sullivan, L. F. Cheathan, Jr.,
K. J. Halbach and J. W. Stull.

"Steam Processing versus Pelletting of Two Ratios of Milo and
Barley for Lactating Cows," Journal of Dairy Science, 53:
(In press).

Brown, W. H.

"Urea Effect Studied on Milk Production and Composition,"
Arizona Farmer-Ranchman, 49 (May, 1970), 3.

Gardner, R. W. and J. D. Schuh

"Accelerated Growth and Early Breeding Studies with Holstein
Heifers," Journal of Dairy Science, 53 (June, 1970) 657.

Schuh, J. D., J. O. A. Lima, W. H. Hales and Brent Theurer, Jr.

"Steam-processed Flaked Grains versus Steam-rolled grains for
Dairy Calves," Journal of Dairy Science, 53 (June, 1970) 475.

D. Monographs in a Series

None.

E. Papers Presented (Unpublished)

Brown, W. H.

Effect of Urea on Production and Composition of Milk. Paper
presented at Eleventh Annual Dairy Field Day, October, 1969.

Nelson, F. Eugene and Henry Tranmal.
Microbiology of Corn Tortillas. Paper presented at Spring Meeting, Arizona Branch, American Society for Microbiology, Phoenix, 1970.

Nelson, F. Eugene
Progress Report on Fruit-flavored Drinks. Paper presented at Annual Meeting, Grapefruit Advisory Committee, Yuma, 1970.

Price, R. L.
Distribution of Bitter Compounds in Grapefruit and other Factors Affecting their Acceptability. Paper presented at Annual Meeting of Grapefruit Administrative Committee, Yuma, 1970.

Schuh, J. D., W. H. Hale, and C. B. Theurer.
Pressure Cooking Milo versus Steam Processing and Flaking Milo for Dairy Calves. Paper presented at Eleventh Annual Dairy Field Day, October, 1969.

Stull, J. W.
Variation in the Fatty Acid Distribution of Filled Beverages. Paper presented at 30th Annual Meeting of Institute of Food Technologists, San Francisco, California, 1970.

Wegner, T. N.
Some Aspects of Gluconeogenesis and Glucose Availability in Ruminants. Paper presented at Fourth Washburn Lectures, Colorado, 1969.

Wegner, T. N.
Patterns of Major Mineral Ions in Relation to Heat Stress in Dairy Cattle. Paper presented at Eleventh Annual Dairy Field Day, October, 1969.

F. Abstracts

Horvath, R. A., W. H. Brown, J. W. Stull.
"Variation in the Fatty Acid Distribution of Filled Milk Beverages," Proc. Inst. Food Tech., 1970 (Abstract No. 90).

Nelson, F. E. and W. Carson Brown.
"Whey Utilization in Fruit Drinks," J. Dairy Sci., 1969. (Abstract No. M102).

Nelson, F. E., H. Tranmal, J. D. Schuh, T. N. Wegner.
"Criteria of Abnormal Milk from Individual Quarters During a Period of High Temperatures," J. Dairy Sci., 1969. (Abstract No. P42).

Stott, G. H.

"Adrenal Involvement in Reproductive Failure in Bovine Related to Environmental Temperature," Proc. Int. Biom. Congress, 1969.

Stott, G. H. and J. R. Robinson.

"Plasma Corticosteroids as Indicators of Gonadotrophin Secretion and Infertility in Stressed Bovine," J. Dairy Sci., 1970 (Abstract No. P25).

G. Book Reviews

Brown, W. H.

Review of The Lonely Furrow; Farming in the United States, Japan and India by Kusani Nair. Choice, (In press).

Brown, W. H.

Review of Beef Cattle by A. L. Neumann and R. R. Snapp. Choice, 6 (October, 1969), 1042.

Brown, W. H.

Review of The Beginnings of Agriculture in America by Lyman Carrier. Choice, 6 (November, 1969) 1248.

Brown, W. H.

Review of Proceedings: Drugs Affecting Lipid Metabolism by William L. Holmes and others. Choice 6 (November, 1969) 1249.

Brown, W. H.

Review of Single-cell Protein edited by Mateles, Richard and S. R. Tannebaum. Choice, 6 (January, 1970) 1603.

Brown, W. H.

Review of The Domestication and Exploitation of Plants and Animals edited by P. J. Ucks and G. W. Dimbleby. Choice, (In press).

Brown, W. H.

Review of Animal Reproduction; the Efficient Breeding of Sheep and Cattle by B. J. F. James. Choice, 6 (February, 1970) 1776.

Brown, W. H.

Review of Trace Elements in Agriculture by Vincent Sauchiolli. Choice, 7 (April, 1970) 252.

Brown, W. H.

Review of Modern Breeds of Livestock by H. M. Briggs and D. M. Briggs. Choice, 6 (July-August, 1969) 669.

Brown, W. H.

Review of Atlas of Protein Sequence and Structure 1969, Vol. 4, by Margaret O. Dayhoff. Choice, (In press).

Stull, J. W.

Review of Grain Storage; the Role of Fungi in Quality Loss by C. M. Christensen and H. H. Kaufman. Choice, 6 (December, 1969) 842.

Stull, J. W.

Review of The Biogenesis of Starch Granules in Higher Plants by N. P. Badenhuizen. Choice, 6 (December, 1969) 1083.

Stull, J. W.

Review of Proceedings: The Transport of Plant Hormones by Y. Vardar. Choice, 6 (December, 1969) 1427.

Stull, J. W.

Review of Medieval Farming Glossary by John L. Fisher. Choice, (In press).

Stull, J. W.

Review of Agricultural Origins and Dispersals; the Domestication of Animals and Foodstuffs by Carl D. Sauer. Choice, (February, 1970) 1777.

Stull, J. W.

Review of Harry L. Russell and Agricultural Science in Wisconsin (Biology) by Edward H. Beardsley. Choice, (In press).

Stull, J. W.

Review of Sisal, Thirty Years' Sisal Research in Tanzania. 2nd Ed. (Biology) by G. W. Lock. Choice (In press).

Stull, J. W.

Review of The Artificial Insemination of Farm Animals by E. J. Perry. Choice, (In press).

Stull, J. W.

Review of Soviet Agriculture in Perspective; a Study of its Successes and Failures by Erich Strauss. Choice, 7 (March, 1970) 107.

ENTOMOLOGY

Publications During the Year

A. Books and Monographs

None.

B. Chapters in Books

None.

C. Articles

Apple, Gail, D. P. Morgan and C. C. Roan.

"Determinants of Serum DDT and DDE Concentrations,"
Bulletin of Environmental Contamination and Toxicology,
5 (Jan-Feb. 1970), 16-23.

Cahill, W. P., B. J. Estes and G. W. Ware.

"A Rapid On-column Extraction-cleanup Method for Animal Fat."
Bulletin of Environmental Contamination and Toxicology 5
(Jan-Feb.), 70-71.

Cahill, W. P., B. J. Estes and G. W. Ware.

"Determination of DDT in the Presence of Toxaphene Residues."
Bulletin of Environmental Contamination and Toxicology.
1970.

Collins, R. C., L. W. Dewhurst, and L. A. Carruth.

"The Cattle Grub Problem in Arizona. I. Timing of Adult
Activity of the Common Cattle Grub," Journal of Economic
Entomology, 62 (June 1969), 652-656.

Crowder, L. A. and C. J. Goodnight.

"Radioautographic Localization of 5-hydroxytryptamine in
Leiobunum Longipes (Arachnida: Opiliones) (Submitted to Trans.
Am. Micr. Soc.) 1970.

Graves, G. N. and T. F. Watson.

"Effect of Bacillus thuringiensis on the Pink Bollworm.
Journal of Economic Entomology (In Press).

Haverty, M. I. and G. W. Ware.

"Circadian Sensitivity and Dosage Rate Response to X-irradiation
in the Pink Bollworm, Pectinophora gossypiella (Saunders)."
J. Econ. Entomol.

Morgan, Donald P. and Clifford C. Roan.

"Chlorinated Hydrocarbon Pesticide Residue in Human Tissues,"
Archives of Environmental Health, 20 (April 1970), 452-457.

Morgan, D. P., C. J. Harris, S. R. Kemberling, and E. A. Williford.

"Pesticide Intoxications in Arizona," Arizona Medicine
(November, 1969), 872-876.

Morgan, D. P. and C. C. Roan.

"Of Pests and Pesticides," JAMA, 210 (November 17, 1969),
1275-1276.

Nutting, W. L. and H. G. Spangler.

"The Hastate Setae of Certain Dermestid Larvae: an Entangling
Defense Mechanism," Annals of the Entomological Society of
America, 62 (July, 1969), 763-769.

Nutting, W. L.

"The Desert Termites," Pest Control, 37 (September, 1969),
10, 12, 20.

Nutting, W. L.

"Distribution and Flights of Rare North American Desert Termites
of the Genus Amitermes (Isoptera: Termitidae), Pan-Pacific
Entomologist, 45 (October, 1969), 320-325.

Nutting, W. L.

"How Large is a Dry-wood Termite Colony?" Pest Control, 38
(January, 1970), 30-32, 40, 42-43.

Nutting, W. L.

"Free Diurnal Foraging by the North American Nasutiform Termite,
Tenuirostritermes tenuirostris (Isoptera: Termitidae), Pan-
Pacific Entomologist, 46 (January, 1970), 39-42.

Nutting, W. L.

"Composition and Size of Some Termite Colonies in Arizona and
Mexico," Annals of the Entomological Society of America, 63
(In press).

Philipp, Jerry S. and T. F. Watson.

"Influence of Temperature on Population Growth of the Pink
Bollworm, Pectinophora gossypiella (Saunders). Ann. Entom. Soc.
Amer. (In press).

Roan, C. C., D. P. Morgan, N. Cook and E. H. Paschal.

"Blood Cholinesterases, Serum Parathion Concentrations and
Urine p-Nitrophenol Concentrations in Exposed Individuals,"
Bulletin of Environmental Contamination and Toxicology,
(Nov.-Dec. 1969), 362-369.

Roan, C. C., J. A. Laubscher and Donald P. Morgan.
"DDT in Tissues of Man, Animals and Soils of Arizona,"
Progressive Agriculture in Arizona 21 (November-December
1969), 16-17.

Ware, G. W., L. W. Dewhirst and R. Echeverria.
"Sheep Bot Fly in Arizona." Progressive Agriculture in
Arizona, 21(5) 20-21.

Ware, G. W., W. P. Cahill and Betty J. Estes.
"Uptake of C¹⁴-DDT from soil by Alfalfa." Bull. Environ.
Contam. Toxicol. 5 (Jan-Feb. 1970) 85-86.

Ware, G. W. and C. C. Roan.
"Interaction of Pesticides with Aquatic Microorganisms and
Plankton." Residue Reviews.

Ware, G. W., B. J. Estes, C. Jahn and W. P. Cahill.
"DDT moratorium in Arizona--agricultural residues after
one year." Pesticides Monitoring Journal

Ware, G. W., B. J. Estes, W. P. Cahill, P. D. Gerhardt and
K. R. Frots.
"Pesticide Drift III: Drift Reduction with Spray Thickeners."
J. Econ. Entomol.

Ware, G. W. and G. K. Whitacre.
"Similar Effects of X-Irradiation and Piperonyl Butoxide
on Toxicity of Malathion and Malaoxon to House Flies.
J. Econ. Entomol.

Ware, G. W. and M. McComb.
"Circadian Susceptibility of Pink Bollworm Moths to
Azinphosmethyl." J. Econ. Entomol.

Ware, G. W., W. P. Cahill, P. D. Gerhardt, and J. M. Witt.
"Pesticide Drift IV. On-Target Deposits from Aerial Application
of Insecticides." J. Econ. Entomol.

Watson, T. F., W. E. Larsen, K. K. Barnes and D. G. Fullerton.
"Value of Stalk Shredders in Pink Bollworm Control." J. Econ.
Entomol. (In Press)

Watson, T. F.
"Pink Bollworm Research Progress in Arizona." Proc. Western
Cotton Prod. Conf. Phoenix, Arizona, (Mar. 1970)

Watson, T. F. and Leon Moore.
"Cotton Insect Control in Arizona--A Changing Outlook."
Progressive Agriculture in Arizona (In Press).

Watson, T. F., D. G. Fullerton, Leon Moore, D. M. Tuttle, J. Hazlett, D. Howell, and J. Lamoreaux.
"Evaluation of Acaricides for Control of the Strawberry Spider Mite, Tetranychus (Tetranychus) turkestanii, on cotton and alfalfa." Progressive Agriculture in Arizona (In press).

Wene, George P.
"Control of the Polistes Wasp." Pest Control Operators News 29 (April 1969) 6.

Wene, George P.
"Mesquite Scale" Progressive Agriculture in Arizona 21 (May-June 1969) 17.

Wene, George P.
"Drenches Control Mites on Italian Cypress." Pest Control Operators News 29 (June 1969) 21.

Wene, George P.
"One to Control the Elm Leaf Beetle." Progressive Agriculture in Arizona 21 (July-August 1969) 12-13.

Wene, George P.
"Systematics for the Control of the Great Basin Tent Caterpillar" Pest Control Operators News 29 (August-September 1969) 10-11.

Wene, George P.
"Control of Brachyrhinus cribricolis Injuring Ornamentals." Journal of Economic Entomology 62 (August 1969) 941-942.

Werner, F. G.
"A Revision of Acanthinus (Coleoptera: Anthicidae). VII." Ann. Entomol. Soc. America, 62 (January, 1970), 111-128.

Werner, F. G.
"A Revision of Acanthinus . . . VIII. The Australian Species, Ann. Entomol. Soc. America, 63 (March, 1970) 486-490.

Werner, F. G.
"A Revision of Acanthinus . . . IX. The Leporinus, Scitulus, Cuyabanus, and Myrmecops-groups," Ann. Entomol. Soc. America, 63 (May, 1970), 718-731.

Werner, F. G.
"A Revision of Acanthinus . . . X. Albicinctus-group and conclusion," Ann. Entomol. Soc. America, 63 (May, 1970) 859-876.

Werner, F. G.
"Terrestrial Insects of the Rita Blanca Lake Deposits," IN: Anderson, R. Y. and D. W. Kirkland, "Environmental Reconstruction of an Early Pleistocene Lake of the High Plains of Texas," Memoirs Geol. Soc. America, Inc., Memoir 113. (March 1970). pp. 123-130.

Whitacre, D. M. and G. W. Ware
"Endosulfan Metabolism in Temperature-Stressed Rats."
Journal of Economic Entomology. 1970.

D. Monographs in a Series

Carruth, L. A.
Insect Damage as Related to Yield Losses. Tucson, Arizona:
University of Arizona Agricultural Experiment Station and
Cooperative Extension Service, 1970 (Report P-17, Page 76).

Roney, J. N. and George P. Wene
Insect Control for Flowers, Shrubs, and Shade Trees 1969-70.
Tucson, Arizona: University of Arizona Cooperative Extension
Service and Agricultural Experiment Station Bulletin A-18
August 1969) 1-16.

E. Papers Presented (Unpublished)

Jubb, G. L., Jr. and L. A. Carruth.
Cotton Growth, Yield and Quality Following *Lygus hesperus*
Infestation During Squaring. Paper presented at the Annual
Meeting of the Entomological Society of America, Chicago,
1969.

Frost, Kenneth and G. W. Ware.
Pesticide Drift from Aerial and Ground Applications.
1969 Winter Meeting of American Society of Ag. Engineers.

Nutting, W. L.
Composition and Size of Wood-inhabiting Termite Colonies
in Arizona and Mexico. Paper presented to the Third Annual
Meeting of the Working Group on Social Insects (Productivity
of Terrestrial Communities Section, International Biological
Program), Warsaw, Poland, June 24, 1970.

Tuttle, D. M.
Mites Inhabiting Woody Plants of Southwestern Desert Areas
of United States. Paper presented to Desert Biome
(Invertebrate Section) Phoenix, 1970.

Tuttle, D. M.
Pests of Bermudagrass. Paper presented to the Annual Meeting
of the Arizona Entomologists. Flagstaff, 1970.

Tuttle, D. M.
Mites of Agricultural and Horticultural Importance in Arizona.
Paper presented to the Arizona Insect Survey and Detection
Workshop. Phoenix, 1970.

Tuttle, D. M.
Citrus Red Mite in Arizona. Paper presented to Yuma Citrus
Growers. April, 1970.

F. Abstracts

None.

G. Book Reviews

Tuttle, D. M.

Review of The Comparative Morphology and Evolution of the Internal Female Reproductive System of Trichoptera by John D. Unzicker. Choice, 6 (January 1970), 1605.

Tuttle, D. M.

Review of The Contribution to the Systematics of North America Species of Synhalonia (Hymenoptera, Apoidea) by P. H. Timberlake, Choice, 6 (January 1970), 1604.

Tuttle, D. M.

Review of The Insects; Structure and Function by R. F. Chapman. Choice, 7 (March 1970), 105.

Tuttle, D. M.

Review of Systematics and Ecology of Bees of the Subgenus Diandrena (Hymenoptera: Andrenidae) by Robin W. Thorp. Choice, 6 (December 1969), 1428.

Tuttle, D. M.

Review of Moths and How to Rear Them by Paul Villiard. Choice, 6 (December 1969), 1428.

Tuttle, D. M.

Review of Insect Vision tr. by R. and L. Madironi by G. A. Mazokhin - Porshnia Kov. Choice, 6 (November 1969), 1250.

Tuttle, D. M.

Review of Social Life Among the Insects by William Morton Wheeler. Choice, 6 (November 1969) 1252.

Tuttle, D. M.

Review of Ecology, Behavior, and Adult Anatomy of the Albida Group of the Genus Epicauta (Coleoptera, Meloidae) by Richard B. Selander and Juan M. Mathieu. Choice, 6 (October 1969), 1042.

Tuttle, D. M.

Review of Genesis of the Hymenoptera and the Phases of Their Evolution tr. by O. W. Richards and B. Uvarov, by S. I. Malyshev. Choice, 6 (September 1969), 844.

Tuttle, D. M.

Review of Red Mites and Typhus by J. Ralph Audy. Choice
5 (January 1969), 1459.

Tuttle, D. M.

Review of The Compleat Flea by Brendan Lehane. Choice,
6 (February 1970), 1776.

Ware, G. W.

Review of Jogging for Fitness and Weight Control by F. B.
Roby and R. P. Davis, Ariz. J. of Health, Physical Education
and Recreation. Spring '70, p. 16.

HORTICULTURE

Publications During the Year

A. Books and Monographs

None.

B. Chapters in Books

Bemis, W. P.

"Evolution in the genus Cucurbita." A paper in Section II, The Origin of Species, (Papers on Evolution. (Little, Brown and Company). Boston, 1969. (With Thomas W. Whitaker).

C. Articles

Bemis, W. P., A. M. Rhodes, Thomas W. Whitaker, and S. G. Carmer.
"Numerical Taxonomy Applied to Cucurbita Relationships."
American Journal of Botany 57 (4) April, 1969 (in press).

Cole, Frank D. and Peter L. Steponkus.

"Further studies on the effects of high temperature on plant growth." Plant Physiology Supplement 44:17.

Foster, R. E., E. L. Harriott, and J. H. Park.

"Mechanisms, Culture, and Variety for Selective Mechanical Cantaloupe Harvest." Transactions of the American Society of Agricultural Engineers 13:48-55. 1970.

Hilgeman, R. H.

"Correction of Iron Chlorosis with Iron Chelates in Arizona." California Citrograph. July, 1969.

Hilgeman, R. H., W. H. Fuller, L. F. True, G. C. Sharples, and P. F. Smith.

"Lithium Toxicity in 'Marsh' Grapefruit in Arizona."
Proceedings of the American Society of Horticultural Science
95:2:248-251.

D. Monographs in a Series

None.

E. Papers Presented (Unpublished)

Bemis, W. P.

Amphidiploidy in Cucurbita. Paper presented to the American Society for Horticultural Science, Pullman, Washington, August 21, 1969.

Hilgeman, R. H.
Toward Improved Irrigation Efficiency. 18th International
Horticultural Congress, Israel, 1970.

Hilgeman, R. H. and F. O. Sharp.
Response to 'Valencia' Orange trees to four soil water schedules
during 20 years. 18th International Horticultural Congress,
Israel, 1970.

F. Abstracts

None.

G. Book Reviews

None.

PLANT BREEDING

Publications During the Year

A. Books and Monographs

None.

B. Chapters in Books

None.

C. Articles

Cherry, J. P., F. R. H. Katterman and J. E. Endrizzi.
"Comparative studies of seed proteins of species of Gossypium
in gel electrophoresis." Evolution, 24 (1970), 431.

Katterman, F. R. H.
"A study of quantitative variations of nucleic acids in
Gossypium." Phytochemistry, 8 (1970). With D. R. Ergle.

Stith, L. S.
"Cotton for Silage - Palatability and Nutrient Value."
Agronomy Journal (In Press). With W. H. Hale.

Turcotte, E. L. and Carl V. Feaster.
"Semigametic Production of Haploids in Pima Cotton."
Crop Science, 9 (1969), 653-655.

Voigt, Robert L.
"The Influence of Rural America on the Character of the Nation."
Progressive Agriculture in Arizona, 21(5) (Sept-Oct. 1969).
With R. E. Calmes.

Voigt, Robert L.
"Grain Sorghum: Production in Characteristics in the Marana
Area." Progressive Agriculture in Arizona, 21 (6) (Nov.-Dec.
1969).

D. Monographs in a Series

Fisher, W. D., L. S. Stith and E. H. Pressley.
Annual Report - Short Staple Cotton Breeding - 1968. Tucson,
Arizona: University of Arizona Agricultural Experiment Station,
1969 (Report No. 254).

Voigt, Robert L.
Arizona Grain Sorghum, Forage Sorghum and Sudangrass
Performance Tests, 1969. Tucson, Arizona: Arizona Agricultural
Experiment Station, 1970. (Report No. 258).

E. Papers Presented (Unpublished)

Stith, Lee S.

A Progress Report on Arizona Cotton Hybrid Work.

1970 National Cotton Conference, Houston, Texas, Jan. 6, 1970.

Khalifa, H., W. D. Fisher and L. S. Stith.

Inheritance of Flat-Square and Its Effect on Agronomic Properties in *Gossypium hirsutum* L. Var. Acala.

National Cotton Improvement Conference, Houston, Texas, Jan. 6, 1970.

Muramoto, H.

A Look at Hexaploid Cotton. 1969 Beltwide Cotton Production Research Conference, Houston, Texas, Jan. 1970.

Turcotte, E. L. and Carl V. Feaster.

Semigamy - A Short cut to pure lines of Pima Cotton.

Beltwide Cotton Production Conference, Houston, Texas, Jan, 1970.

F. Abstracts

John P. Cherry and F. R. H. Katterman.

"Nonspecific esterase isozyme polymorphism in species of *Gossypium* by gel electrophoresis." Jour. Ariz. Acad. Sci. 1970.

J. P. Cherry, F. R. H. Katterman and J. E. Endrizzi.

"Diploidization in allotetraploids of *Gossypium* as examined by electrophoresis of seed proteins and esterases." Fed. Proc. 1970.

J. E. Endrizzi and F. R. H. Katterman.

"Genetic Study of a variegated chlorophyll mutant in cotton." Journal Ariz. Acad. Sci. 1970.

G. Book Reviews

None.

PLANT PATHOLOGY

Publications During the Year

A. Books and Monographs

Streets, R. B.

"The Diagnosis of Plant Diseases," Univ. of Arizona Press

"Diseases of the Cultivated Plants of the Southwest"

Univ. of Arizona Press.

B. Chapters in Books

None.

C. Articles

Allen, Ross M. and H. H. McDonald

"Fifth Anniversary of Arizona's Citrus Budwood Program".

Citrograph (1970)

Allen, Ross M. and Herbert H. McDonald

"Budwood Certification: A Plan for Tomorrow". Citrograph

54(12) (Oct. 1969) 503-504.

Allen, Ross M.

"Mechanical transmission of exocortis virus". Citrograph

55(4) (Feb. 1970) 145-148, 152-153.

Bloss, H. Earl and J. F. Baniecki

"Effects of Sterols and Light on Sporulation and Germination

of Conidia of Phymatotrichum omnivorum. Phytopathology 59;

(May 1969) 680-684.

Bloss, H. E. and John F. Baniecki

"The basidial stage of Phymatotrichum omnivorum". Mycologia

Vol. LXI (Nov.-Dec. 1969) 1054-1059 (Published).

Boyle, Alice M. and Milton Charles Rush

"A Blight of Aleppo Pine (Pinus halepensis Miller)".

Plant Diseases Reporter 53(9) (1969 Sept.)

Boyle, Alice M. and Jerald E. Wheeler

"Identification of Four Phytophthora isolates previously

unreported from Arizona". Mycologia (In press).

Boyle, Alice M., J. E. Wheeler and R. B. Hine

"Comparative activity of the soil fungicides Dexon and

Terrazole against Phytophthora and Pythium". Phytopathology

60 (1969) 561-562.

Gilbertson, R. L. and A. B. Budington
"Three new species of wood-rotting fungi in the Corticiaceae".
Mycologia (In press).

Gilbertson, R. L. and A. B. Budington
"New Records of Arizona Wood-rotting Fungi". Journal of the
Arizona Academy of Science (In press).

Gilbertson, R. L. and A. B. Budington
"Some Southwestern Lignicolous Hymenomycetes of Special Interest".
Southwestern Naturalist (In press).

Gilbertson, R. L. and K. Sieglinde Neuhauser
"Some Aspects of Bipolar Heterothallism in *Fomes Cajanderi* Karst".
Mycologia (In press).

Hine, R. B. and J. E. Wheeler
"The occurrence of some previously unreported diseases in Arizona".
Plant Disease Reporter 54 (1970) 179-180.

Hine, R. B., J. E. Wheeler and E. L. Clark
"New canker disease found in pecans". Progressive Agriculture
in Arizona 21 (1969) 17.

Hine, R. B., S. V. Thomson, J. E. Wheeler and A. W. Johnson
"A new method to control root rot (*Phymatotrichum omnivorum*)
in replant sites". Progressive Agriculture in Arizona (In press).

Hine, R. B. and E. G. Ruppel
"Relationship of soil temperature and moisture to sugarbeet root
rot caused by *Pythium aphanidermatum* in Arizona". Plant Disease
Reporter 53 (1969) 989-991.

McClure, M. A., J. P. Reed and K. Helrich
"Bromide residues in vegetables following soil treatment with
nematocides". Proceedings of the Symposium on Tropical
Nematology. Univ. of Puerto Rico. 1969.

McClure, M. A.
"Styrene divinylbenzene spheres, a convenient support for
microscope slide coverslips". Nematologica 15 (1969) 155.

McClure, M. A.
"Uptake and incorporation of carbon-14 by *Aphelenchoides
dactylocercus*". Journal of Nematology 1 (1) (1969) 17.

Nigh, E. L., Jr., H. W. Reynolds, J. H. O'Bannon, A. T. Tomerlin,
and D. R. Rodney
"The Environment and Survival of *Tylenchulus semipenetrans*".
Plant Disease Reporter (In press).

Ruppel, E. G.

"Comparisons of beet yellows virus isolates from Arizona".
Journal of the American Society of Sugar Beet Technologists
(In press).

Ruppel, E. G.

"Relationships of Cucumber Mosaic Virus Isolates from Arizona".
Plant Disease Reporter (In press).

Turner, Raymond M., Stanley M. Alcorn, and George Olin
"Mortality of transplanted saguaro seedling". Ecology
50:(1970) 835-844.

D. Monographs in a Series

Bloss, H. E.

Techniques for Measuring Populations of Fungal Populations
in Soil. Wash. State Univ. W-38 Bulletin 716 (Published)

Nigh, E. L., Jr., I. J. Shields and R. B. Hine
Alfalfa Stem Nematode. Univ. of Ariz. Press

E. Papers Presented (Unpublished)

Allen, R. M. and R. H. Hilgeman

Effects of Tristeza Infection on Growth and Yield of 3 Citrus
Varieties. Proceedings 5th Conference International Organiza-
tion of Citrus Virologists. Japan, 1969.

Gilbertson, R. L. and A. B. Budington

Fungi Associated with Decay of Ponderosa Pine in the Southwest.
Forest Pathologists, Foresters, Plant Pathologists, Mycologists,
Private Forest Owners and Forest Industry.

McClure, M. A. and E. L. Nigh, Jr.

Cotton resistance to root-knot nematodes: penetration and
post-infection development. Beltwide Cotton Production
Research Conferences. Houston, Texas. January 1970.

McClure, M. A. and E. L. Nigh, Jr.

Cotton resistance to root-knot nematodes: Comparative
biochemistry of resistant and susceptible cotton plants.
Beltside Cotton Production Research Conferences. Houston,
Texas. January 1970.

F. Abstracts

Allen, R. M. and R. B. Hine

"Control of Thielaviopsis root rot (Thielaviopsis basicola)
by citrus by soil amendment with benomyl". Phytopathology
59 (Aug. 1969) 1015.

Caldwell, Roger L. and R. B. Streets
"Air Pollution Effects on Vegetation in Arizona". J. Ariz. Acad. Sci. Vol. 6 Proceedings Supplement (1970) 14.

Caldwell, Roger L. and Ross M. Allen
"Chemical Difference in Virus Infected Citrus". J. of Ariz. Acad. Sci. Vol. 6 Proceedings Supplement (1970) 14-15.

Caldwell, Roger L.
"Effects of Air Pollution on Vegetation". Progressive Agriculture in Ariz. (In press).

Hine, R. B., C. J. Wenger and D. L. Johnson
"Soil Persistency of Two Benzimidazole Fungicides and Their Fungistatic Activity Against *Phymatotrichum omnivorum*".
Proceeding 21st National Cotton Disease Council, New Orleans, LA. 1969.

Hine, R. B., D. L. Johnson, C. J. Wenger and M. Simbwa-Bunnya.
"Studies on Uptake and Translocation of Benlate in Cotton".
Proceedings 21st National Cotton Disease Council, New Orleans, LA. 1969.

Hine, R. B. and J. E. Wheeler
"Viability and occurrence of mycelial strands of *Phymatotrichum omnivorum* in Arizona. Phytopathology 59 (1969) 1057.

Nigh, E. L., Jr., and H. Eshtiaghi
"Nematodes associated with upland cotton infected by *Phymatotrichum omnivorum*". Phytopathology 59 (1969) 1042.

POULTRY SCIENCE

Publications During the Year

A. Books and Monographs

None.

B. Chapters in Books

None.

C. Articles

Berry, J. W., B. L. Reid and A. J. Deutschman.
"Studies on Carbon-14 Tagged Fatty Acid Ester," Poultry Science, (1970) 48:2182-2184.

Dobrenz, A. R., C. W. Weber and B. L. Reid.
"Effect of High Strontium Levels on Bone and Egg Shell Calcium and Strontium," Calcified Tissue, (1969) 4:180-184.

Katzen, Sol, K. Matsuda and B. L. Reid.
"Amelioration of Marek's Disease by Mycoplasma Gallisepticum," Poultry Science, (1969) 48:1504-1506.

Smith, S. I., C. W. Weber and B. L. Reid.
"The Effect of High Levels of Dietary DDT on Egg Production, Mortality, Fertility, Hatchability and Pesticide Content of Yolks in Japanese Quail," Poultry Science, (1969) 48:1000-1004.

Smith, S. I., C. W. Weber and B. L. Reid.
"The Effect of Injection of Chlorinated Hydrocarbon Pesticides on Hatchability of Eggs," Toxicology and Applied Pharmacology, (1969) 16:179-185.

Smith, S. I., C. W. Weber and B. L. Reid.
"Dietary Pesticides and Contamination of Yolks and Abdominal Fat of Laying Hens," Poultry Science (1970) (in press).

Svacha, A. J., C. W. Weber and B. L. Reid.
"Lysine, Methionine and Glycine Requirements of Japanese Quail to Five Weeks of Age," Poultry Science, (1970) (in press).

Weber, C. W. and B. L. Reid.
"Nickel Toxicity in Young Growing Mice," Journal of Animal Science, (1969) 28:620-623.

D. Monographs in a Series

None.

E. Papers Presented

None.

F. Abstracts

Weber, Charles W.

"Effect of Grain Sorghum Processing on Its Nutritive Value for Broilers and Laying Hens". Poultry Science, September, 1969. (48:1890).

Weber, Charles W.

"Studies on Response of Mice to Amino Acid Imbalance Diets." Federation Proceedings, March-April, 1970. (Abstract No. 1023).

G. Book Reviews

None.

WATERSHED MANAGEMENT

Publications During the Year

A. Books and Monographs

Brickler, Stanley K.
Park Visitor Classification Matrix, Dec. 1969, Ph.D.
Dissertation, Colorado State University.

Ffolliott, Peter F.
Characterization of Arizona Snowpack Dynamics for Prediction
and Management Purposes, 1970. Ph.D. Dissertation, University
of Arizona.

Hull, Herbert M.
Leaf Structure as Related to Absorption of Pesticides and
Other Compounds. Vol. 31, Residue Reviews, Ed. F.A. Gunther
and J. D. Gunther. New York-Heidelberg-Berlin: Springer-
Verlag, 1970.

B. Chapters in Books

None.

C. Articles

Bonham, Charles D.
"Distribution of insect plots in cotton fields," USDA Misc.
Publ. No. 1140. (1969). 32 pp. With R.E. Fye.

Bonham, C. D.
"Estimating temperatures and heat flux in insect environments
in stubbed cotton fields in the winter," Jour. Econ. Entol.
62:823-829. (1969). With R.E. Fye.

Bonham, Charles D.
"A statistical study of basic ecological variations in a
shortgrass prairie site," AEC Tech. Prog. Report No. COO-
1821-1. (1969). 72 pp.

Bonham, C. D.
"Modification of temperature by four types of insect cages,"
Jour. Econ. Entol. 62:1019-1023. (1969). With R. E. Fye.

Bonham, C. D.
"The role of ecology in industrial research programs,"
Arizona Review. 19(4):8-11. (1970)

Bonham, C. D.
"Temperatures at the surface of cotton leaves," Jour. Econ.
Entol. 62:1519-1520. (1969). With R. E. Fye.

Bonham, C. D.

"Acquisition of insect data from the optical scanner,"
Jour. Econ. Entol. (1970). Accepted. With R. E. Fye.

Bonham, C. D.

"Estimation of wintertime soil temperatures," Jour. Econ. Entol. (1970). Accepted. With R. E. Fye.

Bonham, C. D.

"Phytosociological relationships in Alpine tufted hairgrass (*Deschampsia caespitosa* (L.) Beauv.) meadows," Arctic and Alpine Research. (1970). Accepted. With R. T. Ward.

Bonham, C. D.

"Analysis of populations of the bollweevil in one acre of cotton at Florence, South Carolina in 1957-59," Jour. Econ. Entol. (1970). Accepted. With R. E. Fye.

Bonham, C. D.

"Summer temperatures of soil surface and their effect in the survival of bollweevils in fallen cotton squares," Jour. Econ. Entol. (1970). Accepted. With R. E. Fye.

Bonham, C. D.

"Winter survival of the bollweevil in Arizona," Jour. Econ. Entol. (1970). Accepted. With R. E. Fye and J. E. Leggett.

Ffolliott, Peter F.

"Multiproduct Timber Inventory," Forest Products Journal Vol. 19(11):31-36. With Roland L. Barger.

Ffolliott, Peter F.

"Snowpack Density, Water Content and Runoff on a Small Arizona Watershed," Proceedings Western Snow Conference, 37th Annual Meeting (April, 1969). 37:12-18. With David B. Thorud.

Fogel, Martin M.

"Effect of Storm Rainfall Variability on Runoff from Small Semiarid Watersheds," Transactions American Society of Agricultural Engineers, 12 (Nov.-Dec., 1969). 808-812.

Fogel, Martin M.

"Point Rainfall Frequencies in Convective Storms," Water Resources Research, (December, 1969). pp. 1229-1237.

Hull, Herbert M.

"Emergence of Fourwing Saltbush After Spraying Shrubs with Picloram," Weed Science 18 (May, 1970), 389-392. With S. Clark Martin and Samuel J. Shellhorn.

Jordan, Gilbert L.

"Artificial Selection for Seedling Drouth Tolerance in Boer lovegrass (*Eragrostis curvula* Nees)," Crop Sci. 10 (1969) p. 99-102. With L. N. Wright.

Klemmedson, James O.

"Response of Bitterbrush Seedlings to Nitrogen and Moisture on a Granitic Soil," Soil Sci. Soc. Amer. Proceedings 33 (November, 1969), 962-966. With R. B. Ferguson.

Klemmedson, James O.

"Needs for Soils Information in the Management of Range Resources," Jour. of Range Manage. 23 (March, 1970), 139-143.

Klemmedson, James O.

"Behavior of Fistulated Steers on a Desert Grassland. Jour. of Range Manage. 23 (May, 1970), 158-163. With Tesfay Zemo.

Martin, S. Clark

"Improving Semidesert Ranges in Southern Arizona, U.S.A. by Grazing Management and Shrub Control," Annals of Arid Zone. 23 (September, 1968) 235-242.

Martin, S. Clark

"Rotating Access to Water to Improve Semidesert Cattle Range Near Water," Jour. of Range Manage. 23 (January, 1970) 22-26. With Donald E. Ward.

Martin, S. Clark

"Longevity of Velvet Mesquite Seed in the Soil," Jour. of Range Manage. 23(1) (January, 1970) 69-70.

Martin, S. Clark

"Emergence of Fourwing Saltbush After Spraying Shrubs With Picloram," Weed Science. 18 (May, 1970) 389-392. With Samuel J. Shelhorn and H. M. Hull.

Ogden, Phil R.

"Vegetative Response Following Pinyon-Juniper Control in Arizona," Jour of Range Manage. 23:6 (1969) 416-418. With J. T. O'Rourke.

Schmutz, E. M.

"Crested Wheatgrass and Winterfat Emergence Under Simulated Drouth," Prog. Agr. in Arizona (1969) 21(5):3-5. With M.F. Al-Rabbat.

Schmutz, E. M.

"Fertilization and Increased Quality and Quantity of Lehmann lovegrass on Chaparral Soils," Prog. Agr. in Arizona (1969) 21(6):14-15. With Bekele Sissay.

Thames, John L.
"Application of a Computer Model to a Desert Watershed,"
Prog. Agric. in Arizona 21(1):12-19, (1969). With J. H.
Kitchen.

Thames, John L.
"Computerized Hydrologic Data Acquisition System--A Facility
for Upgrading Instruction in Watershed Management," Journal,
National Association of Colleges and Teachers of Agriculture,
24(1):3-5, (1970). With R. Tinlin.

Thorud, David B.
"Transpiration of Ponderosa Pine and Douglas-fir After Treat-
ment with Phenylmercuric Acetate," Water Resources Research,
6 (June, 1970). 2 pp. With Kenneth N. Brooks.

Thorud, David B.
"Snowpack Density, Water Content and Runoff on a Small Arizona
Watershed," Proceedings Western Snow Conference, 37th Annual
Meeting (April 1, 1969) 37:12-18. With P. F. Ffolliott.

D. Monographs in a Series

Ehrenreich, John H.
(Editor) Environmental Quality and Pollution Research Needs in
Forestry. ASCUFRO (Assoc. State Colleges and University
Forestry Research Organization). Task Force Report, 30 pp.

Ffolliott, Peter F.
Evaluating Product Potential in Standing Timber, U.S. Dept.
Agric., 1970 (Rocky Mtn. Forest & Range Exp. Sta. Res. Paper).
With R. L. Barger.

Knorr, Philip N. (Regional Contributing Author)
Intraregional Competition in Lumber Markets of the Eleven
Western States. Edited by Richard W. Brure, Washington Agric.
Exp. Sta. Bul. 711, Washington State University, Pullman,
Washington, 1969, 31 pp.

Schmutz, E. M.
Guide to Improvement of Arizona Rangelands. Tucson, Arizona:
Ariz. Agric. Exp. Sta. - Soil Conservation Service Bull;
Arizona Interagency Range Technical Subcommittee. Bull. A-58,
93 p.

Thorud, David B.
Soil Rejuvenation Following Artificial Compaction in a Minnesota
Oak Stand. Univ. of Minnesota. 1969. Minnesota Forestry
Note 208. 4 pp. With Sidney S. Frissell.

Wagle, Robert F.

Proceedings of the Symposium on Fire Ecology and the Control and Use of Fire in Wildland Management, Tucson, Arizona, April 19, 1969. Ariz. Academy of Science, Southwestern Section-Society of American Foresters, Southwestern Interagency Fire Council, and U. of A. Department of Watershed Management. 86 pages. With M. J. Zwolinski.

Zwolinski, Malcolm J. (Co-author)

Guide to Prescribed Fire in the Southwest. Fort Collins, Colorado: Southwest Interagency Fire Council, 1969. 58 pages. With M. H. Allen, R. W. Berry, D. Gill, G. L. Hayes, P.S. Truesdell and J. M. Pierovich.

Zwolinski, Malcolm J. (Co-editor)

Proceedings of the Symposium on Fire Ecology and the Control and Use of Fire in Wildland Management, Tucson, Arizona, April 19, 1969. Ariz. Academy of Science, Southwestern Section - Society of American Foresters, SW Interagency Fire Council, and U. of A. Department of Watershed Management. 86 pages. With R.F. Wagle.

Zwolinski, Malcolm J. (Editor)

Proceedings of a Seminar on Prescribed Burning and Management of Air Quality, Tucson, Arizona, November, 1968. Southwest Interagency Fire Council, 1970. 81 pages.

E. Paper Presented (Unpublished)

Bonham, Charles D.

An Estimation Method for Determination of Vegetative Composition. Paper presented to 14th Annual Meeting of the Arizona Academy of Science, Phoenix, Arizona, April, 1970. With E.B. Fish.

Bonham, Charles D.

Measurement and Analyses of Ecological Variations in a Short-grass Site. Paper presented to Arizona Academy of Science Meeting, Phoenix, Arizona, April, 1970.

Bonham, Charles D.

Implementing Biometry into Undergraduate Natural Resource Programs. Paper presented to NSF Symp. - Biometry in Natural Resource Curricula, Ft. Collins, Colo., April, 1970.

Bonham, Charles D.

Implementing Biometry into Graduate Programs in Natural Resources. Paper presented to NSF Symp. - Biometry in Natural Resource Curricula, Ft. Collins, Colo., April, 1970.

Brickler, Stanley K.
Carrying Capacity of Natural Areas. Paper presented to Seminar on Environmental Planning Study. Colorado Mountain College, Glenwood Springs, Colorado, 1969.

Brickler, Stanley K.
A Study to Develop Practical Techniques for Determining the Carrying Capacity of Natural Areas in the National Park System. Paper presented to Dept. of Recreation and Watershed Resources, Colorado State University, Ft. Collins, Colo., November, 1969.

Ehrenreich, John H.
The Forester and His Environment. Paper presented to the Southwestern Section of the Society of American Foresters, Albuquerque, New Mexico, March, 1970.

Ehrenreich, John H.
Range Management in an Arid Environment. Opening address to Range-Watershed Session of American Society of Range Mgmt. Annual Meeting, Denver, Colo., February, 1970.

Ehrenreich, John H.
Effect of Mining on Ecology in the Southwest. Paper presented at National Mining and Ecology Conference, Tucson, Arizona, March, 1970.

Ffolliott, Peter F.
Investigation of the Statistical Requirements for Evaluating the Effects of Thinning Ponderosa Pine on the Snow Regime. Report to the Rocky Mtn. Forest and Range Exp. Sta., Flagstaff, Arizona. 1969. 21 pp. With David B. Throud and Harry E. Brown.

Fish, E. B.
An Estimation Method for Determination of Vegetative Composition. Paper presented to 14th Annual Meeting of the Arizona Academy of Science, Phoenix, Arizona, April, 1970. With C. D. Bonham.

Fish, E. B.
Measurement and Analyses of Ecological Variations in a Short-grass Site. Paper presented to 14th Annual Meeting of the Arizona Academy of Science, Phoenix, Arizona. April, 1970. With C. D. Bonham.

Fogel, Martin M.
Sampling Problems Associated with Precipitation. Paper presented to Abiotic Specialists Meeting at the IBP Desert Biome, Tucson, Arizona, March, 1970.

Klemmedson, James O.

Some Considerations for Nutrient Balance Studies. Paper presented to the US/IBP Desert Biome Plan Specialists Meeting, Las Vegas, Nevada. Jan. 2-3, 1970.

Martin, S. Clark

Vegetation Changes on Semidesert Range During 10 Years of Summer, Winter and Yearlong Grazing by Cattle. Prepared for XI International Grassland Congress, Surfers Paradise, Queensland, Australia, April 22, 1970. (Paper read by E.H. Reid)

Ogden, Phil R.

Influence of Cover, Soil, and Micro-relief on Runoff from Desert Grasslands. Paper presented to 23rd Annual Meeting, American Society of Range Management, Denver, Colorado, February, 1970. With R.O. Hawkinson.

Thames, John L.

Soil Sampling Problems. Paper presented to Abiotic Specialists Meeting, International Biological Program, Tucson, Arizona, March, 1970.

Thames, John L.

Hydrologic Properties of Some Beaver Creek Soils. Paper presented to Forestry Seminar, University of Northern Arizona, Flagstaff, Arizona, May, 1970.

Thorud, David B.

Snowpack-Hydrograph Relationships for Watershed 17. Report to the Rocky Mtn. Forest & Range Exp. Sta., Flagstaff, Arizona. 1969. 23 pp.

Thorud, David B.

Investigation of the Statistical Requirements for Evaluating the Effects of Thinning Ponderosa Pine on the Snow Regime. Report to the Rocky Mtn. Forest & Range Exp. Sta., Flagstaff, Arizona. 1969. 21 pp. With Peter F. Ffolliott and Harry E. Brown.

Zwolinski, Malcolm J.

Conservation Responsibilities as seen by an Educator. Arizona Chapter, Soil Conservation Society of America, Tucson, Arizona, November 24, 1969.

F. Abstracts

Bonham, Charles D.

"An Estimation Method for Determination of Vegetative Composition," Arizona Academy of Science, Abst., 14th Annual Meeting, Phoenix, Arizona, April 17-18, 1970. With E. B. Fish

Bonham, Charles D.

"Measurement and Analyses of Ecological Variations in a Short-grass Site," Arizona Academy of Science, Abst., 14th Annual Meeting, Phoenix, Arizona, April, 1970. With E. B. Fish.

Fish, E.B.

"An Estimation Method for Determination of Vegetative Composition," Arizona Academy of Science, Abst., 14th Annual Meeting, Phoenix, Arizona, April 17-18, 1970. With C. D. Bonham.

Fish, E.B.

"Measurement and Analyses of Ecological Variations in a Short-grass Site," Arizona Academy of Science, Abst., 14th Annual Meeting, Phoenix, Arizona, April, 1970. With C.D. Bonham.

Hull, H.M.

"Comparison of Growth and Response to Herbicides of Velvet and Honey Mesquite Seedlings," Weed Science Soc. of Amer., February, 1970. (Abst. No. 112). With H.L. Morton and S.J. Shellhorn.

Hull, H.M.

"Influence of DMSO and Surfactant on the Control of Creosotebush with 2,4,5-T," Weed Science Soc. of Amer., February, 1970. (Abst. No. 113). With Richard E. Saunier.

Thames, John L.

"A Direct Passive Electrical Analog of a Watershed," American Geophysical Union, Abst., National Meeting, San Francisco, Calif., December, 1969. With R. Tinlin.

Thorud, David B.

Research Projects Relating to Snow and Ice Hydrology at the University of Arizona, Tucson. Proc., The Workshop on Snow and Ice Hydrology. Colorado State University, 1969. pp. 136-138. With James H. Zumberge and John F. Abel.

Thorud, David B.

Antitranspirants for Phreatophytes. Published minutes of the 69-3 Meeting of the Phreatophyte Subcommittee, Pacific Southwest Interagency Committee. September, 1969, Phoenix, Arizona. pp. 5-6. With Kenneth N. Brooks.

G. Book Reviews

Fogel, Martin M.

Review of The Treatment of Industrial Wastes, by E.B. Besselièvre. Choice, 6 (September, 1969), 850.

Fogel, Martin M.

Review of Strategies of American Water Management by G.F. White. Choice, 6 (November, 1969). 1256.

Fogel, Martin M.
Review of Water Management Innovation in England by L.E. Craine. Choice, 6 (October, 1969), 1051.

Fogel, Martin M.
Review of Residential Water Demand and Economic Development by T.R. Lee. Choice, 6 (January, 1970), 1608.

Fogel, Martin M.
Review of Urban Planning Aspects of Water Pollution Control by S. Grava. Choice, 7 (March, 1970), 110.

Schmutz, E.M.
Review of Cowboys Under the Mogollon Rim by Glenn R. Ellison, Jour. of Range Mange., 22 (1969), 292.

SCHOOL OF HOME ECONOMICS

Publications During the Year

A. Books and Monographs

None.

B. Chapters in Books

None.

C. Articles

Kight, M.A., B.L. Reid, Janice I. Forcier, Carol M. Donisi
and Martina Cooper
"Nutritional Influences of Mexican-American Foods in Arizona."
Journal of the American Dietetic Association 55 (December,
1969), 557-561.

D. Monographs in a Series

None.

E. Papers Presented (Unpublished)

Ruth C. Hall

Household Production Here and Abroad

Paper presented to the 6th Biannual Home Economics Alumni
Association meeting, The Ohio State University, Columbus,
Ohio, October 18, 1969.

Women in World Affairs

Paper presented to the annual meeting of the Region V. Business
and Professional Womens' Club, Phoenix, Arizona, November 12,
1969.

Role of the Home Economist in World Problems

Paper presented to the All College Honors Banquet, Kansas
State University, Manhattan, Kansas, February 5, 1970.

Faye C. Jones

Social and Physical Requirements for Housing the Elderly.

Paper presented to the Arizona Institute on Housing, Phoenix,
Arizona, April, 1970.

F. Abstracts

None.

G. Book Reviews

None.

AGRICULTURAL EXTENSION SERVICE

BULLETINS, POPULAR ARTICLES, REVIEWS, REPORTS, ETC. PUBLISHED BY THE
EXTENSION SERVICE

One of the primary responsibilities of Extension workers, especially state specialists, is to "prepare publications and other educational material needed by county personnel and the public in the conduct of Extension educational programs."

Usually, Extension staff members, because of the particular ability in writing for popular reading, author the Extension publications. Sometimes, however, Extension staff members coordinate the writing of an Extension publication by several other staff members. At other times, either because we do not have a specialist in the particular subject matter area or because a research worker desires to write an Extension publication, the Extension Service initiates the desire for and publishes needed bulletins authored by other than Extension staff members.

Early in 1968, the Publications Program for the College of Agriculture was changed so that all publications issued by the College of Agriculture were handled under the Extension Information Publications Project. This meant the addition of Experiment Station Reports and Experiment Station Technical Bulletins to the "popular publication" categories formerly handled by the Publications Editor.

Publications issued during the year were:

<u>BULLETINS</u>			<u>NO. COPIES</u>
A-1	Reprint	Chemical Wee Control 1970	7,000
A-18	Reprint	Insect Control for Flowers, Shrubs and Shade Trees	7,000
A-19	Reprint	Commercial Vegetable Insect Control	6,000
A-20	Revised	Irrigation: When? How Much? How?	5,000
A-33	Reprint	Growing Grapes in Arizona	7,000
A-37	Reprint	A Milker's Manual	5,000
A-51	Reprint	Budding and Grafting Fruit & Nut Trees	10,000
A-58	New	A Guide to Improvement of Arizona Rangelands	5,000
A-59	Reprint	Creativity and Children	15,000
A-60	New	Finishing and Refinishing Furniture	7,000
A-61	New	Bulbs for Southern Arizona	8,000
A-62	Reprint	Home Citrus in Arizona	15,000
A-63	Reprint	Pecans in Arizona	7,000
A-64	New	Growth and Development of the Cotton Plant	10,000
A-65	Reprint	Arizona Home Gardening	12,000

<u>BULLETINS</u>			<u>NO COPIES</u>
A-66	Reprint	Chile Peppers	7,000
A-67	Reprint	Easy Ways to Cook Pinto Beans	10,000
A-68	Revised	A Guide for Family Day-Care Mothers	5,000
A-70	New	Arizona Agriculture 1970	11,000
 <u>CIRCULARS</u>			
C-233	Reprint	How to Process Your Home Grown Olives	5,000
C-236	Reprint	Easy Sewing Skills for Everyone	7,000
C-245	Reprint	Making a Rope Halter	5,000
C-255	Reprint	Your 4-H Stock Horse	5,000
C-283	Reprint	Freezing Cooked Foods	8,000
 <u>FOLDERS</u>			
F- 68	Revised	1969-70 Arizona Farm & Home Publications	15,000
F- 87	Revised	Citrus Pollination By Honey Bees	3,000
F- 90	Revised	Melons and Cucumbers Need Bees	3,000
F- 91	Revised	Honey Bees in Alfalfa Seed Production	2,000
F-103	Reprint	Rose Varieties 1970	5,000
F-118	Reprint	Food for Fitness (English	15,000
F-121	Reprint	Darning on a Simple Sewing Machine	7,000
F-138	Reprint	Cotton Insect Control 1970	8,000
F-144	Reprint	Cultural Control of Pink Bollworm	6,000
F-146	Reprint	Insect Control in Field Corn, Sorghum, Small Grains 1970	6,000
F-147	Reprint	Insect Control Alfalfa and Bermuda Grass	5,000
F-148	New	Storage Battery Maintenance	6,000
F-149	New	Arizona Replacement-Heifer Program	5,000
F-150	New	I - Tourist Suggestions - All Citizens	20,000
F-151	New	II - Tourist Suggestions-Service Stations	5,000
F-152	New	III- Tourist Suggestions-Restaurant Personnel	5,000
F-153	New	IV - Tourist Suggestions-Hotel & Motel	5,000
F-154	New	V - Tourist Suggestions-Retail Sales Personnel	5,000
F-155	New	Alfalfa Stem Nematode	5,000
F-156	New	Root Rot Control in Ornamentals	8,000
F-157	New	Control of Texas Root-Rot in Ornamentals	8,000
F-158	New	Preparing Tree Holes for Root Rot Control	8,000
F-159	New	Evaporation of Water from Open Water Surfaces in Arizona	10,000
F-161	New	Chemical Control of Powdery Mildew in Cantaloup	2,000
F-162	New	Controlling Flies Around Dairies and Corrals	5,000

4-H MANUALS

NO. COPIES

3	Reprint	Learning to Sew	5,000
6	Reprint	Easy Does It	1,500
8	Reprint	4-H Horse Project-Unit I	5,000
18	Reprint	It's About Time	1,000
33	Reprint	4-H Lamb Guide	5,000

RESEARCH REPORTS

R-253	New	Costs and Returns Data for Crop Farms in Arizona	3,000
R-254	New	Annual Report 1968 - Short Staple Cotton Breeding	1,500
R-256	New	Quality of Arizona's Domestic, Agricultural and Industrial Waters	7,000
R-257	New	1969 Turfgrass Report	1,000
R-258	Revised	Arizona Grain Sorghum, Forage Sorghum and Sudangrass Performance Tests	3,500
R-259	New	Evaluation of Biochemical Soil Additive Vineyard Study	5,000

PRODUCTION SERIES

P-12	New	Cattle Feeders Day	2,000
P-16	New	Cattle Feeders Day	2,000

MISCELLANEOUS

	College of Agriculture Student Handbook	1,500
	Your Digest: October	7,000
	Your Digest: November	7,000
	Your Digest: December	7,000

TOTAL NO. COPIES 426,000

New	30	Agriculture	46	Bulletins	19
Revised	7	Home Economics	10	Circulars	5
Reprint	29	4-H	5	Folders	25
		Information	5	4-H Manuals	5
				Reports	6
				P-Series	2
				Miscellaneous	4
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A. Books and Monographs

None.

B. Chapters in Books

None.

C. Articles

Alstad, George and Keith Jones. Summer 4-H Fun, Progressive Agriculture in Arizona XXI (4) July-August, 1969.

Cable, C. Curtis, and George Alstad. Cotton Growers Must Fact Challenge, Progressive Agriculture in Arizona XXI (1) January-February, 1970.

Napier, Clay. An Agricultural Editor's Prayer, AAACE, 53, April-June 1970, 27-28.

Napier, Clay. Administration: Theory X or Y, AAACE, 52, July-September, 1969, 31,32,33.

Napier, Clay. Electronic Data Processing, Extension Service Review, 40, October, 1969, 4,5.

Napier, Clay. New 'Do-it-all' Cotton Planter, Farm Journal, 70, July, 1969, 4.

Napier, Clay. 4-H Remembers Forgotten Boys, National 4-H News, 48, January, 1970, 10.

Napier, Clay. Crops on Beds Yield More, Crop Profits, 6, Spring Issue 1970, 4.

Napier, Clay. Cotton Big in Arizona Economy, Progressive Farmer, 85, March-April, 1970, 13.

Napier, Clay. 'Known Need' Program Slashes Control Costs, American Cotton Grower, 6, February, 1970, 19.

Napier, Clay. Brangus Excelling, Brangus Journal, 15, July, 1969, 17, 18.

Napier, Clay. Insect War Saves Money, California-Arizona Cotton, V, January, 1970, 7.

Napier, Clay. Lower Cotton Production Costs, Cotton's Progress, 71, January-February, 1970, 6.

Napier, Clay. University of Arizona Ranch School, Arizona Cattlelog, XXVI, March, 1970, 4,5,6.

Napier, Clay. Parasite Problems in Arizona, Poultry and Egg Production, 42, August, 1969, 1.

Napier, Clay. Management-Profit Links Cited, The Poultryman, XXXV, May, 1970, 1, 12.

Napier, Clay. 4-H Poultry Work Sparks Yaqui Youngsters in Arizona, The Poultryman, XXXIX, October, 1969, 2.

Napier, Clay. Experiments in Grain Processing, Western Livestock Journal, 46, October, 1969, 14.

Napier, Clay. Fly Control, Animal Nutrition and Health Journal, 51, September, 1969, 7.

Napier, Clay. University of Arizona Cotton Machine, Agrichemical West, 12, July, 1969, 21.

Napier, Clay. How to Check for Insects in a Western Cotton Field, Cotton Farming, 14, May, 1970, 12.

Napier, Clay. Chemical Weed Control, The Progressive Farmer, 85, January, 1970, 17.

D. Monographs in a Series

None.

E. Papers Presented (Unpublished)

Cable C. Curtis, and George Alstad. REAP A Brighter Future From Your Cotton, Western Cotton Production Conference, Phoenix, Arizona, March 10, 1970.

F. Abstracts

None.

G. Book Reviews

None.