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A PRELIMINARY BIBLIOGRAPHY ON RURAL HOUSING AND FARM SERVICE BUILDINGS

INTRODUCTION

In order to meet the new responsibilities assigned to the Department of Agriculture by Public Law 171, The Housing Act of 1949, I have appointed a temporary Committee on Housing Research to aid in planning the Department's program in this field. The committee includes P. V. Cardon, Administrator, Agricultural Research Administration; D. B. Lasseter, Administrator, Farmers Home Administration; Ralph R. Shaw, The Librarian; L. F. Watts, Chief, Forest Service; G. V. Wells, Chief, Bureau of Agricultural Economics; M. L. Wilson, Director, Extension Service, Chairman.

The first responsibility of this committee was to survey existent data, in order that the Department's new work in the field of housing might utilize all available information to the fullest extent. The bibliography which follows was compiled by Miss Margaret C. Schindler, Chief of the Division of Bibliography of the Department Library, in cooperation with a Working Committee consisting of Roy J. Burroughs, Bureau of Agricultural Economics; L. H. Hauter, Farmers Home Administration; Samuel P. Lyle, Extension Service; Dr. Louise Stanley, Agricultural Research Administration; Dr. George Trayer, Forest Service; and Ralph R. Shaw, The Librarian, Chairman.

Time available for this preliminary study was limited to three weeks. It must be noted, therefore, that there are certain important gaps in its coverage. For example, the listing is stronger in engineering and construction aspects than it is in social and economic factors. Work published prior to 1939 has not been included, and some such publications describe research which is of current value. Samples only of State extension publications are included, and research in progress in non-Governmental laboratories has not been covered adequately.

These shortcomings are noted in order to indicate the direction of further bibliographical studies which may be required. On the other hand, the bibliography does cover most of the Department of Agriculture and State Experiment Station research in progress, much of the important research work reported in print during the last ten years, as well as extension programs in progress. A limited edition of this preliminary inventory of research data on rural housing is, therefore, being issued as an aid to those who have immediate problems in this field.

The amount of material listed would normally require more than a man-year of bibliographical work. Credit for achieving so much in such a limited time should be given to the Working Committee.

Knox T. Hutchinson
Assistant Secretary of Agriculture

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General Studies

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JOHN B. PIERCE FOUNDATION. Family living as the basis for dwelling design. New York, 1943-44. v. 1, 4, 5. 324.9 J61
Bibliography, v. 1, p. 20-22.
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KEENE, A. K. Let's figure for a home. U. Fla. Col. Ed., Gainesville, 1947. 59 p.

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BROOKS, J. B. Basement and cellar storage structures. Ky. Agr. Col. Ext. Leaflet 52, 6 p. July 1943. 275.29 K415Le

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FITZGERALD, M., and WOODRUFF, L. Homemade storage facilities for the home. Mo. Agr. Col. Ext. C. 503, 11 p. 1943. 275.29 M69C

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MARLEY, H. L. Some storage requirements of a group of Indiana families. 1948. 116 p.

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Pt. 1, Types, drawers, shelves, sizes, poles, lighting and ventilation, hooks, racks. Various standard manufactured units shown; Pt. 2, Bedroom closets for men, women and children; Pt. 3, Hall closets; Pt. 4, Housekeeper's desk, living room, sports equipment, bathroom and medicine, household appliances, and dining room storage. Detailed drawings for the closets designed are given.

THE STORAGEWALL; a new answer to the housewife's demand for better storage; marshals hard-to-closet articles in the space now lost to partitions. Prefabricated units form flexible, two-way walls suited to every plan and purpose. Architect. Forum 81(5): 83-92. Nov. 1944. 296.8 B76

George Nelson and Henry Wright, designers.

Added to a typical small house plan, the units provide 500 cu. ft. of efficient, fitted storage.

WILSON, M., DODGE, J. R., and EDWARDS, E. Closets and storage spaces. U. S. D. A. Farmers' B. 1865, 21 p. 1940. 1 Ag84F

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WOODRUFF, L. Meeting the storage needs of small children. Mo. Agr. Col. Ext. C. 495, 4 p. 1943. 275.29 M69C

Development of House Plans to Meet Requirements

BURBANK, N. L. House construction details. Ed. 2. New York, Simmons-Boardman, 1942. 313 p. 296 B89

Construction details, photographic views of finished work, shortcut tables and brief explanatory text. Includes kitchen plans, broom closet and other closets, breakfast alcove, ironing board and other built-in equipment and shelves, fireplaces and chimneys, gates, fences, a septic tank, flooring, insulation, wiring, heating and air conditioning, windows, doors, hardware, cabins, garages, prefabrication, modern building materials, etc.

CARTER, D. G. Case studies in low-cost housing. Agr. Engin. 22: 427-428. Dec. 1941. 58.8 Ag83

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DIETZ, A. G. H. Dwelling house construction [a practical working manual on frame layout, materials and construction]. New York, Van Nostrand, 1946. 371 p.

FITZSIMMONS, C., and PERKINS, N. L. A score card for farm family quality in living. Ill. Agr. Col. Ext. HE 559, 10 p. 1947. 275.29 IL62Phe

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ILLINOIS. UNIVERSITY. COLLEGE OF AGRICULTURE. EXTENSION SERV. When you build or remodel your farmhouse; a guide to planning. Ill. Agr. Col. Ext. C. 620, 48 p. Jan. 1948. 275.29 IL62C

MODULAR planning. Amer. Builder and Bldg. Age 66(9): 84-85, 100; (10): 116-117. Sept.-Oct. 1944. 296.8 Am3

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OVERBY, F. M. Farm house and the architect. Agr. Engin. 21: 103-104. Mar. 1940. 58.8 Ag83

Architectural considerations of stock plans. One-story farm houses. Time-saving lumber. Factors delaying home improvements.

SCHEICK, W. H., and LINDSAY, D. B. Solar orientation in home design. Ill. U. B. 42(25), 4 p. Feb. 16, 1945. (Small Homes

Council C. Ser. C3.2) 296.29 IL6

SIMONS, J. W. New approaches to farmhouse design, construction and equipment. Agr. Engin. 22: 181-184. May 1941. 58.8 Ag83

SUCCESSFUL FARMING. Successful Farming's building guide for farm and home. Des Moines, Iowa, Meredith, 1940. 78 p. 296 Su1

Includes 5 Bildcost houses for which working plans are available. Discusses basic principles of home design and gives examples of remodeling. Pt. IV. is a building manual which considers water-supply and sewage-disposal systems, electricity, financing, heating, foundations, insulation, paint, walls, floors, roofing, and stormproofing.

U. S. DEPT. OF AGRICULTURE. Minimum requirement for farmhouses recommended by the United States Department of Agriculture. U. S. D. A. Misc. P. 475, 8 p. 1941. 1 Ag84M

Choosing the site, construction features, space requirements and arrangement, kitchen, food, fuel and other storage, light and ventilation, electric wiring, heating, water supply and sanitation and health and safety are discussed.

U. S. FARM SECURITY ADMINISTRATION. REGION VIII. The farm home. Dallas, Tex., 1941. 21 p. 1.9508 F223

WICHERS, H. E. Better homes for Kansas farms. Kans. Engin. Expt. Sta. B. 43, 80 p. Ref. 1942. 290.9 K132

Consideration is given to the farmstead layout, including plans, solving the farmhouse problems, which includes water supply, sewage disposal, lighting, heating and air conditioning, room analysis, including closets, recreation room, fruit room, etc., and construction. Illustrations and floor plans for 33 designs are given. Some consideration is given to the growing house.

WILSON, E. B. Planning better homes. Mont. State Col. Ext. Serv. B. 255, 17 p. Jan. 1949. 275.29 M76C

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ASHBY, W., and NASH, W. H. Modernizing farmhouses. U. S. D. A. Farmers' B. 1749, 62 p., slightly rev. 1944. 1 Ag84F

Presents 18 examples of remodeling, some actual and some typical conditions, with alternate plans in several cases.

CROUSE, W. H. Home guide to repair, upkeep, and remodeling. New York, McGraw-Hill, 1947. 358 p. 323 C88

DOWDY, W. V. 4-H home improvement handbook. Ga. Agr. Col. Ext. B. 509, 34 p. 1944. 275.29 G29B

Units of work outlined include: A victory home for Georgia farm families; home safety; lamps and lighting for the farm home; selecting interior finishes for the farm home; homemade furniture for the farm home, etc. Minimum housing standards for farm homes are listed and clothes closets are considered.

HUMPHREYS, G. Bringing our houses up to date. W. Va. Agr. Col. Ext. Serv. Good Living Ser. 13, 6 p. n. d. 275.29 W522G

JEFFERSON, C. H., GERLACH, C. S., and POND, J. Remodeling rural Michigan homes. Mich. Agr. Expt. Sta. C. 205. 44 p. 1947. 100 M58S

REYNOLDS, L. W., and HOLMES, E. G. Home improvements of 40 Ohio farm families. J. Home Econ. 39: 341-344. June 1947. 321.8 J82

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U. S. BUR. OF FOREIGN AND DOMESTIC COMMERCE. Check list for home repair and modernization. U. S. Bur. Foreign and Dom. Com. Econ. Ser. 36, 13 p. 1944. 157.54 Ec7

U. S. DEPT. OF AGRICULTURE. Your farmhouse; how to plan remodeling. U. S. D. A. Misc. P. 619, 24 p. Apr. 1947. 1 Ag84M

U. S. HOME OWNERS' LOAN CORPORATION. APPRAISAL AND RECONDITIONING DIVISION. Master specifications for reconditioning (including repairing, rehabilitation, rebuilding, enlargement, and demolition). Ed. 3. 1940. 226 p. 173.2 H752M

VAN VLACK, C. H., and SIMPSON, R. Modernizing a midwestern farmhouse. Iowa. Agr. Expt. Sta. B. P78: 577-596. 1946. 100 Io9

Three points to be considered: Will the house be worth it? Will it be satisfactory? and What will it cost?

Housing for Transient Workers

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Books by same author and title are available for grades 7-10.

Grade 7 contains material on applying outside paint, mixing paint, and applying preservative treatment to farm timber; Grade 8, designing and constructing built-in cabinets and tables, wood box and ventilated fruit, egg, milk and vegetable bin; Grade 9, replacing broken glass in window sash, constructing wood steps, yard and farm gates, plant trellises, installing water system, simple electrical wiring; Grade 10, constructing safe and economical fireplaces.

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Beech, American	,, white	,, , southern
Birch	Hackberry	,, , sugar
Buckeye	Hemlock, eastern	,, , western white
Butternut	,, , western	
Cedar, Alaska yellow-	Hickory	
Cedar, Atlantic white-	Holly, American	

Cedar, California incense-	Larch, western	Poplar, balsam
,, , eastern red	Locust, black	,, , yellow
,, , northern white-		Redwood
,, , Port Orford white-	Magnolia	Spruce, eastern
,, , western red	Maple	,, , Engelmann
Cherry, black	Oak	,, , Sitka
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PART II

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SOCIAL AND ECONOMIC ASPECTS

General

ECONOMIC ASPECTS OF RURAL HOUSING IN IOWA. Iowa Agricultural Experiment Station, Ames. Depts. of Agricultural Economics, Agricultural Engineering and Home Economics.

To study (1) quantity, quality, economy and methods and structure of rural housing; (2) isolation and defining of the problems of rural housing; and (3) development of valid methods for economic research in rural housing.

Aggregate Need and Markets and Public Policy Relating Thereto

National

MEASUREMENT OF HOUSING QUALITY. American Public Health Association. Committee on the Hygiene of Housing. New Haven, Conn.

In recent years the Committee has developed an integrated system of procedures for evaluation of housing conditions and needs in urban slums or substandard areas. Studies are being undertaken to adapt the system to the appraisal of rural housing.

ANNUAL ESTIMATE OF FARM POPULATION. Texas Agricultural and Mechanical College, College Station.

Annual study of changes in farm population to determine cause.

INVENTORY OF FARM HOUSING AND OTHER STRUCTURES.

a. INVENTORY, FACILITIES, QUALITY, USE OF STRUCTURES, ETC., IN RELATION TO INCOME AND POPULATION DATA.

U. S. Bureau of Agricultural Economics, Washington.

Local

New York

STATE PROJECT: STUDY OF HOUSE IMPROVEMENT PRACTICES OF FARM FAMILIES IN NEW YORK STATE. Cornell University, Ithaca, N. Y.

Virginia

POSSIBILITIES OF LOW-COST HOUSING IN VIRGINIA. Virginia Agricultural Experiment Station, Blacksburg.

Cost and Value of Buildings Including Appraisal

HOUSING COSTS AND INVESTMENT IN WISCONSIN RURAL FARM DWELLINGS. Wisconsin Agricultural Experiment Station, Madison. Dept. of Home Economics.

To determine (1) relationship of the farm investment in land, farm buildings and equipment and income from the farm to amount invested in durable goods used in family living; (2) amounts spent for building new houses, remodelling, etc. in relation to space, utilities and equipment secured; (3) annual maintenance and operation costs; and (4) relation of overinvestment in the farm house to the necessity for foreclosure of farm loans.

Financial Planning and Financing

A CASE STUDY OF IMPROVED RURAL HOUSING. South Carolina Agricultural Experiment Station, Clemson. Dept. of Home Economics.

To study experiences of typical farm owners who have succeeded in providing for their families better than average housing.

STUDIES IN PLANNING AND REMODELLING TO IMPROVE LOW COST FARM HOUSES. Kentucky Agricultural Experiment Station, Lexington. Dept. of Agricultural Engineering.

To develop low cost farm house plans and improvements that can be used by families of limited or low incomes to attain the most satisfactory housing for money spent.

Studies will be made: (4) of credit facilities available and used for housing improvements.

ECONOMICS OF HOUSING: FARM FAMILY PRACTICES AND PROBLEMS IN MAKING HOUSING IMPROVEMENTS IN NORTH CENTRAL REGION. U. S. Bureau of Human Nutrition and Home Economics. Division of Family Economics, Washington.

To provide information on practices by farm families and problems in making farm housing improvements.

Cooperating: State and local extension agents, Experiment Stations, North Central States, North Central Farm Structures

Coordinating Committee; Bureau of Plant Industry, Soils, and Agricultural Engineering.

Building Materials and Construction Industry

INVESTIGATIONS OF POTENTIAL REQUIREMENTS FOR TIMBER PRODUCTS IN THE UNITED STATES. U. S. Forest Service. Division of Forest Economics.

Studies cover all the various consumption uses and all forest products. Only limited work is currently under way on farm housing.

STUDIES IN PLANNING AND REMODELING TO IMPROVE LOW COST FARM HOUSES. Kentucky Agricultural Experiment Station, Lexington. Dept. of Agricultural Engineering.

To develop low cost farm house plans and improvements that can be used by families of limited or low incomes to attain the most satisfactory housing for money spent.

Studies will be made: (2) on the services and information available through lumber dealers, skilled carpenters, plumbers, electricians, masons, contract arrangements made by farmers with them prior to construction, techniques used, and supervision of building crews.

Past and Prospective Volume of Construction Activity and Capital Formation

INVENTORY OF FARM HOUSING AND OTHER STRUCTURES. b. VOLUME OF CONSTRUCTION ACTIVITY FOR UNITED STATES AND THREE REGIONS. U. S. Bureau of Agricultural Economics.

Sample survey in 1950. Now in planning stage. Some pretesting has been done cooperatively with Michigan State College and Cornell.

Legal Aspects

LEGAL REGULATION OF EXISTING HOUSING. American Public Health Association Committee on the Hygiene of Housing, New Haven, Conn.

The objective of the studies in this field is to develop improved legal instruments for maintaining proper standards in presently occupied housing, with special emphasis on the role of local or State public health departments.

BUILDING CODE. U. S. Forest Service. Division of Forest Products.

To improve building practice and economy the Forest Products Laboratory and the National Lumber Manufacturers Association have joint sponsorship in preparing building code requirements for wood construction including dwellings, to be issued as a standard by the American Standards Association. The prepara-

tion of this code is underway.

FARMSTEAD

FARM BUILDINGS, A STUDY OF UTILITY, ARRANGEMENT AND IMPROVEMENTS WITH CONSIDERATION OF GEOGRAPHIC AND ECONOMIC FACTORS. Idaho Agricultural Experiment Station, Moscow.

IMPROVEMENT OF PRODUCTION EFFICIENCY IN FARM BUILDINGS. Illinois Agricultural Experiment Station, Urbana. Dept. of Agricultural Engineering.

To study methods of improving efficiency of farm structures as production units through location.

DAIRY FARMSTEAD. New Jersey Agricultural Experiment Station, New Brunswick.

FARM ORGANIZATION AND MANAGEMENT IN UTAH. XI. LABOR REQUIREMENTS FOR AGRICULTURAL PRODUCTION IN UTAH. Utah Agricultural Experiment Station, Logan. Dept. of Agricultural Economics.

(1) To determine the amount and efficiency of labor needed for agricultural production in Utah; (2) to increase the efficiency of farm labor and its relation to such factors as size of farms, layout of farms.

A labor requirements survey will be conducted in representative areas to supplement present available data. Using the requirement standards obtained, the amount of labor required to produce Utah's crops and care for Utah's livestock will be determined each current year. Field data will be obtained where changes in farm organization, methods, and machinery have been made.

Cooperating: Extension Service.

FARM LABOR EFFICIENCY. Vermont Agricultural Experiment Station, Burlington. Dept. of Agricultural Economics.

To study (1) factors which govern effectiveness with which labor is used on individual farm jobs; and (2) adjustments farmers can make in methods, equipment, and building arrangement.

DWELLINGS

Study of Family Requirements in Housing

DESIGN OF DWELLINGS (SINGLE- OR MULTI-FAMILY) IN TERMS OF THE AMOUNT AND ORGANIZATION OF SPACE REQUIRED FOR HEALTHFUL AND CONVENIENT LIVING. American Public Health Association Committee on the Hygiene of Housing, New Haven, Conn.

FARMHOUSE REQUIREMENTS AND HOME IMPROVEMENT METHODS. Illinois Agricultural Experiment Station, Urbana. Depts. of Agricultural Engineering and Home Economics.

To determine or develop effective methods for making farmhouse improvements. To study family housing needs and preferences, the pattern of household activities and the influence of income, type of farming, family size, and other factors on housing. To establish requirements of space, arrangement, utilities, equipment, and environment for farm living.

STUDIES IN PLANNING AND REMODELING TO IMPROVE LOW COST FARM HOUSES. Kentucky Agricultural Experiment Station, Lexington. Dept. of Agricultural Engineering.

To develop low cost farm house plans and improvements that can be used by families of limited or low incomes to attain the most satisfactory housing for money spent.

ANALYSIS OF SELECTED ACTIVITIES ROOM RELATIONSHIPS IN FARM HOMES. Cornell University, Ithaca, N. Y.

STUDY OF INFLUENCING FACTORS IN CLASSIFICATION OF FARM HOUSING REQUIREMENTS IN NORTHEAST REGION. Cornell University, Ithaca, N. Y.

EFFECTS OF INCOME, TENANCY, FAMILY COMPOSITION AND OTHER FACTORS IN FARM HOUSE REQUIREMENTS. Wisconsin. University, Madison.

RELATION OF FAMILY COMPOSITION AND PERIOD OF THE FAMILY CYCLE TO RURAL FARM HOUSE CHARACTER AND UTILIZATION; METHODS OF ADJUSTMENT IN HOUSING TO CHANGES IN PERSONNEL OVER THE LIFE CYCLE OF THE FARM FAMILY. Wisconsin.University, Madison. College of Agriculture. Dept. of Home Economics.

ANALYSIS OF FARM HOUSEHOLD ACTIVITIES, AS A GUIDE TO HOUSING NEEDS. U. S. Bureau of Human Nutrition and Home Economics. Division of Housing and Household Equipment, Beltsville, Md., and cooperating State Agricultural Experiment Stations.

To survey and analyze household activities of farm families in selected areas of the U. S. in order to provide basic data for planning farm houses.

Survey schedules are being collected to determine farm family requirements for housing in the different regions. Schedules are being collected in some non-participating States. As the survey work is completed, States are turning to study of special aspects of this problem.

Cooperating: Thirty-three States under four regional projects as follows: NE-7 — Connecticut (Station), Maine, [1]Massachusetts, [1]New Jersey, New York, Pennsylvania, Rhode Island, West Virginia; S-7 — Alabama, Arkansas, Georgia, Mississippi, [2]North Carolina, South Carolina, Tennessee, Virginia; NC-9 — Illinois, Indiana, Iowa, Kansas, [1]Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, Wisconsin; W-9 — Arizona, California, Colorado, Oregon, Utah, Washington.

1 Partial participation. 2 Assisting with statistical study of data.

Living and Recreation Areas

INDOOR PLAY AREAS FOR THE PRE-SCHOOL CHILD. Arizona Agricultural Experiment Station, Tuscon. Dept. of Home Economics.
To (1) determine space needs for indoor play activities by pre-school children and space for storage of equipment used in these, (2) suggest possibilities of providing play areas in the farmhouse which will permit supervision by the mother as she is engaged in various household tasks and which will not interfere with space for adult leisure activities, and (3) suggest location for storage units for indoor play equipment.

HOUSING CONDITIONS RELATED TO HOSPITALITY ACTIVITIES OF OWNER-OPERATOR FARM FAMILIES IN GEORGIA. Georgia. University, Athens.

THE RELATIONSHIP OF DOMESTIC ACTIVITIES AND SPACE ARRANGEMENT IN RHODE ISLAND FARMHOUSES TO MEET FAMILY SOCIAL AND RECREATIONAL NEEDS. Rhode Island Agricultural Experiment Station, Kingston. Dept. of Home Economics.
To determine basic space arrangements and equipment requirements in the house to promote satisfactory accomplishment of (a) adult leisure time and recreational activities, (b) children's activities and play, and (c) entertaining of and caring for guests in the house.

Work Areas

KITCHEN-LAUNDRY DESIGN. Illinois. University, Urbana.

LAUNDRY SPACE REQUIREMENTS. Illinois. University, Urbana.

EXAMINATION OF POSSIBLE CRITERIA FOR MINIMUM ADEQUACY IN KITCHEN STORAGE PROVISIONS FOR FAMILIES OF FOUR. Purdue University, Lafayette, Ind.

EVALUATION OF DIFFERENT STYLES OF KITCHEN SINKS. Maine Agricultural Experiment Station, Orono.

KINDS OF WORKING AND STORAGE SPACES NEEDED IN VARIOUS ROOMS OF THE MAINE FARM HOME, AND THE PREFERRED JUXTAPOSITION OF THE MOST FREQUENTLY USED ROOMS. Maine Agricultural Experiment Station, Orono. Dept. of Home Economics.
To ascertain the activities which the farm family carries on in the individual rooms and to learn the homemaker's preferences in respect to the location of these rooms in relation to each other and to outside entrances.

DEVELOPMENT OF A FUNCTIONAL BASIS FOR KITCHEN DESIGNING. Cornell University, Ithaca, N. Y.

TEST ANALYSIS IN LAUNDRY SPACE REQUIREMENTS—REGIONAL SPACE REQUIREMENTS SURVEY. Cornell University, Ithaca, N. Y.

RELATION OF SINK DIMENSIONS TO POSTURE OF THE WORKER. Cornell University, Ithaca, N. Y.

A STUDY OF COMPONENT ACTIVITIES COMMON TO CERTAIN MAJOR HOUSEHOLD TASKS. New York (Cornell) Agricultural Experiment Station, Ithaca. Dept. of Household Management.

To select and study the important component activities common to the major household tasks, and the effect on the worker.

It is proposed (1) to select most frequent component activities as noted in research and in observations of women working in kitchens, and (2) to study each activity by means of oxygen consumption, heart rate, postural angle of bend and twist, process charts, and psychological reaction of workers. From this, it is expected to derive optimum conditions, and a range around these conditions, that will be useful in designing suitable equipment and work areas in the interest of biological effects, time required for work, and money cost of housing.

STUDY OF DISTANCES BETWEEN MAJOR PIECES OF EQUIPMENT AND RELATED STORAGE SPACE USED IN PREPARING AND SERVING FOOD IN HOMES. New York (Cornell) Agricultural Experiment Station, Ithaca. Dept. of Home Economics.

To conduct an exploratory study concentrating attention of work centers for common tasks connected with food preparation, to determine where the tasks are carried out and where the related equipment, utensils, and supplies are located.

DEVELOPMENT OF A FUNCTIONAL BASIS FOR KITCHEN DESIGNING. New York (Cornell) Agricultural Experiment Station, Ithaca.

A STUDY IN LIGHTING IN KITCHEN WORK CENTERS. Ohio State University, Columbus.

VARIOUS NEW TYPES OF WASHING MACHINES IN LAUNDERING FABRICS, IN TIME AND ENERGY MANAGEMENT, AND IN LAUNDRY AREA PLANNING FOR NEW AND REMODELED HOMES. Ohio Agricultural Experiment Station, Columbus.

OPTIMAL STORAGE REQUIREMENTS FOR THE UNIT KITCHENS. Oregon State College, Corvallis.

A STUDY OF SIXTY TENNESSEE HOME KITCHENS. Tennessee.University, Knoxville.

FOOD MANAGEMENT IN VERMONT FARM HOMES. Vermont Agricultural Experiment Station, Burlington. Dept. of Home Economics.

To investigate the type of meals being served to Vermont farm families and the relationships between the food and factors of home management.

Data will be obtained on (4) physical conditions under which meals are prepared.

IMPROVEMENT OF RURAL HOUSING: 1. A SURVEY TO DETERMINE FAMILY NEEDS AND PREFERENCES. 2. ARRANGEMENT OF WORK AREA IN HOME USING MOTION STUDY AS A BASIS. Washington State College, Pullman.

FUNCTIONAL DESIGNS FOR HOME SEWING FACILITIES. U. S. Bureau of Human Nutrition and Home Economics. Division of Housing and Household Equipment, Beltsville, Md.

To develop functional designs for home sewing facilities, based on activity requirements and storage needs; and to prepare working drawings and specifications for construction of these facilities.

Cooperating: Textiles and Clothing Division.

Storage Areas

CERTAIN STORAGE REQUIREMENTS FOR GROOMING ACTIVITIES OF TEEN AGE RURAL YOUTH IN HARVEY COUNTY. Kansas State College, Manhatten.

KINDS OF WORKING AND STORAGE SPACES NEEDED IN VARIOUS ROOMS OF THE MAINE FARM HOME, AND THE PREFERRED JUXTAPOSITION OF THE MOST FREQUENTLY USED ROOMS. Purnell. Maine Agricultural Experiment Station, Orono.

To ascertain the activities which the farm family carries on in the individual rooms and to learn the homemaker's preferences in respect to the location of these rooms in relation to each other and outside entrances.

STORAGE FACILITIES FOR OTHER AREAS OF THE FARMHOUSE THAN THE KITCHEN. Oregon Agricultural Experiment Station, Corvallis. Dept. of Home Economics.

To study effect of (1) changes in family living habits upon types and quantities of articles to be stored; (2) changes in building practices and materials used in construction of storage facilities; and (3) increase in the availability of commercial storage units.

Development of House Plans to Meet Requirements

FARM HOME IMPROVEMENT THROUGH PRACTICES AND METHODS FOR OBTAINING ADEQUATE FARM HOUSING AT LOW COST. Arkansas Agricultural Experiment Station, Fayetteville. Dept. of Agricultural Engineering.

To determine functional requirements of farm homes to meet needs and activities of the farm family, such as space, arrangement, health needs, equipment, and facilities. Study requirements for remodeling and improving farm homes. Determine methods of using native materials and low cost commercial materials, separately and in combination, to secure adequate, attractive, and economical rural housing. Prepare and make available to farm families home

plans using best combinations as shown by results of projects.

Cooperating: Bureau of Human Nutrition and Home Economics.

A STUDY TO DETERMINE HOUSING REQUIREMENTS OF CALIFORNIA RURAL FAMILIES AND TO DEVELOP HOUSE PLANS USING THE FINDINGS OF THIS STUDY. California Agricultural Experiment Station, Davis. Dept. of Home Economics.

To collect and analyze the basic information concerning rural families and their environmental conditions required in the development of house plans suited to the State, to correlate this information with that from sections of other States with similar conditions, and to appraise the house plans distributed by the California station and used in building rural homes.

Cooperating: Bureau of Human Nutrition and Home Economics.

MODULAR PLANNING OF HOUSES. Illinois. University, Urbana.

PARTICIPATION IN NORTH CENTRAL REGION PLAN DEVELOPMENT, INCLUDING PREPARATION AND PUBLICATION OF REGIONAL PLAN BOOK. Illinois. University, Urbana.

STUDIES IN PLANNING AND REMODELING TO IMPROVE LOW COST FARM HOUSES. Kentucky Agricultural Experiment Station, Lexington. Dept. of Agricultural Engineering.

To develop low cost farm house plans and improvements that can be used by families of limited or low incomes to attain the most satisfactory housing for money spent.

DEVELOPMENT OF PLANS, CONSTRUCTION PRACTICES, and EFFECTIVE METHODS FOR ATTAINING ADEQUATE ECONOMICAL HOUSING FOR FARM FAMILIES. Nebraska Agricultural Experiment Station, Lincoln.

EXPERIMENTATION WITH BASIC LOW-COST FARMHOUSE DESIGNS. Cornell University, Ithaca, N. Y.

PLANNING A SOLAR HOUSE FOR ARIZONA AND COMPARATIVE BENEFITS FOR OHIO DESIGN. Ohio State University, Columbus.

DEVELOPMENT OF PLANS AND DESIGNS FOR VIRGINIA FARM HOMES. Virginia Agricultural Experiment Station, Blacksburg. Dept. of Agricultural Engineering.

To assemble and utilize all basic information concerning functional requirements of farm homes. To develop effective and suitable sets of plans, including revision of present plans of merit, for farm homes of all types and sizes as may be necessary to meet Va. requirements. To explore new ideas and designs, including materials and methods of construction. To disseminate such plans and designs in circular and bulletin form.

TRENDS IN FARM HOUSE PLANNING AS SHOWN IN RECENTLY BUILT TENANT AND OWNER-OCCUPIED RURAL FARM HOUSES. Wisconsin. University, Madison.

FARMHOUSE PLANNING AND REMODELING. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, Beltsville, Md.

To determine structural and other design requirements; assist in establishing space requirements; and develop plans and specifications for rural housing incorporating such requirements.

Cooperating: Bureau of Human Nutrition and Home Economics; State agricultural colleges.

Remodeling

REMODELING CASE STUDIES. Illinois. University, Urbana.

STUDIES IN PLANNING AND REMODELING TO IMPROVE LOW COST FARM HOUSES. Kentucky Agricultural Experiment Station, Lexington. Dept. of Agricultural Engineering.

To develop low cost farm house plans and improvements that can be used by families of limited or low incomes to attain the most satisfactory housing for money spent.

STUDY OF HOUSE IMPROVEMENT PRACTICES OF FARM FAMILIES IN NEW YORK STATE. New York (Cornell) Agricultural Experiment Station, Ithaca. Dept. of Household Design.

To obtain and analyze factual data on house improvement practices of farm families, the data and analysis to serve as a guide in later development of plans for remodeling existing farm houses.

FARMHOUSE PLANNING AND REMODELING. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Building & Rural Housing, Beltsville, Md.

To determine structural and other design requirements; assist in establishing space requirements; and develop plans and specifications for rural housing incorporating such requirements.

Cooperating: Bureau of Human Nutrition and Home Economics; and State agricultural colleges.

SERVICE BUILDINGS

General

DESIGN AND CONSTRUCTION OF FARM BUILDINGS. Arkansas Agricultural Experiment Station, Fayetteville.

FARM BUILDINGS.—REQUIREMENTS AND DESIGNS. Illinois Agricultural Experiment Station, Urbana.

IMPROVEMENT OF PRODUCTION EFFICIENCY IN FARM BUILDINGS. Illinois Agricultural Experiment Station, Urbana. Dept. of Agricultural Engineering.

To study methods of improving efficiency of farm structures as production units through design, arrangement, location and equipment for work simplification, labor reduction, and conservation of animals and stored products.

BUILDING AND PERMANENT IMPROVEMENTS, WESTERN IOWA EXPERIMENTAL FARM. Iowa Agricultural Experiment Station, Ames.

BUILDING, EQUIPMENT AND OPERATION OF HOWARD COUNTY FARM. Iowa Agricultural Experiment Station, Ames.

THE PLANNING AND DEVELOPMENT OF BUILDINGS FOR THE AGRICULTURAL EXPERIMENT STATION FARMS. Iowa Agricultural Experiment Station, Ames.

INVESTIGATION OF FARM BUILDINGS. Minnesota Agricultural Experiment Station, St. Paul.

DESIGN OF FARM BUILDINGS TO MEET MODERN REQUIREMENTS. Missouri Agricultural Experiment Station, Columbia.

DEVELOPMENT OF FARM STRUCTURES RECOMMENDATIONS, PLANS, AND SPECIFICATIONS. Oklahoma Agricultural Experiment Station, Stillwater.

FARM LABOR EFFICIENCY. Vermont Agricultural Experiment Station, Burlington. Dept. of Agricultural Economics.

To study (1) factors which govern effectiveness with which labor is used on individual farm jobs; and (2) adjustments farmers can make in methods, equipment, and building arrangement.

ECONOMICS OF FARM SERVICE BUILDINGS. U. S. Bureau of Agricultural Economics, Washington.

Currently work is limited to dairy buildings. The objective is to make economic appraisals of opportunities for more efficient farming through improvement of farm service buildings.

Cooperating: Bureau of Plant Industry, Soils, and Agricultural Engineering and Illinois Agricultural Experiment Station, Urbana.

Livestock Buildings

RELATION OF ANIMAL PRODUCTIVITY TO MODIFIED LOCAL CLIMATIC ENVIRONMENT. California Agricultural Experiment Station, Davis.

FARM WORK SIMPLIFICATION. Illinois Agricultural Experiment Station, Urbana. Dept. of Agricultural Economics.

To study practices which will reduce the labor input on livestock enterprises.

Cooperating: Bureau of Agricultural Economics.

INFLUENCE OF CLIMATIC FACTORS ON PRODUCTIVITY AND PHYSIOLOGICAL REACTIONS OF FARM ANIMALS. Missouri Agricultural Experiment Station, Columbia. Depts. of Agricultural Engineering, Animal Husbandry, and Dairy Husbandry.

To (1) gain knowledge of physiological reactions to climatic factors that may help develop most efficient hot- and cold-weather shelters under America's variable environmental conditions and developing strains of heat resistant cattle, (2) obtain basic knowledge

on requirements of most desirable and economical shelters against hot and cold weather, by study of the responses of animals to various environmental temperatures, (3) find out how changes in climatic conditions caused from movement from one locality to another affects the animals, (4) gain control of the environment sufficiently as to make milk and its products available in the tropics at prices which would encourage consumption, in a region where dairy cattle do not prosper and milk in the diet of the people is inadequate, and (5) obtain insight into basic mechanisms whereby climatic factors influence nervous, endocrine, and enzyme systems, including heat production and body-temperature regulation and their bearing on productive processes.

INVESTIGATION OF ENVIRONMENTAL FACTORS INFLUENCING DEVELOPMENT, PRODUCTION AND HEALTH OF ANIMALS IN WARM CLIMATES. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, Davis, Calif.

To determine the effects of various environmental factors on farm animals in warm climates; to find the optimum requirements for the different animals and the penalties for the deviations from the optimum so that economical shelters can be designed; and to develop means of modifying conditions in shelters in warm climates.

Cooperating: California Agricultural Experiment Station, Davis. Bureau of Dairy Industry, Bureau of Animal Industry.

Barns Except Dairy Barns

BARNS AND EQUIPMENT FOR LIVESTOCK IN CALIFORNIA (SHEEP). California Agricultural Experiment Station, Davis.

Dairy Barns and Buildings

BARNS AND EQUIPMENT FOR LIVESTOCK IN CALIFORNIA (DAIRY CATTLE). California Agricultural Experiment Station, Davis.

THE CONTROL OF CERTAIN ENVIRONMENTAL FACTORS IN DAIRY BARNS. Iowa Agricultural Experiment Station, Ames. Dept. of Agricultural Engineering.

To reduce heat loss from dairy barns by using a partial basement design. To increase actual amount of heat available in the barn in order to maintain a dry barn by drawing heat from the soil under and around the barn. To increase the available heat in the barn by recovering some of the heat now lost thru the exhaust air. To reduce first cost of barns by using a lower cost wall for partial basement as compared to more expensive heavily insulated above-ground wall.

THE DESIGN OF DAIRY BARN STRUCTURES IN RELATION TO EFFICIENCY AND QUALITY OF PRODUCTION. Kansas Agricultural Experiment Station, Manhattan. Dept. of Agricultural Engineering.

To compare the loose run system with the stanchion system of housing dairy cattle with respect to such factors as milk production and quality; animal health; longevity and injuries; manure quality and ease of handling; labor efficiency; uncertainty of breeding; and first cost and maintenance. To improve and develop methods of mechanizing dairy barns with respect to labor saving devices, and their effect upon sanitation, animal health, first cost and maintenance. To study the bank or basement barn with respect to improved temperature control and summer comfort. To investigate one story vs. two story barns for the purpose of comparing labor efficiency, fire and wind hazards, insulation and ventilation of structure, and first cost and maintenance. To find methods of reducing the cost and labor requirements of dairy structures and dairy management without affecting the productive efficiency of the cows.

THE ECONOMIC AND PHYSIOLOGIC EFFICIENCY OF RAISING CALVES TO 4 MONTHS ON CONCRETE VS. WIRE FLOORS. Louisiana Agricultural Experiment Station, Baton Rouge.

A STUDY OF LOOSE RUN DAIRY CATTLE HOUSING. Michigan Agricultural Experiment Station, East Lansing. Dept. of Agricultural Engineering.

To determine: (1) minimum area per cow (per 1000 wt.) required in the lounging area as affected by shape of area, exits, open doorways, amount of bedding used, etc.; (2) location, arrangement and size of feeding area with respect to the lounging area; (3) location, arrangement and floor level of the milking room with respect to lounging, feeding area and milkhouse for (a) the abreast arrangement, (b) the tandem arrangement, (c) number of cows to be milked at one time per man; (4) location of milkhouse with respect to milking room; (5) location of feed storage units.

PLANNING DAIRY FARM BUILDINGS. Michigan Agricultural Experiment Station, East Lansing.

IMPROVED MILK HOUSE DESIGN. Michigan Agricultural Experiment Station, East Lansing.

HOUSING AND MANAGEMENT OF DAIRY CATTLE WITH RELATION TO EFFICIENCY AND ECONOMY. Minnesota Agricultural Experiment Station, St. Paul.

A STUDY OF DAIRY BARNS AND RELATED STRUCTURES. Minnesota Agricultural Experiment Station, St. Paul.

FARM WORK SIMPLIFICATION. Minnesota Agricultural Experiment Station, St. Paul. Dept. of Agricultural Economics.

To determine (1) methods of working, arrangements of work

places, and types of equipment that will reduce the hours of labor needed to operate farms and related processing plants, with special reference to dairy products.

A STUDY OF HAY AND SILAGE HANDLING EQUIPMENT FOR USE IN LOOSE HOUSING BARNS FOR DAIRY CATTLE. Minnesota Agricultural Experiment Station, St. Paul. Dept. of Agricultural Engineering.

To (1) assemble information on labor saving devices adaptable to use in feeding silage and hay to dairy cattle housed in the pen type barn; and (2) develop and try out devices and systems that appear to have possibilities for this purpose.

THE DESIGN OF DAIRY BARNS AND RELATED STRUCTURES TO PROVIDE FOR BEST MANAGEMENT AND USE OF SPACE, HIGH LABOR EFFICIENCY AND PRODUCTION OF HIGH QUALITY MILK. Missouri Agricultural Experiment Station, Columbia. Dept. of Agricultural Engineering.

To make a detailed study of the loose-run or loafing barn-milking barn system of dairy cattle housing to establish recommendations as to minimum area per cow required; location, arrangement, and size of feeding area; location, arrangement, and floor level of milking room; location of milkhouse and of feed storage units; time, place, and method of feeding concentrates; and efficient size of unit for different numbers of operators.

Cooperating: U. S. Dept. of Agriculture.

THE MONTANA COW STALL. Montana Agricultural Experiment Station, Bozeman.

A STUDY OF DAIRY STABLE VENTILATION SYSTEMS USING ELECTRIC FANS. New York (Cornell) Agricultural Experiment Station, Ithaca.

FARM LABOR SIMPLIFICATION.—I, DAIRY CHORES.—II, POULTRY CHORES. New York (Cornell) Agricultural Experiment Station, Ithaca. Dept. of Agricultural Economics.

To study (1) labor-saving methods, equipment, and building arrangements on dairy and poultry farms; (2) savings in time and travel by the use of these methods and their economic significance to farmers; and (3) development of new labor-saving methods, equipment, and arrangements.

WAYS OF ECONOMIZING IN THE LABOR REQUIRED TO DO DAIRY CHORES. Ohio Agricultural Experiment Station, Columbus. Depts. of Rural Economics, Dairy Industry, and Agricultural Engineering.

To determine labor requirement and ways of saving labor in doing dairy chores on Ohio farms, giving special attention to stanchion vs. pen type farms with and without milking parlors.

SUMMER TEMPERATURE CONTROL IN DAIRY CATTLE LOAFING BARNS. Oklahoma Agricultural Experiment Station, Stillwater.

DAIRY BARN VENTILATION STUDY. Oregon Agricultural Experiment Station, Corvallis.

EFFICIENCY OF VARIOUS MATERIALS FOR DAIRY BARNS. Vermont Agricultural Experiment Station, Burlington. Dept. of Animal and Dairy Husbandry.

To determine the efficiency, suitability, durability, and cost of maintenance of different building materials when used in the construction of a dairy barn in northern New England.

THE REQUIREMENTS OF HOUSING AND EQUIPMENT FOR ADEQUATE REARING OF DAIRY CALVES. Washington Agricultural Experiment Station, Pullman.

INVESTIGATION TO DETERMINE THE OPTIMUM STALL FOR DAIRY COWS. West Virginia Agricultural Experiment Station, Morgantown. Dept. of Agricultural Engineering.

To ascertain the optimum dimensions and proportions of dairy stalls and material for and better methods of constructing: (1) the floor - length and width, slope, finish, imperviousness, durability, safety, and resistance to heat transfer, (2) the manger - slope, dimensions, curb, and tie best suited to properly restrain the cow, and (3) the gutter - depth, width, slope, finish and relative heights of stall platform and litter alley to gutter bottom.

TO DETERMINE THE MOST EFFICIENT AND ECONOMICAL METHODS OF REMOVING MANURE AND LITTER FROM DAIRY BARNS. West Virginia Agricultural Experiment Station, Morgantown. Dept. of Agricultural Engineering.

To evaluate techniques for manure and litter removal from dairy barns as to efficiency, effectiveness and adaptability to various types of barns.

A LABORATORY STUDY OF MILKING ROOMS, AS USED IN CONJUNCTION WITH THE LOOSE RUN SYSTEM OF DAIRY CATTLE HOUSING. Wisconsin Agricultural Experiment Station, Madison. Depts. of Agricultural Engineering and Dairy Husbandry.

To determine best location, arrangement and floor levels of the milking room and its component parts with respect to lounging area, feeding area and milk house for: (1) various abreast arrangements, (2) various tandem arrangements, (3) size of unit for 1 man, and (4) unit vs. pipe line milkers. The results will be measured in terms of: (1) labor efficiency, (2) first cost of the installation, (3) quality of milk, and (4) ease of training the herd to the various systems.

MEETING DAIRY MARKET SANITATION AND HEALTH REQUIREMENTS MOST ECONOMICALLY. U. S. Bureau of Agricultural Economics, Washington. Division of Production Economics.

The requirements as to specific features of dairy buildings are not well established and are not uniform for different milksheds. The direct or indirect influence of building features on quality of milk is not known.

Objectives include study of opportunities for use and limits of adaptability of low-cost dairy buildings in the production and preparation for market of high quality fluid milk which conforms with market sanitation and health standards.

Cooperating: Farm Credit Administration. Cooperative Research and Service Division; Office of Experiment Stations.

ECONOMICS OF FARM MECHANIZATION AND OTHER IMPROVED TECHNIQUES. COST REDUCTION IN DAIRYING. U. S. Bureau of Agricultural Economics, Washington.

Many of the new developments such as the pen-type barns for dairy cows, require considerable further study for perfecting, both from the standpoint of saving labor and investment costs and from the standpoint of their influence on the production of milk.

PHYSICAL AND ECONOMIC CHARACTERISTICS OF FARM DAIRY STRUCTURES AND EQUIPMENT AS RELATED TO MILK PRODUCTION. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings & Rural Housing, Urbana, Ill.

(1) To develop standards for measuring the physical efficiency of dairy structures, equipment and methods; and improved building layouts, interior arrangements, procedures, and equipment. (2) To determine the influence of these factors on income of dairy enterprises and the cost of producing milk.

Cooperating: Bureau of Agricultural Economics; Illinois Agricultural Experiment Station, Urbana.

INFLUENCE OF DESIGN OF DAIRY CATTLE HOUSING ON QUALITY AND COST OF MILK PRODUCED UNDER ALTITUDE AND CLIMATIC CONDITIONS TYPICAL OF THE NORTHWEST. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings & Rural Housing, Caldwell, Idaho; Logan, Utah; and Corvallis, Oreg.

To compare the stanchion barn and open shed milking barn systems of housing, determine the equipment and sanitary procedures necessary, and develop designs for dairy structures and equipment for the Northwest.

Cooperating: Idaho Agricultural Experiment Station, Moscow; Utah Agricultural Experiment Station, Logan; Oregon Agricultural Experiment Station, Corvallis; Informal cooperative relations with Bureau of Dairy Industry.

A STUDY OF BANK (BASEMENT) BARNS. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings & Rural Housing, Madison, Wis.

In soil barns, to determine the effect of soil heat on temperature and humidity; natural light intensity in winter; bacteriological conditions of the air and interior surfaces with natural, artificial and germicidal lights; odor characteristics; and effects on animal health and quality of milk produced.

Cooperating: Wisconsin Agricultural Experiment Station, Madison, and other State agricultural experiment stations in the North Central Region; Bureau of Dairy Industry; Division of Farm Electrification.

Hog Houses

BARNS AND EQUIPMENT FOR LIVESTOCK IN CALIFORNIA (SWINE). California Agricultural Experiment Station, Davis.

FORCED AIR VENTILATING SYSTEMS FOR HOG HOUSES COMPARED TO NATURAL DRAFT SYSTEMS. North Dakota Agricultural Experiment Station, State College Station, Fargo. Depts. of Agricultural Engineering and Animal Husbandry.

To (1) secure performance data on hog houses with a fan ventilating system as compared to those having gravity system of flue type, (2) make improvements upon mechanical ventilating systems, and (3) determine air requirements.

INVESTIGATIONS FOR CONTROLLING INTESTINAL THREADWORMS OF SWINE. U. S. Bureau of Animal Industry. Zoological Division, Beltsville, Md.

To broaden the scope of our knowledge concerning the specific sources of infection of suckling pigs with Strongyloides that occur under farrowing house conditions, and test control measures.

INVESTIGATIONS OF DIFFERENT TYPES OF HOG LOT EQUIPMENT WITH RESPECT TO COST OF PRODUCTION, DURABILITY AND PRACTICAL APPLICATION. U. S. Bureau of Animal Industry. Division of Animal Husbandry, Beltsville, Md.

To study the effect of different types of roofing for hog lot shades with respect to cost of production, and for hog comfort.

Poultry Houses

A STUDY OF POULTRY HOUSING. California Agricultural Experiment Station, Davis.

MOISTURE CONTROL IN POULTRY HOUSES. Connecticut Agricultural Experiment Station, Storrs.

A SUN-PORCH POULTRY REARING HOUSE. Hawaii Agricultural Experiment Station, Honolulu.

IMPROVED VENTILATION OF POULTRY HOUSES. Idaho Agricultural Experiment Station, Moscow.

POULTRY HOUSE VENTILATION. Maine Agricultural Experiment Station, Orono. Dept. of Agricultural Engineering.

To determine optimum amount of air movement necessary to maintain desirable environmental and operational conditions of temperature, humidity, ammonia concentration, and dry litter for poultry houses in Maine.

THE DEVELOPMENT OF NEW AND IMPROVEMENT OF EXISTING METHODS AND EQUIPMENT FOR PROPER CONDITIONING OF ANIMAL SHELTERS AND FARM CROP STORAGES.—I, INVESTIGATIONS TO IMPROVE POULTRY HOUSE VENTILATION. Massachusetts Agricultural Experiment Station, Amherst. Dept. of Agricultural Engineering.

To investigate methods and equipment for air-conditioning of animal shelters which will maintain tolerable humidity and temperature for animal and a condition of air which will not accelerate rate of deterioration of the structure, and is satisfactory to the operator; and be economical.

WARM ROOM BROODING USING A HOVER-CONVECTOR. Massachusetts Agricultural Experiment Station, Amherst. Dept. of Agricultural Engineering.

To investigate the suitability of a hover-convector combination as heat source for warm room brooding, to see if it may be offered the poultry industry in lieu of more expensive under floor heat now being attempted.

FREEZE-PROOF POULTRY WATER SUPPLY. Massachusetts Agricultural Experiment Station, Amherst. Dept. of Agricultural Engineering.

To investigate the adaptability of the "bullet valve" and accessory piping as an economical method of poultry drinking water supply that is freeze proof, economical, and distributed so as to eliminate "bossiness", and which will eliminate spillage, and be protected from dirt and other contamination.

DESIGN AND LAYOUT OF LAYING PENS AND RELATED EQUIPMENT. New York (Cornell) Agricultural Experiment Station, Ithaca. Dept. of Agricultural Engineering.

To (1) study transportation of feeds, litter, eggs and other materials within and between poultry structures and to study equipment arrangements for maximum efficiency; and (2) critically appraise alternative methods of supplying water to hens and disposing of waste water and develop new methods or systems.

FORCED AIR FOR VENTILATING SYSTEMS FOR POULTRY HOUSES COMPARED TO THE MUSLIN FRONT AND SLOT SYSTEMS. North Dakota Agricultural Experiment Station, State College Station, Fargo. Depts. of Agricultural Engineering and Poultry Husbandry.

To secure data on performance of a poultry house having forced air ventilating system as compared to house having gravity systems of ventilation of the muslin front and slot type.

INFLUENCE OF DESIGN AND MANAGEMENT OF POULTRY HOUSES ON PERFORMANCE, OPERATING EFFICIENCY AND CONTROL OF LITTER MOISTURE. Oregon Agricultural Experiment Station, Corvallis.

FARM LABOR SIMPLIFICATION.—II. POULTRY CHORES. New York (Cornell) Agricultural Experiment Station, Ithaca. Dept. of Agricultural Economics.

To study (1) labor-saving methods, equipment, and building arrangements on dairy and poultry farms; (2) savings in time and travel by the use of these methods and their economic significance to farmers; and (3) development of new labor-saving methods, equipment, and arrangements.

BROODER HOUSE INSULATION FOR FUEL CONSERVATION, TEMPERATURE CONTROL AND MOISTURE CONTROL. Rhode Island Agricultural Experiment Station, Kingston.

RADIANT HEATING OF BROODER HOMES. Virginia Agricultural Experiment Station, Blacksburg.

A STUDY OF ROOSTING RACK DESIGN - DEVELOPING ELECTRIC BROODERS FOR PORTABLE BROODER HOUSES. Washington Agricultural Experiment Station, Pullman.

RURAL STRUCTURE: HIGH ALTITUDE POULTRY HOUSES. Wyoming Agricultural Experiment Station, Laramie. Depts. of Agricultural Engineering and Animal Production.

To develop a poultry laying house that will without mechanical ventilation or supplemental heat supply basic housing requirements of poultry for maximum production in Wyoming, where altitude of farms is from 3500 to 8500 feet and where strong winds and very cold winter temperatures prevail.

A RESEARCH PROGRAM FOR THE STUDY OF AND THE DEVELOPMENT OF CONTROL MEASURES FOR FOWL TYPHOID. U. S. Bureau of Animal Industry. Pathological Division, Beltsville, Md.

To develop satisfactory methods of controlling fowl typhoid so as to minimize losses. Phase VI — Investigation of the effect of management, especially with respect to sanitation and housing on the development of fowl typhoid.

INVESTIGATIONS TO DETERMINE THE EFFECT OF THE PHYSICAL ENVIRONMENT ON THE GROWTH, MORTALITY, AND FEED AND WATER CONSUMPTION OF CHICKENS FROM HATCH TO MATURITY. U. S. Bureau of Animal Industry. Division of Animal Husbandry, Beltsville, Md.

To determine the optimum environmental conditions for the maximum value of $dW/dw\ dt$ where dW is the gain in weight of the chicken, dw the amount of feed utilized over the period of time dt.

Small Animal Buildings

EFFECTS OF HUTCH-FLOOR CONSTRUCTION ON THE ACQUISITION OF COCCIDIOSIS BY DOMESTIC RABBITS. U. S. Bureau of Animal Industry. Zoological Division, Fontana, Calif.

To determine what relationships exist between nature of the hutch floor and the prevalence of coccidiosis in rabbits.

Cooperating: Rabbit breeders in vicinity of Fontana, California.

Storage Buildings for Crops

Cotton

STORAGE OF COTTONSEED FOR PLANTING PURPOSES. Texas Agricultural Experiment Station, College Station. Dept. of Agricultural Engineering.

To determine (1) germination qualities of cottonseed stored in large quantities for two or more months in steel tanks, (2) effects of temperature on cottonseed thus stored, (3) moisture content of cottonseed when placed in storage and effect of moisture content on heating of cottonseed thus stored, (4) methods of ventilation and volume of air required to lower moisture content and prevent heating and deterioration, and (5) effects of chemical heat inhibitors on prevention and deterioration of cottonseed in storage.

STORING AS AN AID TO MORE EFFICIENT GINNING AND MARKETING OF MECHANICALLY HARVESTED SEED COTTON. Texas Agricultural Experiment Station, College Station. Depts. of Agricultural Engineering and Agronomy.

Adoption of mechanical harvesting has already aggravated the problem of fitting ginning capacity to volume of ginning. Volume offered for ginning during the peak period can be expected to increase materially over the situation under hand harvesting. Furthermore, mechanical harvesting is started later than hand harvesting and is completed in a much shortened period resulting in a piling up of seed cotton at the gin. Investigations will be undertaken to (1) analyze relative costs of increasing ginning capacity as against providing storage facilities either on the farm or at the gin plant; (2) study the problems of maintaining the quality of the seed cotton held in storage with special emphasis on the question as to whether or not cleaning and drying equipment is needed at the storage plant; and (3) ascertain preferences of growers for quick service through unloading of their product into the cotton house for later ginning as against waiting in line for direct ginning.

CONDITIONING AND STORAGE OF SEED COTTON WITH SPECIAL REFERENCE TO MECHANICALLY HARVESTED COTTON. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Mechanical Processing of Farm Products, Stoneville, Miss.

To develop optimum methods and equipment for the conditioning and storage of seed cotton.

Cooperating: Cotton Branch, Production and Marketing Administration.

STORING AS AN AID TO MORE EFFICIENT GINNING AND MARKETING OF MECHANICALLY HARVESTED SEED COTTON. U. S. Office of Experiment Stations, College Station, and Lubbock, Texas.

To analyze costs of increasing ginning capacity as compared with storage facilities on farm or at gin plant; study maintenance of quality of seed cotton held in storage with emphasis on whether cleaning and drying equipment is needed at the storage plant; ascertain growers' preferences for unloading their product into cotton house for later ginning or waiting in line for direct ginning; determine suitable types of storage facilities for seed cotton; to determine advantages and disadvantages of home storing.

DEVELOPMENT AND PROMOTION OF MORE EFFICIENT METHODS, EQUIPMENT, AND FACILITIES FOR THE PHYSICAL HANDLING AND STORAGE OF RAW COTTON. U. S. Production and Marketing Administration, Marketing Facilities Branch, Washington.

To reduce the cost of physically handling raw cotton, reduce the losses from fire and weather damage, and aid cotton in maintaining its competitive position.

Cooperating: National Cotton Compress and Cotton Warehouse Association, National Cotton Council of America, and Manufacturers of Commodity handling equipment.

Fruits and Vegetables

INVESTIGATION TO DEVELOP IMPROVED STRUCTURES, EQUIPMENT, AND METHODS FOR HANDLING AND STORING WHITE POTATOES. Alaska Agricultural Experiment Station, Matanuska Valley.

To reduce potato weight and quality losses from the field through storage; and to lengthen the practicable storage period. Study will be made of ... improvement of containers in which to handle and store potatoes, and improvement in storage air circulation and temperature, and humidity regulation.

Cooperating: Bureau of Plant Industry, Soils, and Agricultural Engineering.

STORAGE, STORING, GRADING, AND PACKAGING MAINE POTATOES. Maine Agricultural Experiment Station, Orono. Depts. of Agricultural Economics and Agronomy.

To (1) study efficiency of methods of storing potatoes in Maine potato houses and removing them in marketing season; (2) determine relative amounts of bruising occurring under various storage methods; (4) study temperature, humidity, etc. as they affect quality of graded potatoes.

THE PERFORMANCE OF STRAW "LOFT" POTATO STORAGE HOUSES OF THE TYPE DEVELOPED IN POTTER COUNTY. Pennsylvania Agricultural Experiment Station, State College.

STUDIES OF BUILDINGS FOR POTATO STORAGE. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering, Division of Farm Buildings and Rural Housing, Fort Collins, Colo.

To develop design improvements for potato storages in late-crop and warmer late-crop areas and develop improved methods and equipment for handling potatoes.

Cooperating: Colorado Agricultural Experiment Station, Fort Collins.

SWEETPOTATO STORAGE. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, University of Georgia and other points within the State.

To study the effect of construction, insulation, utilization of materials, heating, heat and moisture distribution, ventilation, temperatures, humidities, cost of heating, management practices, labor utilization, economical building and equipment costs, and weight loss and quality of stored sweetpotatoes.

Cooperating: Interested branches of the University of Georgia.

IMPROVEMENT OF DESIGN AND OPERATION OF COLD STORAGES FOR APPLES. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, Wenatchee, Wash. and Blacksburg, Va.

To determine the most efficient and practical types of buildings, equipment, and operating procedures for providing and maintaining the optimum storage conditions for apples on the farm and at local shipping points.

Cooperating: Division of Fruit and Vegetable Crops and Diseases; Washington Agricultural Experiment Station, Pullman, and Virginia Agricultural Experiment Station, Blacksburg.

WHITE POTATO STORAGE AND MARKETING INVESTIGATIONS FOR NEW JERSEY, LONG ISLAND AND PENNSYLVANIA AREAS. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, New Brunswick, N. J., Long Island and Pennsylvania areas.

To determine most efficient and practical buildings, equipment, and operating procedures for storage of potatoes on farm and at local shipping points under climatic and marketing conditions experienced in potato producing areas of N. J., L. I., and east. Pa.

Cooperating: New Jersey Agricultural Experiment Station, New Brunswick; New York Agricultural Experiment Station, Geneva; Pennsylvania Agricultural Experiment Station, State College.

INVESTIGATIONS ON THE MOST EFFICIENT UTILIZATION AND OPERATION OF COLD STORAGE FACILITIES FOR APPLES AND PEARS IN THE PACIFIC NORTHWEST. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Fruit and Vegetable Crops and Diseases, Wenatchee-Okanogan District, Wash.

To determine how the apple and winter pear crop of the Pac. Northwest can be handled or stored to the best advantage in the existing cold storage plants which have inadequate refrigerating capacity to effectively cool the total tonnage as quickly as it should be.

Cooperating: Regional Agricultural Credit Corporation, Wenatchee; and cold storage operators in the district.

DISINFECTION OF STORAGE HOUSES, FIELD BOXES AND BASKETS; TESTS WITH DIFFERENT MATERIALS AND METHODS OF APPLICATION. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Fruit and Vegetable Crops and Diseases, Beltsville, Md., Wenatchee, Wash., Fresno, Calif.

To investigate the disinfection of storage houses, field boxes and baskets.

Cooperating: Commercial warehousemen.

IMPROVEMENT IN FACILITIES, EQUIPMENT, AND METHODS FOR FARM STORAGE OF SOYBEANS. U. S. Production and Marketing Administration. Fats and Oils Branch, Washington.

To determine storage capacity, handling facilities, and drying equipment available to farmers for soybeans, including methods on farms, country elevators and local and terminal markets; type and cost of farm storage, including insurance; best method for handling high-moisture-content soybeans in storage.

Cooperating: Grain Branch of Production and Marketing Administration; Bureau of Agricultural and Industrial Chemistry.

Grain, Seed and Corn

GRAIN STORAGE INVESTIGATION. Illinois Agricultural Experiment Station, Urbana. Depts. of Agricultural Engineering and Agronomy.

To determine the designs and types of buildings and the requirements for storage and handling that will best preserve and improve the quality of soybeans, corn, wheat, and other grains stored on the farm.

THE STORAGE AND CURING OF CORN. Iowa Agricultural Experiment Station, Ames.

STORAGE AND HANDLING OF WHEAT ON KANSAS FARMS. Kansas Agricultural Experiment Station, Manhattan.

STORAGE OF HIGH MOISTURE CORN. South Dakota Agricultural Experiment Station, Brookings.

THE MECHANICAL AND STRUCTURAL ASPECTS OF HARVESTING, CURING, HOUSING, AND REMOVAL FROM HOUSING OF GRAIN, HAY, SILAGE, AND BEDDING. Vermont Agricultural Experiment Station, Burlington.

THE EFFECT OF DRYING UNRIPE GRAINS BY DIFFERENT PROCEDURES ON DECREASES IN NUTRITIONAL VALUE OF THE NUTRIENTS. U. S. Bureau of Animal Industry. Division of Animal Husbandry, Beltsville, Md.

To study possible deterioration of nutritional factors and feeding value of corn and other grains during drying under various natural and heat-controlled conditions. The tests on nutritional values will be carried along concurrently with the engineering and other work to aid in the progressive development of equipment for drying, so that the safe limits for temperature and heating, crib and bin construction, and other factors of drying can be defined.

Cooperating: Coordinated work by Grain Branch of Production and Marketing Administration and Bureau of Plant Industry, Soils, and Agricultural Engineering.

GRAIN AND SEED STORAGE IN THE SOUTHEASTERN STATES. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, Georgia.

To determine storage characteristics and management practices contributing to successful storing of grain and seed crops; design types of storage structures; and develop equipment for conditioning these crops for safe storage.

Cooperating: University of Georgia; Bureau of Entomology and Plant Quarantine.

INVESTIGATION OF METHODS OF PROPERLY CARING FOR SMALL GRAIN IN STORAGE. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, Ames, Iowa.

(1) To evaluate the effects of various bin characteristics, such as size, materials, weathertightness, and ventilation in maintaining the quality of grain over relatively long periods. (2) To find ways in which substitutes for scarce materials may be satisfactorily and economically used for grain storage. (3) To organize all available information about grain storage in farm-type buildings for immediate use as need arises.

Cooperating: Iowa Agricultural Experiment Station, Ames; Bureau of Entomology and Plant Quarantine; Production and Marketing Administration.

STUDIES OF STRUCTURAL, VENTILATION AND ENVIRONMENTAL REQUIREMENTS FOR SAFE STORAGE OF EAR AND SHELLED CORN ON THE FARM. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, Ames, Iowa.

To determine and evaluate storage structures and handling practices for corn of high moisture content and for dry corn; to devise emergency methods of storing immature or damaged corn; find

mathematical expressions for the factors that cause or retard changes in moisture; and develop designs for improved corn storages.

Cooperating: Iowa Agricultural Experiment Station, Ames; Grain Branch, Production and Marketing Administration, Bureau of Entomology and Plant Quarantine.

MASS-PRODUCED GRAIN BINS. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, Ames, Iowa and Lafayette, Ind.

To develop improved designs for mass-produced prefabricated grain storage bins that will eliminate faulty structural features, permit of easy erection, dismantling and portability, provide for convenient and economical handling of grain and be adapted for use with mechanical drier.

Cooperating: Production and Marketing Administration; Iowa Agricultural Experiment Station, Ames; Indiana Agricultural Experiment Station, Lafayette.

CORN-DRIER DEVELOPMENT. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, Indiana, Illinois, Iowa, and probably Ohio, Michigan, Minnesota, South Dakota, and Nebraska.

To prepare specifications and develop a practical and economical corn drier for farm use, study air temperature, rate of flow, and distribution thru corn in various types of cribs, and demonstrate the use and value of a practical farm drier in conditioning soft or wet corn for safe storage.

Cooperating: Grain Branch, Production and Marketing Administration; Extension Service; Bureau of Agricultural Economics; Agricultural Experiment Stations and States concerned.

Silos

THE USE OF THE TRENCH SILO UNDER GEORGIA CONDITIONS. Georgia Agricultural Experiment Station, Athens. Dept. of Animal Husbandry.

Adaptability and approximate cost of constructing.

STUDY OF THE PROPERTIES OF HIGH MOISTURE ENSILAGE THAT INFLUENCE THE DESIGN OF SILOS AND A STUDY OF METHODS FOR REDUCING MOISTURE CONTENT OF ENSILAGE CROPS BY MECHANICALLY EXPRESSING THE MOISTURE FROM THE GREEN MATERIAL. Minnesota Agricultural Experiment Station, St. Paul. Depts. of Agricultural Engineering and Chemistry.

To determine the quantity of moisture drainage from silos, its rate of flow and its chemical composition.

Cooperating: Madison Silo Co. Sanitary Farm Dairies.

ENGINEERING INVESTIGATIONS IN THE STORAGE OF GRASS SILAGE. New Jersey Agricultural Experiment Station, New Brunswick. Depts. of Agricultural Engineering and Dairy Husbandry and Manufacture.

To (1) compare various coatings for silo walls in order to select the coating that will give needed protection at low cost and be easy to apply, and (2) consider ways of controlling leakage of juices from silos.

PRESERVATIVES FOR PLYWOOD SILO WALLS. Washington Agricultural Experiment Station, Pullman.

ECONOMY AND EFFICIENCY OF ENSILING CROPS IN VARIOUS TYPES OF SILOS AND BY DIFFERENT PROCESSES AT BELTSVILLE, MD. U. S. Bureau of Dairy Industry. Division of Nutrition and Physiology, Beltsville, Md.

To determine (1) the practicability and economy of different kinds of silos, and (2) the influence of the moisture content and various additions (as molasses and acids) on the losses of feed constituents and on the nutritive value of the silage.

Tobacco

PRODUCTION, HARVESTING, CURING AND STORING OF MARYLAND TOBACCO.—B, HANDLING TOBACCO IN THE BARN. Maryland Agricultural Experiment Station, College Park. Dept. of Agricultural Engineering.

To compare methods of raising and lowering tobacco in the barn.

PRODUCTION, HARVESTING, CURING AND STORING OF MARYLAND TOBACCO.—D, TOBACCO HOUSING. Maryland Agricultural Experiment Station, College Park. Dept. of Agricultural Engineering.

To determine optimum conditions of temperature, humidity and air movement for the curing and storing of tobacco, to determine the extent which it is economically justifiable to achieve these conditions, and to design and develop equipment and methods to maintain these conditions as uniformly as possible in all parts of full-size barns.

PRODUCTION, HARVESTING, CURING AND STORING OF MARYLAND TOBACCO.—E, STRUCTURES AND EQUIPMENT FOR TOBACCO STRIPPING. Maryland Agricultural Experiment Station, College Park. Dept. of Agricultural Engineering.

To determine the best design of stripping room as affected by size, arrangement and natural and artificial lighting; to determine optimum conditions for keeping tobacco in desirable condition and to design and test equipment for this purpose; and to develop new and improved equipment for stripping operations.

IMPROVED BARNS FOR AIR-CURED TOBACCO. Virginia Agricultural Experiment Station, Blacksburg.

SMALL CHARCOAL KILNS. Connecticut Agricultural Experiment Station, New Haven.

THE RELATION OF VOLUME TO EFFICIENCY IN MARKETING AND PROCESSING AGRICULTURAL AND FOREST PRODUCTS.—THE SMALLEST PRACTICAL COMPLETE WOOD UTILIZATION CENTER. Mississippi Agricultural Experiment Station, State College. Dept. of Forestry.

To study forest industry in N.E. Miss. to determine nature and extent of operations and show relationship between volume of products and efficiency of plant operation and determine size, volume, and types of products necessary for efficient operation of a complete wood utilization center.

A CROP DRYING AND CURING BUILDING FOR THE FARM. North Carolina Agricultural Experiment Station, State College Station, Raleigh. Dept. of Agricultural Engineering.

To develop a building of general utility for all crops.

Existing information applicable to crop drying will be coordinated and applied to the design and construction of an experimental general purpose drying building to be located on Central Farm in Raleigh. Crops for test purposes will be secured and their drying characteristics determined. From such observations needed changes will be made in the design of the experimental building to result in a practical crop drying and curing building.

MOBILE CIRCULAR SAWMILL FOR FARM WOODLOTS IN WEST VIRGINIA. West Virginia Agricultural Experiment Station, Morgantown. Dept. of Forestry.

To design a trailer-mounted circular sawmill with high maneuverability adapted to cutting small quantities of lumber and to determine its practicability.

A semi-trailer mounting will be designed and plans made for adapting a No. 00 Frick sawmill. Jacks of 20-ton capacity will be attached to the sawmill for quick leveling and bearing the weight of the mill while in operation. A floating type of mill and woods crew will be organized. Accurate and detailed records of cost and performance regarding the setting up, operation, dismantling, and transportation of the mill will be kept. These records will be used for determining the mill's practicability.

MATERIALS AND CONSTRUCTION

General

CONSTRUCTION AND EQUIPMENT OF THE HOME. American Public Health Association. Committee on the Hygiene of Housing, New Haven, Conn.

This study aims to define, for the dwelling structure and its installed equipment, the performance characteristics which will assure healthfulness, comfort, safety and convenience.

SELECTION AND UTILIZATION OF MATERIALS FOR FARM BUILDING CONSTRUCTION. Indiana Agricultural Experiment Station, Lafayette. Dept. of Agricultural Engineering.

Available data relating to service and design requirements will be collected, assembled, analyzed, and presented in usable form for designers of farm buildings in order to establish the service and design requirements of walls, foundations, floors, roofs, and framework of each of the principal types of farm buildings. Data on physical, chemical, and related properties of building materials, structural parts, and assemblies pertinent to building construction will be compiled and organized and interpretation made of same as to farm exposures and applications. Studies of performance of existing and new materials will be made in selected areas, representative of the different climates and types of farming. It is also proposed to carry on studies relating to the improvement of fabrication methods and construction procedures.

Cooperating: U. S. Dept. of Agriculture. Bureau of Plant Industry, Soils, and Agricultural Engineering.

THE SELECTION AND UTILIZATION OF MATERIALS FOR FARM BUILDING CONSTRUCTION. Iowa Agricultural Experiment Station, Ames. Dept. of Agricultural Engineering.

To establish service and design requirements for floors, walls, roofs and other components of each of the principal types of farm buildings; compile or secure data on physical, chemical and related properties of building materials, structural parts and assemblies as related to farm building construction; evaluate the performance of existing and new materials in actual use on farms; and to improve fabrication methods and construction procedures.

BUILDING MATERIALS FROM FARM RESIDUES. Louisiana Agricultural Experiment Station, University Station, Baton Rouge. Dept. of Agricultural Engineering.

To develop (1) new building materials from farm waste, (2) materials as resistant as possible to rot, termites, rodents, and weather, and (3) a light weight panel for construction of farm homes and storage structures.

A STUDY OF THE UTILIZATION OF BUILDING MATERIALS OF BOTH NATURAL AND MANUFACTURED TYPES FOR FARM BUILDINGS. Michigan Agricultural Experiment Station, East Lansing. Dept. of Agricultural Engineering.

Determination of performance of materials in actual use. Determination of fabrication and construction methods.

SELECTION AND UTILIZATION OF MATERIALS FOR FARM BUILDING CONSTRUCTION. Minnesota Agricultural Experiment Station, St. Paul.

LIGHTWEIGHT BUILDING BLOCKS. Washington. University, Seattle.

DEVELOPMENT OF BUILDING MATERIALS AND MISCELLANEOUS PRODUCTS FROM LIGNIN CONCENTRATES, PARTICULARLY SACCHARIFICATION LIGNIN. U. S. Bureau of Agricultural and Industrial Chemistry. Northern Regional Research Laboratory. Division of Agricultural Residues, Peoria, Ill.

To develop commercial uses for lignin concentrates arising in the processing of agricultural residues, particularly uses resulting from the saccharification of agricultural residues which will return a value of three-fourth to one and one-half cents per pound for the lignin on a large tonnage basis.

Cooperating: Analytical and Physical Chemical Division, and Engineering and Development Division of the Northern Regional Research Laboratory; and informal cooperation with the Forest Products Laboratory, State experiment stations, industries, and other institutions studying the lignin problem, and with potential users.

PHYSICAL AND RELATED PROPERTIES OF MATERIALS, STRUCTURAL PARTS AND ASSEMBLIES FOR FARM BUILDINGS. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, Lafayette, Ind.

To establish and compile the physical and related properties of materials, structural parts and assemblies used in foundations, floors, walls, roofs, etc., of each of the principal types of farm buildings and determine their suitability.

SERVICE REQUIREMENTS FOR MATERIALS, STRUCTURAL PARTS AND ASSEMBLIES IN FARM BUILDINGS. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Rural Housing, Lafayette, Ind.

To establish and compile the service requirements for materials, structural parts and assemblies used in the foundations, floors, walls, roofs, and other component elements of each of the principal types of farm buildings.

Cooperating: Indiana Agricultural Experiment Station, Lafayette; Michigan Agricultural Experiment Station, East Lansing; Iowa Agricultural Experiment Station, Ames; and other North Central agricultural experiment stations.

SPECIAL STUDIES RELATING TO HOUSING—FOR THE HOUSING AND HOME FINANCE AGENCY. U. S. Forest Service. Division of Forest Products.

Included are: strength of low-cost building elements such as floors, walls and roofs; methods for determining vapor barrier permeability; and ventilation requirements for attics to prevent the deterioration of the wood and other materials in dwellings.

Specifications and Working Drawings

NORTHEASTERN REGIONAL PLAN EXCHANGE. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, Beltsville, Md.

To revise and bring up to date plans of farm buildings now in the Northeastern plan exchange service, develop new plans to meet changing requirements, and prepare and publish a new catalog illustrating these plans.

Cooperating: Bureau of Human Nutrition and Home Economics; State agricultural colleges of the Northeastern Region.

SOUTHERN REGIONAL PLAN EXCHANGE. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, Beltsville, Md.

To revise and bring up to date farm building plans now in the Southern Plan Service; develop new plans to meet needs of farmers in the South; and prepare and publish a new catalog of plans for the use of farmers.

Cooperating: Bureau of Human Nutrition and Home Economics; State agricultural colleges of the Southern Region.

Frame Construction

ENGINEERED CONSTRUCTION METHODS—FRAME HOUSES. Illinois. University, Urbana.

RESEARCH IN VERY LOW-COST HOUSING $2,000 to $4,000. Louisiana. State University, Baton Rouge.

Includes frame and concrete block construction.

TESTING WORK ON GLUE CONNECTION. Oklahoma Agricultural and Mechanical College, Stillwater.

BUILDING PANELS FROM AGRICULTURAL RESIDUE. Indiana Agricultural Experiment Station, Lafayette.

THE PERFORMANCE OF SMALL LAMINATED BEAMS AND COLUMNS UNDER LOAD. Pennsylvania Agricultural Experiment Station, State College.

BUILDING BOARDS. U. S. Forest Service. Division of Forest Products.

Work is underway looking toward the development of a method especially adapted to small plant production of wallboards, both structural and insulating types, from wood waste.

STRENGTHS OF JOINTS AND ANCHORAGES AND RIGIDITY OF FLOORS AND ROOFS FOR WOOD FRAME FARM BUILDINGS. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, Beltsville, Md., and U. S. Forest Service. Forest Products Laboratory, Madison, Wis.

To develop improved designs for the types of joints and anchorages normally used in the construction of farm buildings, and to develop increased rigidity of floors and roofs in transmitting wind forces to the end walls of farm buildings.

Cooperating: Indiana Agricultural Experiment Station, Lafayette; Michigan Agricultural Experiment Station, East Lansing; Iowa Agricultural Experiment Station, Ames; and other North Central agricultural experiment stations.

JOINTS AND FASTENINGS. U. S. Forest Service. Division of Forest Products.

To investigate the relative efficiency of various methods of making joints in and between wood members; to devise improved joints for house and other construction; and to study the various factors which influence the strength of joints made with nails, screws, connectors, and other mechanical fasteners.

Masonary Construction

RESEARCH IN VERY LOW-COST HOUSING $2,000 to $4,000. Louisiana. University, Baton Rouge.

Includes frame and concrete block construction.

WATER PERMEABILITY OF STRUCTURAL CLAY TILE FACING WALLS. Minnesota. University, Minneapolis.

To investigate the effect of workmanship and other factors on the permeability of water of structural clay tile facing walls.

DEVELOPMENT OF LIGHTWEIGHT CLAY-PRODUCT UNITS. North Carolina. State College of Agriculture and Engineering, Raleigh.

Sponsored by the Industrial Research and Development Division of the Department of Commerce. Financial and directional assistance is also being rendered in this project by the Structural Clay Products Institute.

BEAM TILE INVESTIGATIONS. North Carolina. State College of Agriculture and Engineering, Raleigh.

Sponsored by the Southern Brick and Tile Manufacturers Association, Atlanta, Georgia.

PROPERTIES OF SETTING AND REHYDRATION OF CEMENT. Ohio State University, Columbus. Dept. of Chemistry and Research Foundation.

DEVELOPMENT OF CONCRETES CONTAINING AIR OR GAS VOIDS FOR APPLICATION TO FARM BUILDINGS. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, Beltsville, Md., and Washington, D. C.

To establish the physical and related properties of concretes containing air or gas voids; to develop techniques for mixing and handling these concretes; and to develop designs and specifications for their use in farm buildings.

Cooperating: Indiana Agricultural Experiment Station, Lafayette; Iowa Agricultural Experiment Station, Ames; and Michigan Agricultural Experiment Station, East Lansing.

DEVELOPMENT FOR FARM USE OF LIGHT-WEIGHT CONCRETE CONTAINING FILLERS. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, East Lansing, Mich.

To establish the physical and related properties of concretes utilizing chopped corn cobs or other farm wastes of similar form as fillers; to develop techniques for mixing and handling these concretes; and to develop types of construction, designs and specifications for their use in farm buildings.

Cooperating: Indiana Agricultural Experiment Station, Lafayette; Iowa Agricultural Experiment Station, Ames; Michigan Agricultural Experiment Station, East Lansing; and other North Central agricultural experiment stations.

Metal Construction

PROTECTIVE COATINGS FOR GALVANIZED METAL ROOFS. Illinois Agricultural Experiment Station, Urbana.

UTILIZATION OF ALUMINUM PRODUCTS IN FARM BUILDINGS AND EQUIPMENT. Illinois Agricultural Experiment Station, Urbana.

THE UTILIZATION OF STEEL IN FARM BUILDING CONSTRUCTION. Iowa Agricultural Experiment Station, Ames.

LIGHT GAGE STEEL STRUCTURES. Cornell University, Ithaca, N. Y.

To provide sound design rules for steel members fabricated by cold forming of light gage sheet steel. Sponsored jointly by the American Iron and Steel Institute and Cornell University.

EXPOSURE TESTS OF PAINTS FOR GALVANIZED STEEL ROOFS. New York (Cornell) Agricultural Experiment Station, Ithaca.

Prefabrication

AN ANALYSIS OF MASS-PRODUCED HOUSES. Illinois. University, Urbana.

NATIONAL HOUSING ADMINISTRATION AND HOUSING AND HOME FINANCE AGENCY PROJECT TO STUDY WATER VAPOR TRANSMISSION IN CONVENTIONAL AND PREFABRICATED WALLS. Pennsylvania State College, State College.

Floors and Floor Finishes

WOOD FLOORS AND RADIANT HEATING. U. S. Forest Service. Division of Forest Products.

With the increased use of radiant heating in homes more and more trouble is being reported with wood floors that have been laid over radiant heating pipes. Recommendations that appear to solve the difficulty for floors laid over concrete slabs in which the pipes are imbedded have been worked out as a result of the work done to date on this subject. The study is being extended to determine the effect of radiant heating on floor structures consisting of wood joists, subfloors and finish flooring.

IMPROVED FLOOR SURFACING FOR FARM BUILDINGS. Washington Agricultural Experiment Station, Pullman.

HOT WATER FLOOR PANEL PROJECT. Minnesota. University, Minneapolis.

To study the methods of designing floor panels for radiant heating.

THE ECONOMIC AND PHYSIOLOGIC EFFICIENCY OF RAISING CALVES TO 4 MONTHS ON CONCRETE VS. WIRE FLOORS. Louisiana Agricultural Experiment Station, Baton Rouge.

DEVELOPMENT OF VERTICAL WOOD BLOCK FLOORING. Indiana Agricultural Experiment Station, Lafayette.

THERMAL AND MOISTURE PROPERTIES OF FLOORS IN FARM BUILDINGS. Indiana Agricultural Experiment Station, Lafayette. Dept. of Agricultural Engineering.

To determine what types of floors are most suitable for farm buildings used for the storage of farm products and housing livestock. To study heat and moisture transfer through floors taking into consideration such factors as the type of fill, soil conditions, flooring material and foundation.

EFFECTS OF HUTCH-FLOOR CONSTRUCTION ON THE ACQUISITION OF COCCIDIOSIS BY DOMESTIC RABBITS. U. S. Bureau of Animal Industry. Zoological Division, Fontana, Calif.

To determine what relationships exist between nature of the hutch floor and the prevalence of coccidiosis in rabbits.

Cooperating: Rabbit breeders in vicinity of Fontana, California.

Insulation and Moisture Control

MOISTURE CONTROL IN POULTRY HOUSES. Connecticut Agricultural Experiment Station, Storrs.

THE CONTROL OF CERTAIN ENVIRONMENTAL FACTORS IN DAIRY BARNS. Iowa Agricultural Experiment Station, Ames. Dept. of Agricultural Engineering.

To reduce heat loss from dairy barns by using a partial basement design. To increase actual amount of heat available in the barn in order to maintain a dry barn by drawing heat from the soil under and around the barn. To increase the available heat in the barn by recovering some of the heat now lost thru the exhaust air. To reduce first cost of barns by using a lower cost wall for the partial basement as compared to more expensive heavily insulated above-ground wall.

Cooperating: Bureau of Plant Industry, Soils, and Agricultural Engineering; Bureau of Agricultural Economics.

WATER PERMEABILITY OF STRUCTURAL CLAY TILE FACING WALLS. Minnesota. University, Minneapolis.

To investigate the effect of workmanship and other factors on the permeability of water of structural clay tile facing walls.

APPARATUS FOR STUDY OF THERMAL CONDUCTIVITY UNDER VACUUM. Minnesota. University, Minneapolis.

To determine the thermal conductivity of insulating materials at various mean temperatures under vacuum conditions.

NATIONAL HOUSING ADMINISTRATION AND HOUSING AND HOME FINANCE AGENCY PROJECT TO STUDY WATER VAPOR TRANSMISSION IN CONVENTIONAL AND PREFABRICATED WALLS. Pennsylvania State College, State College.

DEVELOPMENT OF WATER VAPOR TRANSMISSION CELLS. Pennsylvania State College, State College.

In cooperation with the Armstrong Cork Company.

HEAT TRANSMISSION IN BUILDING AND INSULATING MATERIALS. Pennsylvania State College, State College.

Cooperating in ASH & VE Thermal Conductivity Standardization program.

BROODER HOUSE INSULATION FOR FUEL CONSERVATION, TEMPERATURE CONTROL AND MOISTURE CONTROL. Rhode Island Agricultural Experiment Station, Kingston.

Native Materials and Self-Help

FARM HOME IMPROVEMENT THROUGH PRACTICES AND METHODS FOR OBTAINING ADEQUATE FARM HOUSING AT LOW COST. Arkansas Agricultural Experiment Station, Fayetteville. Dept. of Agricultural Engineering.

To determine methods of using native materials and low cost commercial materials, separately and in combination, to secure adequate, attractive, and economical rural housing.

Cooperating: Bureau of Human Nutrition and Home Economics.

INVESTIGATION TO DEVELOP METHODS OF UTILIZING LOCAL TIMBER, MILL SAWED ON THREE AND FOUR SIDES AND TO LENGTH, IN BUILDING FARM STRUCTURES SUITABLE FOR ALASKA FARMS. Alaska Agricultural Experiment Station, Palmer and Fairbanks.

To develop home building methods adapted to Alaska labor supply, natural resources and climate.

Cooperating: Bureau of Plant Industry, Soils, and Agricultural Engineering.

THE DEVELOPMENT OF NATIVE IDAHO MATERIALS FOR BUILDING CONSTRUCTION. Idaho Agricultural Experiment Station, Moscow.

LOW COST HOME CONSTRUCTION AND IMPROVEMENT THROUGH USE OF FARM LABOR AND MATERIALS. Missouri Agricultural

Experiment Station, Columbia. Dept. of Agricultural Engineering.

To (1) determine practices followed by low income farm families, (2) develop satisfactory methods for constructing new, and improving old, farm homes, (3) develop methods for maintaining satisfactory winter and summer temperatures in low-cost homes, and (4) improve efficiency in kitchen and utility room arrangement.

Paints and Finishes

PROTECTIVE COATINGS FOR GALVANIZED METAL ROOFS. Illinois Agricultural Experiment Station, Urbana.

PERMEABILITY OF OIL AND WAX EMULSION COATINGS. Michigan Agricultural Experiment Station, East Lansing.

ENGINEERING INVESTIGATIONS IN THE STORAGE OF GRASS SILAGE. New Jersey Agricultural Experiment Station, New Brunswick. Dept. of Agricultural Engineering.

To (1) compare various coatings for silo walls in order to select the coating that will give needed protection at low cost and be easy to apply, and (2) consider ways of controlling leakage of juices from silos.

EXPOSURE TESTS OF PAINTS FOR GALVANIZED STEEL ROOFS. New York (Cornell) Agricultural Experiment Station, Ithaca.

EXPOSURE TESTS OF OUTSIDE PAINTS. New York (Cornell) Agricultural Experiment Station, Ithaca.

PROTECTIVE COATINGS FOR FARM STRUCTURES. Pennsylvania Agricultural Experiment Station, State College.

PAINTING. U. S. Forest Service. Division of Forest Products.

Painting studies are being made for the purpose of lowering the costs of painting new houses and of maintaining the paint throughout the life of the dwellings; of improving the performance of wood, plywood and other wood products in houses; of eliminating the many difficulties and wastes that have beset painting in the past; and of establishing a more scientific basis for recommending painting practices. Work is also underway to determine the usefulness of water repellents in retarding dimensional changes and reducing checking and distortion in doors, sash and other house parts; to compare the effectiveness of various repellents now available and to develop improved repellents.

Roofs and Roofing Materials

PROTECTIVE COATINGS FOR GALVANIZED METAL ROOFS. Illinois Agricultural Experiment Station, Urbana.

EXPOSURE TESTS OF PAINTS FOR GALVANIZED STEEL ROOFS. New York (Cornell) Agricultural Experiment Station, Ithaca.

VAPOR PERMEABILITY OF VARIOUS ROOFING CONSTRUCTIONS. Minnesota. University, Minneapolis.

To study vapor permeabilities of various roofing constructions, including under-insulating barriers, surface materials, and complete built-up roofs.

EFFICIENCY OF VARIOUS MATERIALS FOR DAIRY BARNS. Vermont Agricultural Experiment Station, Burlington. Dept. of Animal and Dairy Husbandry.

To determine the efficiency, suitability, durability, and cost of maintenance of different building materials when used in the construction of a dairy barn in northern New England.

INVESTIGATIONS OF DIFFERENT TYPES OF HOG LOT EQUIPMENT WITH RESPECT TO COST OF PRODUCTION, DURABILITY AND PRACTICAL APPLICATION. U. S. Bureau of Animal Industry. Division of Animal Husbandry, Beltsville, Md.

To study the effect of different types of roofing for hog lot shades with respect to cost of production, and for hog comfort.

Wood

BETTER AND LOWER COST HOUSING. U. S. Forest Service. Division of Forest Products.

To improve the efficiency and lower the cost of house construction through determination of the suitability of low-grade materials.

DEVELOPMENT OF VERTICAL WOOD BLOCK FLOORING. Indiana Agricultural Experiment Station, Lafayette.

GENERAL WORK WITH HOUSING APPLICABILITY. U. S. Forest Service. Division of Forest Products.

Examples are the studies being carried on to determine the strength and other physical characteristics of various species; the investigations of wood preservatives and methods of application; the development of better seasoning practices, both air seasoning and kiln drying; and veneer and plywood manufacture including the properties and use characteristics of glues.

JOINTS AND FASTENINGS. U. S. Forest Service. Division of Forest Products.

Investigations are being made on the relative efficiency of various methods of making joints in and between wood members and to devise improved joints for house and other construction. Also being studied are the various factors that influence the strength of joints made with nails, screws, connectors and other mechanical fasteners.

Safe and Permanent Construction

PROTECTIVE COATINGS FOR GALVANIZED METAL ROOFS. Illinois Agricultural Experiment Station, Urbana.

Fire Prevention and Protection

FIRE SAFETY. U. S. Forest Service. Division of Forest Products.

To give wood and wood products in houses greater safety from fire at reasonable cost.

Protection from Termites

EXPERIMENTS WITH CHEMICALS USED AS SOIL POISONS FOR PREVENTING AND CONTROLLING TERMITE INFESTATIONS. U. S. Bureau of Entomology and Plant Quarantine. Division of Forest Insect Investigations, Beltsville, Md., Gulfport, Miss., Barro Colorado Island, Canal Zone.

To evaluate a large series of chemicals for possible use as soil poisons and to test the more promising ones by using them in the practical treatment of infested buildings.

Cooperating: U. S. Army; Private home owners; State Entomologist of Louisiana; Smithsonian Institution; and Canal Zone Commission.

STUDY OF STRUCTURAL METHODS FOR PREVENTION OF DAMAGE TO BUILDINGS BY TERMITES. U. S. Bureau of Entomology and Plant Quarantine. Division of Forest Insect Investigations, Beltsville, Md., and Gulfport, Miss.

To obtain information regarding structural practices that will make buildings resistant to attack by termites and to assist the various housing agencies in applying this information.

Cooperating: Federal Housing Agency; Department of the Army; Department of the Navy; and Bureau of Plant Industry, Soils, and Agricultural Engineering.

Wood Preservation and Decay

STUDY OF BUILDING MATERIALS OF PLANT AND ANIMAL ORIGIN TO DEVELOP METHODS OF PREVENTING DAMAGE BY INSECTS OTHER THAN TERMITES. U. S. Bureau of Entomology and Plant Quarantine. Division of Insects Affecting Man and Animals, Savannah, Ga.

To determine what building materials of plant or animal origin are susceptible to insect damage, find ways of treating such materials to prevent insect damage, and find new uses for agricultural products as building materials through the development of protective treatments.

Cooperating: Bureau of Agricultural and Industrial Chemistry; Cotton Branch of Production and Marketing Administration; and interested industrial firms.

STUDIES OF THE BIOLOGY AND CONTROL OF BUPRESTIS AURULENTA AND B. LANGI IN DOUGLAS FIR PRODUCTS. U. S. Bureau of Entomology and Plant Quarantine. Division of Forest Insect Investigations, Portland, Oreg.

To determine the conditions that are favorable to attack by these insects and to develop methods of control.

Cooperating: University of Washington.

DECAY IN EXTERIOR WOODWORK AND SUBSTRUCTURE FRAMING OF BUILDINGS. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Forest Pathology, Beltsville, Md., California, Wisconsin, Mississippi.

Evaluate the decay hazard in various types of buildings, especially in low-cost housing without basements or sub-floor heating, and in farm buildings. Develop cheap and simple measures by which decay can be avoided or stopped.

Cooperating: Forest Service; Navy; National Housing Administration.

PRESERVATIVES FOR PLYWOOD SILO WALLS. Washington Agricultural Experiment Station, Pullman.

UTILITIES

Electricity

FACTORS AFFECTING ELECTRIC POWER CONSUMPTION ON FARMS. Georgia Agricultural Experiment Station, Experiment. Dept. of Agricultural Economics.

To (1) determine historical trend, annual and seasonal, of electric energy use by types and sizes of farms, (2) relate specific applications of electric energy on farms to economic characteristics of those farms, (3) determine effect of electrification on farm organization, labor requirements, and farm production, and (4) analyze costs of using electricity on farms including costs of energy, appliances, and wiring.

Cooperating: Bureau of Agricultural Economics.

APPLICATION OF ELECTRIC POWER TO FARM OPERATIONS. Illinois Agricultural Experiment Station, Urbana.

FACTORS AFFECTING ELECTRIC POWER CONSUMPTION ON FARMS. Iowa Agricultural Experiment Station, Ames.

FARM AND HOME ELECTRIC WIRING SYSTEMS. Iowa Agricultural Experiment Station, Ames.

USE OF ELECTRIC POWER ON NEBRASKA FARMS--C, UNIT PLANTS. Nebraska Agricultural Experiment Station, Lincoln. Dept. of Agricultural Engineering.

To study the performance of a new model 115-volt direct current wind-electric plant.

THE APPLICATION AND MANAGEMENT OF ELECTRIC LIGHT, HEAT, AND POWER ON PENNSYLVANIA FARMS. Pennsylvania Agricultural Experiment Station, State College.

A STUDY OF VARIOUS METHODS OF SECURING ELECTRICITY FOR THE SPARSELY SETTLED RANCH AREAS OF SOUTH DAKOTA. South Dakota Agricultural Experiment Station, Brookings.

STUDY OF METHODS OF ECONOMIC USE OF ELECTRIC LIGHT, HEAT AND POWER FOR ALL PHASES OF THE DAIRY FARMSTEAD. Wisconsin Agricultural Experiment Station, Madison.

Heating

SOLAR WATER HEATERS. Florida. University, Gainesville.

Study of domestic solar water heating with special emphasis on the utilization of solar energy for water heating in Florida.

THE EARTH AS A HEAT SOURCE FOR REVERSE CYCLE REFRIGERATION. Florida. University, Gainesville.

To obtain sufficient data to enable the air conditioning application engineer to intelligently design and install equipment using the earth as a heat source for winter heating and as a heat receiver during the summer cycle of operation.

SMOKELESS FURNACE AND WATER HEATER. Illinois, University, Urbana.

INST. BOILER AND RADIATOR RESEARCH. Illinois. University, Urbana.

WARM AIR HEATING RESEARCH. Illinois. University, Urbana.

THE CONTROL OF CERTAIN ENVIRONMENTAL FACTORS IN DAIRY BARNS. Iowa Agricultural Experiment Station, Ames. Dept. of Agricultural Engineering.

To reduce heat loss from dairy barns by using a partial basement design. To increase actual amount of heat available in the barn in order to maintain a dry barn by drawing heat from the soil under and around the barn. To increase the available heat in the barn by recovering some of the heat now lost thru the exhaust air. To reduce first cost of barns by using a lower cost wall for the partial basement as compared to more expensive heavily insulated above-ground wall.

Cooperating: Bureau of Plant Industry, Soils, and Agricultural Engineering; Bureau of Agricultural Economics.

ADAPTATION OF THERMOCOUPLE TECHNIQUES TO PROBLEMS IN HOUSEHOLD EQUIPMENT. Iowa Agricultural Experiment Station, Ames.

OPERATING CHARACTERISTICS AND REQUIREMENTS OF ELECTRIC HOT WATER SYSTEMS AND OTHER ELECTRIC APPLIANCES FOR FARM HOME USE. Iowa Agricultural Experiment Station, Ames.

THE USE OF MODELS IN PANEL HEATING PROBLEMS. Iowa. State University, Iowa City. Dept. of Mechanical Engineering.

PRODUCTION, HARVESTING, CURING AND STORING OF MARYLAND TOBACCO.—D, TOBACCO HOUSING. Maryland Agricultural Experiment Station, College Park. Dept. of Agricultural Engineering.

To determine optimum conditions of temperature, humidity and air movement for curing and storing of tobacco, to determine the extent to which it is economically justifiable to achieve these conditions, and to design and develop equipment and methods to maintain these conditions as uniformly as possible in all parts of full-size barns.

WARM ROOM BROODING USING A HOVER-CONVECTOR. Massachusetts Agricultural Experiment Station, Amherst. Dept. of Agricultural Engineering.

To investigate the suitability of a hover-convector combination

as heat source for warm room brooding, to see if it may be offered the poultry industry in lieu of more expensive under floor heat now being attempted.

THE PERFORMANCE OF COAL AND WOOD RANGES FOR COOKING AND HEATING AS A FUNCTION OF DESIGN AND METHOD OF OPERATION. Nebraska Agricultural Experiment Station, Lincoln. Dept. of Home Economics.

To analyze performance of coal and wood ranges for cooking and heating.

To determine stove performance as related to cooking and heating, temperatures will be taken at air for combustion, flue gas at stack, ash pit, cooking top of range, oven, outside surface of range, in flues around oven, and water reservoir. Heating and cooking top rates, and the effects of various types of stove construction will be observed.

HOT WATER FLOOR PANEL PROJECT. Minnesota. University, Minneapolis.

To study the methods of designing floor panels for radiant heating. Test being conducted in a specially built test structure.

STUDY OF THE USE OF ELECTRIC POWER ON NEBRASKA FARMS. --E, HEATING WATER FOR LIVESTOCK. Nebraska Agricultural Experiment Station, Lincoln. Dept. of Agricultural Engineering.

(1) To apply electrical energy to the heating of drinking water for livestock, (2) to adapt available electrical equipment to this duty, (3) to determine optimum temperatures for different animals, and (4) to determine electrical energy required under different conditions.

SOLAR HEATING. Oklahoma Agricultural and Mechanical College, Stillwater.

At present [1948] awaiting material.

THE APPLICATION AND MANAGEMENT OF ELECTRIC LIGHT, HEAT, AND POWER ON PENNSYLVANIA FARMS. Pennsylvania Agricultural Experiment Station, State College.

REVERSE CYCLE HEATING. Texas. Agricultural and Mechanical College, College Station.

Working on an evaluation of the thermal properties of Texas soils under Texas conditions.

RADIANT HEATING OF BROODER HOMES. Virginia Agricultural Experiment Station, Blacksburg.

REVERSED REFRIGERATION AND ITS APPLICATION IN SMALL UNITS. Washington. University, Seattle.

STUDY OF METHODS OF ECONOMIC USE OF ELECTRIC LIGHT, HEAT AND POWER FOR ALL PHASES OF THE DAIRY FARMSTEAD. Wisconsin Agricultural Experiment Station, Madison.

WOOD FLOORS AND RADIANT HEATING. U. S. Forest Service. Division of Forest Products.

With the increased use of radiant heating in homes more and more trouble is being reported with wood floors that have been laid over radiant heating pipes. Recommendations that

appear to solve the difficulty for floors laid over concrete slabs in which the pipes are imbedded have been worked out as a result of the work done to date on this subject. The study is being extended to determine the effect of radiant heating on floor structures consisting of wood joists, subfloors and finish flooring.

SWEETPOTATO STORAGE. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing. University of Georgia and other points within the State.

To study the effect of heating, heat and moisture distribution, ventilation, temperatures, humidities, cost of heating, management practices, and weight loss and quality of stored sweetpotatoes.

Cooperating: Interested branches of the University of Georgia.

CORN-DRIER DEVELOPMENT. U. S. Bureau of Plant Industry, Soils and Agricultural Engineering. Division of Farm Buildings and Rural Housing. Indiana, Illinois, Iowa, and probably Ohio, Michigan, Minnesota, South Dakota, and Nebraska.

To prepare specifications and develop a practical and economical corn drier for farm use, study air temperature, rate of flow, and distribution thru corn in various types of cribs, and demonstrate the use and value of a practical farm drier in conditioning soft or wet corn for safe storage.

Cooperating: U. S. Production and Marketing Administration, Grain Branch; Extension Service; Bureau of Agricultural Economics; Agricultural Experiment Stations and States concerned.

Lighting

PRODUCTION, HARVESTING, CURING AND STORING OF MARYLAND TOBACCO.—E, STRUCTURES AND EQUIPMENT FOR TOBACCO STRIPPING. Maryland Agricultural Experiment Station, College Park. Dept. of Agricultural Engineering.

To determine the best design of stripping room as affected by size, arrangement and natural and artificial lighting; to determine optimum conditions for keeping tobacco in desirable condition and to design and test equipment for this purpose; and to develop new and improved equipment for stripping operations.

IMPROVEMENT OF THE LIGHTING OF FARM HOMES WITHOUT ELECTRICITY. Nebraska Agricultural Experiment Station, Lincoln. Dept. of Home Economics.

To determine what can be done to improve the lighting in farm homes where kerosene and gasoline lamps must be used.

A STUDY IN LIGHTING IN KITCHEN WORK CENTERS. Ohio State University, Columbus.

THE APPLICATION AND MANAGEMENT OF ELECTRIC LIGHT, HEAT, AND POWER ON PENNSYLVANIA FARMS. Pennsylvania Agricultural Experiment Station, State College.

STUDY OF METHODS OF ECONOMIC USE OF ELECTRIC LIGHT, HEAT AND POWER FOR ALL PHASES OF THE DAIRY FARMSTEAD. Wisconsin Agricultural Experiment Station, Madison.

Refrigeration and Cooling

UTILIZATION OF SOLAR ENERGY FOR DOMESTIC AIR CONDITIONING. Florida. University, Gainesville.

Application of solar energy as a heat source for the operation of absorption of refrigeration systems to be used for domestic air conditioning.

ELECTRICITY IN RELATION TO AGRICULTURE, FARM REFRIGERATION, ETC. Idaho Agricultural Experiment Station, Moscow.

DEVELOPMENT OF A LOW COST MECHANICAL REFRIGERATOR FOR COOLING CREAM ON THE FARM. Michigan Agricultural Experiment Station, East Lansing.

A STUDY OF METHODS AND EQUIPMENT FOR CURING AND PRESERVING PERISHABLE FARM PRODUCTS UNDER CONDITIONS OF CONTROLLED TEMPERATURE AND HUMIDITY ADAPTABLE TO USE ON THE FARM.—B, COOLING AND STORING EGGS ON THE FARM. Nebraska Agricultural Experiment Station, Lincoln. Dept. of Agricultural Engineering.

To determine the ambient conditions of temperature and relative humidity required for satisfactory cooling and storing of eggs for short carry-over periods on the farm between trips to market; and to design simple and inexpensive equipment to provide the conditions found above.

A STUDY OF METHODS AND EQUIPMENT FOR CURING AND PRESERVING PERISHABLE FARM PRODUCTS UNDER CONDITIONS OF CONTROLLED TEMPERATURE AND HUMIDITY ADAPTABLE TO USE ON THE FARM.—C, A GENERAL PURPOSE FARM REFRIGERATOR. Nebraska Agricultural Experiment Station, Lincoln. Dept. of Agricultural Engineering.

To provide refrigeration facilities on the farm for freezing, frozen storage, and above freezing storage of perishable foods.

A STUDY OF METHODS AND EQUIPMENT FOR CURING AND PRESERVING PERISHABLE FARM PRODUCTS UNDER CONDITIONS OF CONTROLLED TEMPERATURE AND HUMIDITY ADAPTABLE TO USE ON THE FARM.—D, AN INEXPENSIVE DIFFERENTIAL THERMOSTAT FOR POTATO STORAGES. Nebraska Agricultural Experiment Station, Lincoln. Dept. of Agricultural Engineering.

To design and test an inexpensive and dependable differential thermostat for use in potato storages to make possible the most beneficial use of night air in cooling potatoes after they have been harvested and stored.

WHITE POTATO STORAGE AND MARKETING INVESTIGATIONS IN NEW JERSEY. New Jersey Agricultural Experiment Station, New Brunswick. Depts. of Agricultural Engineering and Plant Pathology.

In order to extend the potato marketing season in New Jersey, studies will be undertaken to determine the most suitable structures for storing potatoes in common underground, above ground, and refrigerated storage.

Cooperating: Bureau of Plant Industry, Soils, and Agricultural Engineering.

SUMMER TEMPERATURE CONTROL IN DAIRY CATTLE LOAFING BARNS. Oklahoma Agricultural Experiment Station, Stillwater.

HOME BUILT FARM REFRIGERATOR UNITS. Oregon Agricultural Experiment Station, Corvallis.

EVALUATION OF LOCALLY FABRICATED WALK-IN TYPE FARM REFRIGERATORS. Virginia Agricultural Experiment Station, Blacksburg.

IMPROVEMENT OF DESIGN AND OPERATION OF COLD STORAGES FOR APPLES. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, Wenatchee, Wash. and Blacksburg, Va.

To determine the most efficient and practical types of buildings, equipment, and operating procedures for providing and maintaining the optimum storage conditions for apples on the farm and at local shipping points.

Cooperating: Fruit and Vegetable Crops and Diseases; Production and Marketing Administration; and Washington Agricultural Experiment Station, Pullman, and Virginia Agricultural Experiment Station, Blacksburg.

WHITE POTATO STORAGE AND MARKETING INVESTIGATIONS FOR NEW JERSEY, LONG ISLAND AND PENNSYLVANIA AREAS. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing, New Brunswick, N. J., Long Island and Pennsylvania.

To determine most efficient and practical buildings, equipment, and operating procedures for storage of potatoes on farm and at local shipping points under climatic and marketing conditions experienced in potato producing areas of N. J., L. I., and east. Pa.

Cooperating: New Jersey Agricultural Experiment Station, New Brunswick, New York Agricultural Experiment Station, Geneva, and Pennsylvania Agricultural Experiment Station, State College.

INVESTIGATIONS ON THE MOST EFFICIENT UTILIZATION AND OPERATION OF COLD STORAGE FACILITIES FOR APPLES AND PEARS IN THE PACIFIC NORTHWEST. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Fruit and Vegetable Crops and Diseases. Wenatchee-Okanogan District, Wash.

To determine how the apple and winter pear crop of the Pacific Northwest can be handled or stored to the best advantage in the existing cold storage plants which have inadequate refrigerating capacity to effectively cool the total tonnage as quickly as it should be.

Cooperating: Regional Agricultural Credit Corporation, Wenatchee,

Wash.; and cold storage operators in the district.

Sanitation and Water Supply

IMPROVEMENT IN RURAL WATER SUPPLIES AND SEWAGE DISPOSAL. Michigan Agricultural Experiment Station, East Lansing.

Insect and Rodent Control

PHYSICAL TESTING OF INSECT WIRE SCREENING. Florida. University, Gainesville.

To run physical tests and compare the various metal and plastic house screening on the market.

A RESEARCH PROGRAM FOR THE STUDY OF AND THE DEVELOPMENT OF CONTROL MEASURES FOR FOWL TYPHOID. U. S. Bureau of Animal Industry. Pathological Division, Beltsville, Md.

To develop satisfactory methods of controlling fowl typhoid so as to minimize losses.

INVESTIGATIONS FOR CONTROLLING INTESTINAL THREADWORMS OF SWINE. U. S. Bureau of Animal Industry. Zoological Division, Beltsville, Md.

To broaden the scope of our knowledge concerning the specific sources of infection of suckling pigs with Strongyloides that occur under farrowing house conditions, and test control measures.

COMMERCIAL-SCALE TRIALS OF RESIDUAL SPRAYS IN FARM BINS, COMMERCIAL STORAGE FACILITIES, FREIGHT CARS, AND MILLS. U. S. Bureau of Entomology and Plant Quarantine. Division of Cereal and Forage Insect Investigations, Manhattan, Kans.; Minneapolis, Minn.; Athens, Ga., or other southeastern location.

To determine the usefulness of residual insecticide sprays in the control of cereal pests in farm bins, freight cars, warehouses and mills.

Cooperating: Bureau of Plant Industry, Soils, and Agricultural Engineering; Kansas Agricultural Experiment Station, Manhattan, Minnesota Agricultural Experiment Station, St. Paul, and Georgia Agricultural Experiment Station, Athens; farmers, elevator and warehouse operators, railways, and millers.

DEVELOPMENT OF METHODS OF PROTECTING STORED CORN AND CORN PRODUCTS FROM INSECTS IN THE SOUTHEASTERN STATES. U. S. Bureau of Entomology and Plant Quarantine. Division of Cereal and Forage Insect Investigations, Athens, Ga. or some other southeastern location where suitable facilities are available.

To develop practical methods of protecting stored corn and corn products from insect infestation on the farm, in transit and in warehouses and mills.

Cooperating: Farmers, railways, corn millers, Georgia Agricultural Experiment Station, Athens, Bureau of Plant Industry,

Soils, and Agricultural Engineering structural engineers.

DEVELOPMENT OF PRACTICAL INSECT CONTROL SCHEDULES, FOR USE IN COMMERCIAL STORAGE FACILITIES AND MILLS. U. S. Bureau of Entomology and Plant Quarantine. Division of Cereal and Forage Insect Investigations, Manhattan, Kans.; Minneapolis, Minn.; Athens, Ga., or other southeastern location.

To develop an overall system of eliminating or preventing insect infestations in grains and milled cereals that will ensure the delivery of insect free products to the consumer.

Cooperating: Kans. Agricultural Experiment Station, Manhattan, Minnesota Agricultural Experiment Station, St. Paul, and Georgia Agricultural Experiment Station, Experiment, farmers, elevator and warehouse operators, railways, millers, and Bureau of Plant Industry, Soils and Agricultural Engineering structural engineers.

DEVELOPMENT OF FORMULAS FOR INSECTICIDAL AEROSOLS. U. S. Bureau of Entomology and Plant Quarantine. Division of Insecticide Investigations, Beltsville, Md.

To develop effective and economical formulas for the application of insecticides in aerosol form to control insects in dwellings and other buildings, on agricultural crops, and in aircraft.

Cooperating: Division of Control Investigations; Division of Truck Crop and Garden Pest Investigations; Division of Foreign Plant Quarantine; U. S. Public Health Service; Maryland Agricultural Experiment Station, College Park.

DISINFECTION OF STORAGE HOUSES, FIELD BOXES AND BASKETS; TESTS WITH DIFFERENT MATERIALS AND METHODS OF APPLICATION. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Fruit and Vegetable Crops and Diseases, Beltsville, Md., Wenatchee, Wash., Fresno, Calif.

To investigate the disinfection of storage houses, field boxes and baskets.

Cooperating: Commercial warehousemen.

Plumbing

DEVELOPMENT OF THE PROPOSED PLUMBING CODE OF THE AMERICAN STANDARDS ASSOCIATION. Iowa. State University, Iowa City.

This work is being done at the request of the American Standards Association and the American Society of Mechanical Engineers.

Waste Disposal

CONSTRUCTION OF SEPTIC TANKS, CISTERNS, AND OTHER FARM STRUCTURES WITH CEMENT SILO STAVES. South Dakota Agricultural Experiment Station, Brookings.

OPERATIONAL CHARACTERISTICS AND REQUIREMENTS OF ELECTRIC WATER SYSTEMS AND OTHER ELECTRICAL EQUIPMENT, APPLIANCES AND SERVICES FOR FARM USE. Iowa Agricultural Experiment Station, Ames.

EVALUATION OF DIFFERENT STYLES OF KITCHEN SINKS. Maine Agricultural Experiment Station, Orono.

FREEZE-PROOF POULTRY WATER SUPPLY. Massachusetts Agricultural Experiment Station, Amherst. Dept. of Agricultural Engineering.

To investigate the adaptability of the "bullet valve" and accessory piping as an economical method of poultry drinking water supply that is freeze proof, economical, and distributed so as to eliminate "bossiness," and which will eliminate spillage, and be protected from dirt and other contamination.

UTILIZATION OF ELECTRICITY IN AGRICULTURE:—III, FROST PROOF STOCK WATERERS. Minnesota Agricultural Experiment Station, St. Paul. Dept. of Agricultural Engineering.

To develop a stock tank waterer which will remain free of ice during most severe weather without use of heaters. To determine its construction and operating costs. To make plans available for its construction and installation.

DESIGN AND LAYOUT OF LAYING PENS AND RELATED EQUIPMENT. New York (Cornell) Agricultural Experiment Station, Ithaca. Dept. of Agricultural Engineering.

To (1) study transportation of feeds, litter, eggs and other materials within and between poultry structures and to study equipment arrangements for maximum efficiency; and (2) critically appraise alternative methods of supplying water to hens and disposing of waste water and develop new methods or systems.

INVESTIGATION OF THE USE OF PLASTIC TUBING FOR UNDERGROUND DRAINS. Ohio Agricultural Experiment Station, Columbus.

TREATMENT OF HARD WATERS FOR HOUSEHOLD, FARM, AND DAIRY USE. South Dakota Agricultural Experiment Station, Brookings. Depts. of Chemistry, Home Economics and Dairy Husbandry.

To determine suitable combinations of synthetic detergents, sequestering agents, soaps, and builders for removal of (1) soil on clothes which are ordinarily laundered at home and (2) the types of soil (mixtures of proteins, fats, and minerals) commonly found on dairy utensils and equipment, and (3) soil on dishes and other food containers. To determine what agents are suitable for treating hard waters which are to be used with spray materials.

Ventilation

IMPROVED VENTILATION OF POULTRY HOUSES. Idaho Agricultural Experiment Station, Moscow.

POULTRY HOUSE VENTILATION. Maine Agricultural Experiment Station, Orono. Dept. of Agricultural Engineering.

To determine optimum amount of air movement necessary to maintain desirable environmental and operational conditions of temperature, humidity, ammonia concentration, and dry litter for poultry houses in Maine.

PRODUCTION, HARVESTING, CURING AND STORING OF MARYLAND TOBACCO. D, TOBACCO HOUSING. Maryland Agricultural Experiment Station, College Park. Dept. of Agricultural Engineering.

To determine optimum conditions of temperature, humidity and air movement for the curing and storing of tobacco, to determine the extent to which it is economically justifiable to achieve these conditions, and to design and develop equipment and methods to maintain these conditions as uniformly as possible in all parts of full-size barns.

THE DEVELOPMENT OF NEW AND IMPROVEMENT OF EXISTING METHODS AND EQUIPMENT FOR PROPER CONDITIONING OF ANIMAL SHELTERS AND FARM CROP STORAGES.—I, INVESTIGATIONS TO IMPROVE POULTRY HOUSE VENTILATION. Massachusetts Agricultural Experiment Station, Amherst. Dept. of Agricultural Engineering.

To investigate methods and equipment for air-conditioning of animal shelters and farm crop storages which will aid in drying or curing a crop being placed in storage; maintain tolerable humidity and temperature for animal or foodstuffs, and a condition of air which will not accelerate rate of deterioration of the structure, and is satisfactory to the operator; and be economical.

A STUDY OF DAIRY STABLE VENTILATION SYSTEMS USING ELECTRIC FANS. New York (Cornell) Agricultural Experiment Station, Ithaca.

AIR VENTILATING SYSTEMS FOR HOG HOUSES COMPARED TO NATURAL DRAFT SYSTEMS. North Dakota Agricultural Experiment Station, State College Station, Fargo. Depts. of Agricultural Engineering and Animal Husbandry.

To (1) secure performance data on hog houses with a fan ventilating system as compared to those having gravity system of flue type, (2) make improvements upon mechanical ventilating systems, and (3) determine air requirements.

FORCED AIR FOR VENTILATING SYSTEMS FOR POULTRY HOUSES COMPARED TO THE MUSLIN FRONT AND SLOT SYSTEMS. North Dakota Agricultural Experiment Station, State College Station, Fargo. Depts. of Agricultural Engineering and Poultry Husbandry.

To secure data on performance of a poultry house having forced air ventilating system as compared to house having gravity system of ventilation of the muslin front and slot type.

DAIRY BARN VENTILATION STUDY. Oregon Agricultural Experiment Station, Corvallis.

AIR INFILTRATION PROJECT. West Virginia. University, Morgantown.

To investigate the infiltration of air into buildings through the walls and around windows and doors because of wind pressure.

SWEETPOTATO STORAGE. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Division of Farm Buildings and Rural Housing and Agricultural Engineering, University of Georgia and other points within the State.

To study the effect of construction, insulation, utilization of materials, heating, heat and moisture distribution, ventilation, temperatures, humidities, cost of heating, management practices, labor utilization, economical building and equipment costs, and weight loss and quality of stored sweetpotatoes.

Cooperating: Interested branches of the University of Georgia.

WHITE POTATO STORAGE AND MARKETING INVESTIGATIONS FOR NEW JERSEY, LONG ISLAND AND PENNSYLVANIA AREAS. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering, Division of Farm Buildings and Rural Housing, New Brunswick, N. J., Long Island and Pennsylvania.

To determine most efficient and practical buildings, equipment, and operating procedures for storage of potatoes on farm and at local shipping points under climatic and marketing conditions experienced in potato producing areas of N. J., L. I., and east. Pa.

Cooperating: New Jersey Agricultural Experiment Station, New Brunswick, New York Agricultural Experiment Station, Geneva, and Pennsylvania Agricultural Experiment Station, State College.

MAINTENANCE AND REPAIR

ECONOMIC AND LEGAL STATUS OF FIRE PROTECTION DISTRICTS IN ILLINOIS. Illinois Agricultural Experiment Station, Urbana. Dept. of Agricultural Economics.

To study economic and legal status of approximately 300 fire protection districts in Illinois. To determine the cost of these districts to members and make a study of the benefits such as reduced fire losses, reduced insurance rates and building inspections; to determine the different types of equipment being used and compare their effectiveness, if possible; to determine ratio of fires to number of buildings and population and the average loss per capita; to study the legal sufficiency of these districts and find the essentials of sound organization; to make appropriate recommendations on such findings.

Cooperating: Department of Agricultural Engineering.

AGRICULTURAL ENGINEERING RESEARCH FARM MAINTENANCE. Iowa Agricultural Experiment Station, Ames.

PART III

COOPERATIVE EXTENSION WORK IN FARM STRUCTURES*

The Farm Structures Extension Program

Farm Structures extension work of the U. S. Department of Agriculture and the State Colleges of Agriculture cooperating includes technical advice and assistance for planning, constructing and improving farm houses, farm buildings and farmsteads. The assistance requested by farm families ranges from advice on investment to the solution of family housing needs and furnishing building plans and technical information and services. The Extension Service endeavors to aid each family requesting assistance to obtain the housing and buildings which best meet the family and farm needs within the income capability of the family and the farm. The organization of this educational assistance is the Farm Structures Extension Program.

Advice and recommendations for the program are based on tested research, conclusions and proven experience from a wide range of science and technology. Four major extension projects including about 343 subject matter specialists contribute part time service to the Farm Structures Extension Program. At the same time these major projects are contributing to a number of other agricultural production and home economics programs. The extension projects contributing to the housing and farm structures program are principally: agricultural engineering, home management, farm management and landscaping with important support and guidance from sociology, forestry, entomology and other projects. The coordinated support of these subject matter projects is extended to farm people in State extension work through arrangements of the State, district and county agricultural and home demonstration agents for scheduling and conducting the various activities of the program.

The Projects Serving the Program

The recommendations of State Extension Housing Committees for the coordination of the subject matter and the procedures to

* A statistical report of the Farm Structures Extension Work summarized nationally and by regions and states follows this descriptive statement.

serve county extension programs are carried out administratively through the planned assistance rendered by specialists in the following extension projects:

Agricultural Engineering Projects: State extension architects or agricultural engineers provide farm house and building plans for general use throughout the State which incorporate the respective functional requirements approved by the various subject matter departments of the college. This project is also responsible for the architectural and engineering features of the plans such as the soundness of structural design, building specifications, materials of construction, electrification and the installation of modern equipment, as well as the convenience, cost and appearance of the structures. Building plans and technical bulletins, and demonstrations of construction, alteration, repair and maintenance skills and practices are made available for county extension use. Extension agricultural engineers also conduct training meetings for extension agents, builders and farmers.

Home Economics Housing Projects: Housing and Home Furnishings specialists provide advice and assistance on the functional requirements of farm dwellings to home demonstration agents and homemakers. They promote efficiency, livability and beauty in interior arrangement, modernizing equipment, interior finish and decoration of homes, and cooperate with other specialists in improving farm houses and the surrounding grounds. Demonstrations, plans, bulletins and other kinds of extension assistance for modernizing homes, kitchens, bathrooms, workrooms and clothes and storage closets are widely popular and effective. These specialists also conduct training meetings for county extension workers and farm people to aid farm families to improve their homes in keeping with the family needs and farm income.

Farmstead Improvement: This phase of the program is assigned in some States to the agricultural engineers and in others to landscape architects or farm management specialists. It requires the joint assistance of all three projects and also home management in planning for farmstead location and layout, safety, economy, labor efficiency, health and pleasing appearance. However, since only a relatively small number of farms have opportunity for completely new farmstead planning, the burden of this field work is done by the landscape specialists to improve the layout and appearance of the farmsteads.

Agricultural Economics Projects: Farm Management Specialists and sociologists contribute much that is basic in planning and conducting the program, such as analyzing the housing situation and furthering sound farm management to increase and assure adequate housing and other buildings on a sound basis of investment. The economics of investment, location and efficient use of the farm homes and other structures is a very important part of planning the farm enterprise and farm family living as a balanced operation.

Other Extension Projects: Forestry specialists contribute much to the protection and appearance of farmsteads by assisting farmers in planning shelterbelts and woodlands. They also develop the use of local timber and other farm building materials and promote fire protection. Entomology specialists contribute much to the protection of buildings from destructive insects. Termites are the cause of extensive costly repairs which can be minimized by proper protection. The elimination or control of household insects, flies, mosquitoes and other pests is also promoted by the entomologists. Production and marketing specialists in crops, livestock, and all farm commodities assist in determining adequate functional standards for all types of farm buildings for shelter and storage. Electrification specialists and specialists in various phases of agricultural engineering establish and promote safe, economical and adequate standards for the installation of modern building equipment of all types for houses, farm buildings, fences, roads, bridges, drainage and irrigation structures. Health and safety specialists assist in safeguarding the persons and property of farm people and others affected by the proper use of building standards and codes on farms.

Regional Farm Building Plan Exchange Service: The Division of Farm Structures of the Agricultural Research Administration and the Agricultural Engineering and Home Economics Housing projects of the Extension Service in cooperation with specialists of the state agricultural colleges have coordinated farm housing and building plan services through regional plan exchange committees since 1936. The committee for each of the national extension regions meets on call with representation from each State to determine on a selection of basic plans for farm houses and buildings for the entire region. The Division of Farm Structures produces the plans to meet the regional requirements and furnishes master working prints for duplication in all the States. It also publishes regional bulletins listing and illustrating the plans. These are used as farm house and building plan catalogues by all county extension offices and are also distributed to farmers. The county extension offices obtain the working prints for any of these plans for farmers from the State Extension Agricultural Engineers. Plans from the regional exchange lists meet most of the extension requests for new farm house and building plans throughout the country. Many State Extension Services provide additional plans and keep complete sets of all working drawings in their county extension offices for reference by farmers.

Extension Information: Extension editors and visual aid specialists assist in preparing and circulating the information to promote and carry on the extension housing and building program. They issue press and radio releases, publish informational bulletins and leaflets and prepare visual teaching aids such as charts, slide films, motion pictures, and cardboard models of buildings used by extension agents in assisting farmers to plan the location of new buildings. They also

assist the specialists of the various projects in coordination of public information and the development of exhibits for the program.

Four-H Club and Youth Work: Four-H Clubs conduct four activities contributing to improvement of farm housing, farm buildings and farmsteads. These are (1) Agricultural engineering dealing with the information and skills of house and building, location, planning and construction. Miniature landscaped farm house models are developed by the 4-H Club members for exhibition. (2) Rural electrification deals with wiring the home and other buildings for safe and satisfying uses of electrical equipment and appliances to modernize homes and increase farm income. (3) Home Improvement and Home Management teaches efficient arrangement of furnishings, storage of clothes and household goods and beauty and attractiveness of rooms, as well as providing a personal interest for girls and boys in the improvement of farm homes. (4) Farm Safety is a very popular 4-H activity, highlighted by three annual campaigns observing Spring Clean-Up Week, National Farm Safety Week, and National Fire Prevention Week. The personal inspection and use of check sheets on farm and home accident and fire hazards lead to much improvement in structures and their safe use.

Conducting the State Extension Farm Structures Program:

The State Director or State leader responsible for the operation of the program is the mainspring of its successful coordination and operation, and the evaluation of its effectiveness. His direction of the Farm Structures Program through district extension agricultural and home demonstration agents to the county extension forces assures a smooth running program of educational service to farm men, women, and youth in which all the project activities are available as needed by the farm families.

Through this administrative line, arrangements are made for training the agents in new extension and subject matter information and techniques, and extending this training to local leaders and cooperating builders and dealers to furnish the technical services requested by farm people. The various project specialists assist in this training and in local meetings and demonstrations with technical services and assistance.

Cooperation is also promoted with the schools and other public and private agencies which can add to the effectiveness of the program. Assisting the Farmers Home Administration in acquainting farm people with all the provisions of the Farm Housing Title of the Housing Act of 1949 is a matter of mutual importance to the Extension Service, farm people and the Farmers Home Administration. Likewise cooperation with the Agricultural Research Administration and the Bureau of Agricultural Economics is important, to extend the benefits of these services to farm people through this program.

Evaluating Accomplishments:

Every county extension office has its annual statistical records of assistance rendered to farm families on "Housing and Farmstead Improvement" including all farm structures and their electrification, equipment and modernization, and improving the home and its furnishings, appearance and grounds. These records are summarized for each State, and also regionally and nationally. They indicate a high level of building interest and activity at present which will doubtless be sustained as long as the great need for more adequate farm dwellings and buildings exists and favorable conditions continue for building. However, the quality of the results will be largely influenced by the Farm Housing Extension Work. Over a period of a few years the results become cumulatively impressive in every agricultural county. Better living attained through better farming becomes evident to all in adequate attractive farm houses and farmsteads situated in pleasant and well kept surroundings, on well managed farms.

HOUSING AND FARMSTEAD IMPROVEMENT — UNITED STATES AND REGIONAL TOTALS
(Information from 1948 Statistical Reports)

Item	United States	Eastern States	Central States	Southern States	Western States
State specialists and percentage of time devoted to housing:					
No. agricultural engineers: 10% housing; 15% farm buildings; 25% rural electrification	145	32	48	50	15
No. home management: 15% housing	97	20	39	26	12
No. agricultural economists and sociologists: 10% housing	63	12	24	16	11
No. horticulturists: farmstead improvement 45%	38	10	11	10	7
Days in field in housing and building work	9,324	1,872	2,849	3,403	1,200
THE HOUSE, EQUIPMENT, AND SURROUNDINGS:					
Days devoted to work by all agents	128,769	15,986	26,543	74,833	11,407
Communities in which work was conducted	44,562	4,603	14,089	22,827	3,043
Local leaders assisting	98,937	11,759	37,554	42,545	7,079
Families assisted in:					
(1) Constructing dwellings	49,972	2,256	7,814	35,424	4,478
(2) Remodeling dwellings	113,172	7,224	25,767	73,050	7,131
(3) Installing sewage systems	47,184	2,700	19,609	20,280	4,595
(4) Installing water systems	51,505	2,871	16,505	28,740	3,389
(5) Installing heating systems	26,870	885	7,276	17,135	1,574
(6) Providing needed storage space	209,203	16,974	55,042	124,022	13,165
(7) Rearranging or improving kitchens	221,712	18,875	62,670	127,652	12,515
(8) Improving arrangement of other rooms	267,765	21,644	67,611	162,796	15,714
(9) Selecting household equipment	359,246	51,233	110,102	173,093	24,818
(10) Laundry arrangement	90,035	2,749	27,673	54,167	5,446
(11) Installing sanitary equipment	28,843	629	2,719	23,774	1,721
(12) Screening and controlling insects	680,853	23,278	223,953	383,722	49,905
(13) Improving home grounds	399,438	30,591	83,821	258,076	26,950
(14) Planting shelterbelts	32,063	1,318	18,255	7,992	4,498
RURAL ELECTRIFICATION:					
Days devoted to work by all agents	16,446	1,064	3,330	11,157	895
Communities in which work was conducted	18,657	967	6,195	10,891	604
Local leaders assisting	20,598	686	4,443	14,698	771
Families assisted in:					
(1) Obtaining electricity	132,884	4,061	29,038	93,675	6,110
(2) Selection or use of electric lights or home electrical equipment	271,706	12,266	60,434	186,256	12,750
(3) Using electricity for income purposes	79,240	10,046	20,306	45,393	3,495
FARM BUILDINGS:					
Days devoted to work by all agents	18,814	3,366	4,467	8,981	2,000
Communities in which work was conducted	21,309	2,276	6,688	10,797	1,548
Local leaders assisting	16,198	1,030	3,954	10,353	861
Farmers assisted in:					
(1) Construction of farm buildings	81,882	7,453	26,797	40,163	7,469
(2) Remodeling or repairing farm buildings	90,241	11,670	30,320	42,968	5,283
(3) Selection or construction of farm building equipment	58,859	7,187	19,857	27,262	4,553

Prepared by AEO., Annual Reports Unit, Division of Field Studies and Training, Extension Service, U.S.D.A., October 1949

HOUSING AND FARMSTEAD IMPROVEMENT — EASTERN REGION
(Information from 1948 Statistical Reports)

Item	Conn.	Del.	Me.	Md.	Mass.	N.Hamp.	N.J.	N.Y.	Penna.	R.I.	Vt.	W.Va.
STATE SPECIALISTS AND PERCENTAGE OF TIME DEVOTED TO HOUSING:												
No. agricultural engineers: 10% housing; 15% farm buildings; 25% rural electrification	1	1	1	4	1	1	1	15	3	½	2	½
No. home management: 15% housing	1	1	1	1	2	1	1	8	3	-	1	-
No. agricultural economists and sociologists: 10% housing	2	-	1	-	1	1	-	3	2	1	1	-
No. horticulturists: 45% farmstead improvement	-	1	-	2	1	1	1	2	1	-	-	1
Days in field in housing and building work	55	44	137	92	172	75	121	767	299	27	35	48
THE HOUSE, EQUIPMENT, AND SURROUNDINGS:												
Days devoted to work by all agents	496	172	820	1,038	1,455	616	915	4,060	4,208	245	470	1,497
Communities in which work was conducted	137	72	370	390	336	228	377	1,220	627	39	306	501
Local leaders assisting	356	119	352	599	1,133	467	286	5,776	855	376	466	974
Families assisted in:												
(1) Constructing dwellings	27	28	63	166	454	90	50	363	211	1	85	720
(2) Remodeling dwellings	144	39	226	1,678	586	140	124	2,115	598	4	376	1,194
(3) Installing sewage systems	32	18	61	258	57	40	89	638	943	-	51	513
(4) Installing water systems	56	15	66	256	60	29	42	568	927	1	64	787
(5) Installing heating systems	17	7	37	157	8	18	25	118	40	-	155	323
(6) Providing needed storage space	371	37	101	2,529	686	185	1,417	7,667	738	2	1,200	2,041
(7) Rearranging or improving kitchens	1,251	42	192	1,827	651	247	1,039	6,804	1,951	71	2,756	2,044
(8) Improving arrangement of other rooms	481	923	64	3,618	1,588	344	965	7,158	2,658	41	1,176	2,628
(9) Selecting household equipment	410	606	6,147	4,001	7,025	860	1,894	19,946	4,904	408	1,223	3,809
(10) Laundry arrangement	51	37	13	355	83	13	109	650	362	-	152	964
(11) Installing sanitary equipment	-	13	-	203	47	-	94	75	28	-	35	134
(12) Screening and controlling insects	75	17	460	3,737	1,849	52	2,213	5,867	3,666	500	293	4,549
(13) Improving home grounds	726	553	491	2,094	2,581	94	3,979	10,613	3,561	538	360	5,401
(14) Planting shelterbelts	31	5	22	42	13	1	52	257	642	-	61	192
RURAL ELECTRIFICATION:												
Days devoted to work by all agents	25	17	25	91	8	96	9	89	77	9	22	596
Communities in which work was conducted	44	29	24	87	71	100	3	158	78	19	26	348
Local leaders assisting	-	6	13	44	-	89	4	97	32	4	18	379
Families assisted in:												
(1) Obtaining electricity	28	139	4	510	41	13	5	194	108	-	35	2,984
(2) Selection or use of electric lights or home electrical equipment	665	404	376	1,265	67	1,484	191	3,381	1,011	-	757	2,667
(3) Using electricity for income purposes	118	20	10	455	1,135	239	2	6,122	366	15	57	1,507
FARM BUILDINGS:												
Days devoted to work by all agents	62	28	236	127	107	174	166	1,783	505	20	18	140
Communities in which work was conducted	75	29	202	138	160	141	153	774	298	21	79	226
Local leaders assisting	-	-	84	47	-	22	4	656	137	1	9	70
Farmers assisted in:												
(1) Construction of farm buildings	215	82	543	774	160	81	685	2,874	1,559	16	105	563
(2) Remodeling or repairing farm buildings	364	88	692	853	340	127	660	5,957	1,751	15	185	658
(3) Selection or construction of farm building equipment	92	39	78	270	130	83	268	5,419	257	9	140	422

Prepared by ASO., Annual Reports Unit, Division of Field Studies and Training, Extension Service, U.S.D.A., October 1949.

HOUSING AND FARMSTEAD IMPROVEMENT -- SOUTHERN REGION
(Information from 1948 Statistical Reports)

Item	Ala.	Ark.	Fla.	Ga.	Ky.	La.	Miss.	N.C.	Okla.	S.C.	Tenn.	Texas	Va.	P.Rico
STATE SPECIALISTS AND PERCENTAGE OF TIME DEVOTED TO HOUSING:														
No. agricultural engineers: 10% housing; 15% farm buildings; 25% rural electrification	4	3	2	3	4	3	5	2	1	5	8	4	6	-
No. home management; 15% housing	2	1	1	1	5	2	1	3	2	1	1	3	2	1
No. agricultural economists and sociologists: 10% housing	1	1	1	2	1	1	1	3	1	1	1	1	1	-
No. horticulturists: 45% homestead improvement	1	1	-	-	1	1	-	1	1	-	1	1	2	-
Days in field in housing and building work	188	174	-	200	378	292	165	288	220	83	254	653	407	101
THE HOUSE, EQUIPMENT, AND SURROUNDINGS:														
Days devoted to work by all agents	4,225	5,056	1,648	5,989	3,831	5,840	6,449	9,380	4,414	3,474	4,287	12,804	6,559	877
Communities in which work was conducted	1,890	2,830	697	1,959	1,092	1,665	1,677	1,991	1,123	1,168	1,777	3,492	1,104	362
Local leaders assisting	3,349	3,715	715	2,988	3,160	2,489	3,868	5,944	3,128	1,777	2,208	5,612	3,133	459
Families assisted in:														
(1) Constructing dwellings	4,445	2,743	1,055	3,652	1,386	2,355	3,599	4,930	1,721	916	3,158	3,691	1,559	214
(2) Remodeling dwellings	6,491	4,464	1,988	7,105	4,033	4,392	8,036	8,352	6,329	3,631	5,391	8,553	3,811	474
(3) Installing sewage systems	1,513	1,192	749	1,993	939	642	1,379	3,153	2,328	698	1,314	3,225	964	191
(4) Installing water systems	2,176	2,098	944	2,606	1,677	1,219	2,551	4,506	3,482	914	2,266	2,217	1,882	202
(5) Installing heating systems	1,380	1,672	294	1,200	707	914	3,014	2,208	1,730	354	1,374	1,180	1,108	-
(6) Providing needed storage space	12,325	8,870	1,967	7,492	7,045	11,530	10,450	12,336	11,609	4,467	8,861	15,300	10,809	961
(7) Rearranging or improving kitchens	11,469	12,909	2,290	11,367	5,262	12,736	10,384	14,512	7,848	5,654	10,463	12,990	9,039	729
(8) Improving arrangement of other rooms	11,164	13,865	2,389	13,131	7,841	18,269	12,364	17,088	11,131	10,005	10,467	19,912	13,769	1,401
(9) Selecting household equipment	16,531	13,015	2,825	9,383	9,605	23,725	11,089	19,398	14,559	5,384	10,371	20,645	15,158	1,405
(10) Laundry arrangement	5,098	7,680	1,131	3,245	2,539	6,460	3,940	6,609	2,252	1,807	2,950	5,624	4,664	168
(11) Installing sanitary equipment	1,564	2,226	1,040	2,254	706	1,160	4,010	3,676	966	793	2,298	1,390	680	1,011
(12) Screening and controlling insects	45,400	41,604	3,413	32,391	14,382	25,006	56,231	43,006	38,246	22,368	16,175	24,267	16,638	4,595
(13) Improving home grounds	17,514	13,114	6,315	16,963	20,531	39,863	23,196	25,062	20,897	18,275	21,458	25,693	7,027	2,168
(14) Planting shelterbelts	105	139	261	459	492	543	578	1,229	1,116	498	49	1,666	325	532
RURAL ELECTRIFICATION:														
Days devoted to work by all agents	391	946	414	1,265	461	699	775	1,338	643	534	1,914	659	1,094	24
Communities in which work was conducted	672	1,555	414	1,221	525	605	737	1,320	598	580	1,253	732	650	29
Local leaders assisting	1,245	1,745	594	1,065	771	591	1,093	2,318	935	643	1,643	911	1,078	66
Families assisted in:														
(1) Obtaining electricity	7,479	6,308	2,539	9,201	6,864	3,592	12,094	8,886	6,730	3,471	15,537	4,723	5,525	726
(2) Selection or use of electric lights or home electrical equipment	15,238	10,950	2,946	12,451	11,446	20,276	17,178	22,629	13,928	5,993	19,904	13,912	19,322	83
(3) Using electricity for income purposes	5,509	4,840	614	5,083	3,531	3,241	4,388	3,800	4,162	1,329	2,469	4,246	2,150	31
FARM BUILDINGS:														
Days devoted to work by all agents	458	767	410	823	773	305	473	1,459	388	553	936	922	678	36
Communities in which work was conducted	838	1,455	336	946	798	467	631	1,455	514	472	1,112	1,153	561	59
Local leaders assisting	730	1,554	229	725	763	371	674	1,934	572	516	798	1,155	288	44
Farmers assisted in:														
(1) Construction of farm buildings	3,305	2,530	704	3,387	4,666	1,314	3,891	6,571	3,158	1,041	3,113	3,428	2,837	218
(2) Remodeling or repairing farm buildings	3,597	2,706	758	4,299	4,122	1,291	4,410	5,327	5,185	1,299	3,136	4,645	2,086	107
(3) Selection or construction of farm building equipment	1,491	1,441	593	2,095	3,773	2,695	2,494	3,669	1,944	712	1,636	3,010	1,639	70

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HOUSING AND FARMSTEAD IMPROVEMENT -- CENTRAL REGION
(Information from 1948 Statistical Reports)

Item	Ill.	Ind.	Ia.	Kan.	Mich.	Minn.	Mo.	Neb.	N.D.	Ohio	S.D.	Wisc.
STATE SPECIALISTS AND PERCENTAGE OF TIME DEVOTED TO HOUSING:												
No. agricultural engineers: 10% housing; 15% farm buildings; 25% rural electrification	5	5	4	5	4	1	5	2	2	5	1	9
No. home management: 15% housing	5	3	5	4	3	2	4	3	2	4	1	3
No. agricultural economists and sociologists: 10% housing	2	2	2	1	2	2	5	1	1	3	1	2
No. horticulturists: 45% farmstead improvement	1	2	2	1	1	1	-	1	1	1	-	-
Days in field in housing and building work	262	254	376	141	286	193	181	439	57	304	101	255
THE HOUSE, EQUIPMENT, AND SURROUNDINGS:												
Days devoted to work by all agents	2,534	1,740	3,758	1,568	2,052	2,908	2,957	2,041	1,138	2,713	920	2,214
Communities in which work was conducted	2,280	973	1,342	960	1,283	1,625	1,081	1,126	1,124	892	466	937
Local leaders assisting	6,832	3,316	4,753	2,174	2,612	3,660	3,105	3,746	1,749	1,354	537	3,716
Families assisted in:												
(1) Constructing dwellings	505	1,338	451	816	588	815	899	345	402	470	640	545
(2) Remodeling dwellings	1,463	1,885	3,293	5,726	1,025	2,675	2,754	1,282	1,580	1,169	1,546	1,369
(3) Installing sewage systems	929	1,509	1,528	2,006	1,826	3,736	1,237	1,142	3,161	697	1,085	753
(4) Installing water systems	845	993	1,874	2,545	821	3,324	1,745	535	1,906	562	850	505
(5) Installing heating systems	531	1,144	722	2,161	256	556	749	173	217	283	310	174
(6) Providing needed storage space	6,186	6,514	6,315	11,816	985	2,557	3,922	3,204	924	3,810	2,038	6,771
(7) Rearranging or improving kitchens	8,400	5,055	7,575	10,747	1,280	3,468	5,997	5,922	2,089	2,917	2,795	6,425
(8) Improving arrangement of other rooms	11,744	3,519	6,758	10,276	9,948	4,787	2,438	2,489	1,689	3,688	2,469	7,806
(9) Selecting household equipment	20,738	9,601	8,830	12,884	13,116	9,479	5,213	4,389	5,648	3,842	2,877	13,485
(10) Laundry arrangement	2,313	2,018	2,495	8,033	285	997	865	4,756	594	1,360	1,467	2,490
(11) Installing sanitary equipment	192	102	155	812	94	153	423	155	56	94	173	310
(12) Screening and controlling insects	51,375	7,577	45,589	19,591	6,085	9,279	28,717	18,429	18,753	3,694	4,331	10,533
(13) Improving home grounds	7,398	2,651	10,350	7,403	4,568	11,063	16,192	4,253	3,432	4,415	3,459	8,637
(14) Planting shelterbelts	300	871	1,554	1,178	930	3,849	439	3,621	1,987	207	1,842	1,477
RURAL ELECTRIFICATION:												
Days devoted to work by all agents	112	384	135	345	593	204	178	254	437	148	294	246
Communities in which work was conducted	513	497	745	615	709	590	274	516	859	263	389	225
Local leaders assisting	464	439	566	395	432	304	214	297	428	139	468	297
Families assisted in:												
(1) Obtaining electricity	3,753	1,102	1,034	5,753	921	2,754	2,558	2,451	5,923	355	2,175	259
(2) Selection or use of electric lights or home electrical equipment	7,082	4,816	6,686	8,358	3,046	3,725	5,310	4,155	5,748	1,581	4,606	5,321
(3) Using electricity for income purposes	2,238	1,001	743	2,317	1,377	2,121	3,361	941	2,313	1,005	966	1,923
FARM BUILDINGS:												
Days devoted to work by all agents	337	312	130	384	689	330	492	123	242	632	136	660
Communities in which work was conducted	656	564	626	589	709	792	540	362	545	517	365	423
Local leaders assisting	563	360	429	332	272	425	339	192	243	276	347	176
Farmers assisted in:												
(1) Construction of farm buildings	3,255	2,263	2,082	2,223	2,703	3,148	3,790	794	809	2,135	1,563	2,032
(2) Remodeling or repairing farm buildings	3,946	2,367	2,180	2,069	2,816	4,367	3,853	1,301	1,540	2,307	1,660	1,914
(3) Selection or construction of farm building equipment	1,317	1,480	1,945	1,326	2,064	2,948	2,792	429	833	2,092	672	1,959

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HOUSING AND FARMSTEAD IMPROVEMENT — WESTERN REGION
(Information from 1948 Statistical Reports)

Item	Ariz.	Calif.	Colo.	Idaho	Mont.	Nev.	N.Mex.	Ore.	Utah	Wash.	Wyo.	Alaska	Hawaii
STATE SPECIALISTS AND PERCENTAGE OF TIME DEVOTED TO HOUSING:													
No. agricultural engineers: 10% housing; 15% farm buildings; 25% rural electrification	- -	3	2	1	3	-	- -	1	2	2	1	-	- -
No. home management: 15% housing	1	3	--	-	1	-	1	2	1	1	1	-	1
No. agricultural economists and sociologists: 10% housing	2	1	1	1	1	-	1	1	1	1	1	-	-
No. horticulturists: 45% farmstead improvement	1	-	1	1	1	-	-	-	-	1	1	-	1
Days in field in housingand building work	46	241	49	67	147	5	63	148	154	120	109	-	51
THE HOUSE, EQUIPMENT, AND SURROUNDINGS:													
Days devoted to work by all agents	346	2,943	654	866	1,116	320	684	1093	1,066	1,035	628	94	582
Communities in which work was conducted	111	610	280	215	306	55	196	448	231	334	164	23	70
Local leaders assisting	134	1,204	1,212	177	355	125	313	1465	509	650	630	22	283
Families assisted in:													
(1) Constructing dwellings	47	852	297	259	447	64	216	1431	224	433	105	100	3
(2) Remodeling dwellings	50	1,125	1,165	286	791	92	394	1696	501	666	279	75	11
(3) Installing sewage systems	45	1.116	847	248	770	20	222	843	49	198	196	40	1
(4) Installing water systems	12	280	729	238	479	613	226	437	96	131	119	27	2
(5) Installing heating systems	-	72	313	49	139	17	135	628	51	63	45	11	1
(6) Providing needed storage space	313	3,261	1,534	1,178	1,393	266	478	1808	673	430	557	89	1,185
(7) Rearranging or improving kitchens	352	3,359	1,620	992	1,197	166	685	1599	324	1,700	458	36	27
(8) Improving arrangement of other rooms	108	4,892	1,835	602	1,561	318	673	1400	270	1,521	852	16	1,666
(9) Selecting household equipment	454	5,028	2,023	1,384	2,739	452	1,443	5743	1,159	2,464	372	80	1,477
(10) Laundry arrangement	53	1,798	874	204	526	386	182	699	44	553	37	5	85
(11) Installing sanitary equipment	3	212	167	1,016	57	5	102	72	38	32	10	7	-
(12) Screening and controlling insects	510	4,474	4,215	11,503	2,903	282	7,344	744	14,002	1,154	2,770	-	6
(13) Improving home grounds	575	1,516	4,796	1,820	2,752	792	5,495	3826	1,391	2,848	975	113	51
(14) Planting shelterbelts	14	131	824	697	957	93	390	426	199	209	542	-	16
RURAL ELECTRIFICATION:													
Days devoted to work by all agents	16	37	76	118	254	26	121	72	35	38	98	-	4
Communities in which work was conducted	9	28	85	47	158	12	96	68	40	24	35	-	2
Local leaders assisting	12	33	156	53	186	20	68	47	17	48	131	-	-
Families assisted in:													
(1) Obtaining electricity	-	78	507	529	1,875	230	1,268	705	114	64	711	-	29
(2) Selection or use of electric lights or home electrical equipment	63	1,054	1,815	571	5,051	27	877	1155	97	601	991	59	389
(3) Using electricity for income purposes	-	264	152	163	1,396	341	812	112	29	127	97	-	2
FARM BUILDINGS:													
Days devoted to work by all agents	36	604	124	90	168	60	27	318	141	311	113	8	-
Communities in which work was conducted	34	305	131	203	198	14	34	245	136	167	76	4	1
Local leaders assisting	2	103	231	64	85	7	17	48	134	131	39	-	-
Farmers assisted in:													
(1) Construction of farm buildings	78	1,666	606	1,085	743	107	261	1,283	428	1,007	189	12	4
(2) Remodeling or repairing farm buildings	48	769	481	963	670	93	130	488	359	1,089	179	7	7
(3) Selection or construction of farm building equipment	10	806	358	394	952	107	113	308	272	1,126	103	3	1

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