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Twenty-Five Years of Extension Work in Missouri

with the

Annual Report for 1939

Agricultural Extension Service
College of Agriculture
University of Missouri

Columbia, Missouri

UNIVERSITY OF MISSOURI COLLEGE OF AGRICULTURE AND THE UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

J. W. BURCH, Director, Agricultural Extension Service
Distributed in furtherance of the Acts of Congress of May 8, and June 30, 1914.

Agricultural Extension Service

Letters of Transmittal

TO HIS EXCELLENCY
HONORABLE LLOYD C. STARK
GOVERNOR OF MISSOURI

In accordance with the provisions of the Smith-Lever Act, I am transmitting herewith the Annual Report of the Agricultural Extension Service for the year ending November 30, 1939, together with a review of extension work in Missouri during the preceding twenty-five years.

Respectfully submitted,
FREDERICK A. MIDDLEBUSH,
President, University of Missouri

PRESIDENT F. A. MIDDLEBUSH
UNIVERSITY OF MISSOURI
COLUMBIA, MISSOURI

As required by the Federal law, I am transmitting herewith the Annual Report of the Agricultural Extension Service for the year ending November 30, 1939, together with a review of extension work in Missouri during the preceding twenty-five years.

Respectfully submitted,

M. F. MILLER,
Dean, College of Agriculture

Twenty-Five Years of Extension Work in Missouri

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Annual Report for 1939

University of Missouri College of Agriculture
Agricultural Extension Service

J. W. BURCH, *Director*

Established primarily to convey to the people of the open country the scientific information accumulated through state and federal research, the Agricultural Extension Service in the last quarter-century has done all that its founders visioned—and vastly more.

Benefits which could not then have been foreseen are now realized in the large numbers of well trained leaders, the highly efficient cooperative organizations, the singleness of purpose with which farm people work together on common problems, and their joy in discovering within themselves resources they had not dreamed they possessed.

Men and women past sixty years of age—thousands of them—have found they still can learn new truths and profit by them as readily as persons one-third their age. Boys and girls and older youth, with programs fitted to their own life situations, have learned and earned by doing the things that science has developed and experience has proved useful and satisfying.

Even through the years most difficult because of debt, drouth, and depression, the record shows that cooperative extension work has opened for the entire farm family greater opportunities than those

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of any former generation for developing personality, leadership, wholesome community life, and a well informed confidence in agriculture as a way of living.

The Service Has Grown with the People

In the earlier years of extension work progress was slow, the chief hindrance being the indifference of the very people whom the Agricultural Extension Service was attempting to serve. Most farm people still were following traditional methods, fairly well content with their situation and accepting its difficulties as unavoidable. Even among those who cultivated a belief in progress, only a few were convinced that the colleges of agriculture had found the correct solutions for the farmers' problems.

Recurrent evidence of this lack of interest among the farm people of 1912 to 1917 is found in the historical sections of this report. Early extension workers frequently stated that the larger part of their time had been used in convincing people that they needed the information the Extension Service was trying to impart. Only as the people themselves grew in awareness of their needs could the Extension Service demonstrate the methods recommended to meet those needs.

At no point in the laws establishing extension work did its founders show greater wisdom than in their provision for the broadest possible basis of cooperation—national, state, and local—beginning with the local unit consisting of at least 250 persons sufficiently interested to maintain a sponsoring county organization. Every page of subsequent history has shown the importance of this requirement, for the Extension Service and its program have grown only as the people themselves have been helped to grow and develop.

The record of these pages clearly reveals the best the Extension Service has done and the best it may hope to do is to help farm people help themselves—and one another.

Indications of Progress

The most encouraging index of progress toward the goal of a permanently satisfying rural life in Missouri is to be found, without question, in the number of trained local leaders whose efforts are joined with those of the extension workers. More than 50,800 men, women, and older youth last year rendered this type of service.

On a county basis, this means that in the average county in Missouri last year the county agent and home demonstration agent had the assistance of 453 local leaders, each of whom had accepted responsibility for some definite part of the plan of extension work agreed upon by the people of the county.

In the State as a whole, more than 3,000 meetings were conducted by county and state extension workers for the purpose of training these local leaders; to teach them skills, supply information, fa-

miliarize them with standard procedures, and train them in leadership. In some lines of work these leader training courses involved as many as seven or eight all-day meetings.

The development of so large a number of trained, experienced leaders has been, appropriately and necessarily, a long-time process. Experience as well as technical training has qualified many of the older leaders to render especially valuable service in the fields of planning and problem analysis as a basis for the annual plans of extension work in their counties. By gradual development, the farm people themselves have come to the point where they have accepted the responsibility of determining on the basis of their own problems the *long-time programs* of farm and home betterment which they consider most important for their respective counties. Upon the consensus of their opinion, developed in community and county meetings and guided by their own leaders, the *annual plans* of extension work are built.

Results Are Seen in Practical Benefits

This close cooperation between the extension workers and the farm people themselves has resulted in the development of a thoroughly practical service.

The cost of family living is being reduced by gardening methods that last year returned $255 an acre and paid $1.19 an hour for labor devoted to them; by year-round budgeting of the food supply with emphasis on home production and preservation; and by the teaching of new and old skills in the home crafts. Thousands of farm women who formerly thought they could not possibly make clothing of acceptable fit and finish now select the materials they want and turn out dresses and coats that fit perfectly and have the appearance of tailored garments.

Poultry raisers who followed the extension plans for feeding and brooding chicks, development of replacement stock, feeding the laying flock, and the control of diseases last year realized a million dollars in savings and added income.

Sleeping sickness among horses and mules was practically eliminated from the state last year by an educational campaign that resulted in the vaccination of 193,000 head of horses and reduced the total number of cases to one-tenth the record of the preceding year.

Through a period of revolutionary change in the meat industry, the Extension Service has been able to guide farmers in adjusting their livestock enterprises to new conditions, cutting down the losses formerly due to disease, eliminating waste of feed, improvement in the quality of animals sent to market, and adaptations in size and age of cattle and hogs to meet changing consumer demands and effect needed economies in production.

Missouri agriculture and the current movements toward crop adjustment and soil conservation have been greatly benefited as the result of extension campaigns for sheep improvement carried on since 1925. By widespread improvement in the quality of Missouri lambs, by putting uniformly better lambs on the market at an earlier date, by controlling parasites and diseases, and effecting other basic economies in mutton and wool production, the earnings of this very timely grazing enterprise have been greatly increased and stabilized.

As the cumulative results of long-time campaigns for production of commodities of higher quality and for the marketing of these products by grade, more than $4,000,000 were added last year to the income of the producers of cotton, dairy products, poultry products, strawberries, melons, and canned tomatoes.

Supplementary pastures widely promoted during the last ten years or more now save Missouri dairymen millions of dollars in costs of feed and labor, besides extending a sod cover over an ever widening acreage of Missouri's rolling lands.

Long-time cost finding studies combined with the demonstration of better practices in the dairy herd improvement associations and the farm flock demonstration work from 1915 to the present, have been a most important influence for increasing the efficiency of dairying and poultry production in Missouri.

Near the beginning of extension work, in 1916, an oft-recurrent insect scourge, the Hessian fly, destroyed $6,000,000 worth of Missouri wheat; but shortly thereafter the Experiment Station developed a system of safe seeding dates and the Extension Service has so persistently taught this practice that the Hessian fly has since that time been only an occasional and minor pest.

Efforts toward soil conservation have characterized the work of the University of Missouri College of Agriculture since the turn of the century, beginning with an investigation of liming in 1905 and experiments for measuring the losses of soil through erosion in 1916. The first ten farm advisers in Missouri in 1912-1913 succeeded in getting farmers to apply 4,400 tons of limestone, and the practice of liming has been promoted with increasing success throughout all the years that have followed until the tonnage used in 1939 was 100 times that of 1913.

Legume crops in Missouri covered a total of 5½ million acres in 1939, and the bulk of the sod legumes was pastured back on the land providing an abundance of high-protein feed, restoring nitrogen and organic matter to the soil, and protecting rolling lands against the destructive forces of erosion.

Sixty-six county soil improvement associations, nonprofit organizations manned by experienced farm leaders, now give their powerful influence and business support to the extension programs for soil conservation. They have greatly reduced the cost of lime,

fertilizer, legume seeds, and the machinery necessary for soil conservation.

Having carried the responsibility for the educational work of Agricultural Conservation programs in Missouri since their beginning in 1933, the Extension Service finds encouragement also in the extent to which Missouri farmers now cooperate in this movement. The owners and operators of 190,202 farms or 79 per cent of the crop land of the State were in cooperation with the Agricultural Conservation program in 1939.

Similarly, the Extension Service has carried on the educational work of the rural electrification program and records with satisfaction the allotment of funds by the federal Rural Electrification Administration for 30 projects in Missouri. These allotments provide for more than 10,000 miles of transmission lines reaching 33,500 farm homes in 100 counties. Much of the credit for this achievement belongs to the 2,327 men and women who worked earnestly and tirelessly as local leaders to secure these benefits for the people of their communities.

The Service Reaches the Entire Family

The interests of all members of the farm family receive attention in the long-time programs and annual plans of work of the Extension Service. The practical benefits resulting from cooperative extension work were shared last year by 220,000 homemakers who reported specific changes of practice induced by extension teaching that had improved one or more phases of daily living for their families.

More than 42,000 rural women were members of home economics extension clubs in 113 counties where county-wide programs of extension work were carried out. These women worked not only to establish more efficient methods in their own households, but also to share these benefits with their neighbors. Their united efforts were directed, also, toward improvement of community life, as well.

They led the individuals and organized groups of their communities in movements for the general good: the establishment of community centers, libraries, playgrounds, parks, and summer camps; the organization of health clinics, singing schools, music classes, bands, and orchestras; the sponsorship of 4-H clubs, vacation Bible schools, educational tours, play days, picnics, and fish fries; and the direction of group discussions, magazine exchanges, the beautification of public grounds, and the improvement of schools and churches.

In 4-H clubs more than 25,000 boys and girls explored interesting aspects of their own life situations with companions of their own age under adult leadership. In so doing they acquired useful skill and knowledge, came in contact with the very best in rural life, and

became happier, more efficient members of family and community.

Very frequently these club experiences enabled the boy and girl to earn while learning. Members of Missouri 4-H clubs last year fed and marketed $69,000 worth of baby beeves at a profit of $16,000. Had all these calves been assembled at one shipping point, 65 standard railroad cars would have been required to transport them to market. The baby beef club is but one of 40 or more different projects and activities in the 4-H club program.

A separate program is provided also for older rural youth, with emphasis on training for community service, development of personality, and enlargement of social opportunities.

Such Growth Must Continue

Throughout the entire development of the extension program in Missouri, the extension worker has sought out those well respected persons in every community who have the ability and the zeal to serve their fellow citizens and a willingness to accept training for special tasks of leadership. Without such help, the accomplishments recorded in this report would have been impossible.

As the number of leaders grew and the demand for extension teaching became more general, the number of members of the Extension Service staff has grown also; yet always the number of members of the University of Missouri faculty whose duty and privilege it is to teach in the open country has been extremely small in comparison with the number of persons they endeavor to teach.

Take for example a typical Missouri county with an area of 750 square miles, a farm population of 13,000 persons, and a total of 2,700 farms. If it happens to be one of the 70 most fortunate counties in the State it has a home demonstration agent as well as a county agricultural agent. With the help of some 450 local leaders, these two agents not only transmit their message to the bulk of their potential class of learners through the newspapers, circulars, letters, meetings, demonstrations, leader-representatives, and radio broadcasts, but they actually get reports of specific benefits realized by 2,112 of the 2,700 farm families in their immense classroom.

As the Extension Service and the extension programs have grown with the farm leadership and the demands for information in the past, it seems reasonable to believe that they must continue to grow concurrently in the future. Additional extension workers must be added, if all the rural families of the State are to share the benefits of the Smith-Lever Act and the many other enactments, state and federal, designed to serve rural people. Every one of Missouri's 114 counties should eventually have the services of a resident county agricultural agent, a home demonstration agent, and a third agent whose time may be largely devoted to the development of programs for boys and girls and older youth.

The Beginnings of Extension Work

The Agricultural Extension Service was established by the Congress of the United States with the passage of the Smith-Lever Act on May 8, 1914. This act first gave official sanction to the plan whereby the federal and state governments cooperate with local people in planning, financing, and carrying on educational activities on the farms and in rural homes.

The work thus established has since become the largest system of adult education in the world.

Many years prior to the passage of the Smith-Lever Act, educational work of this same general type, but without standard plans of co-operation and financing, had been carried on in many states. As early as 1850, agricultural societies sponsored public lectures on agricultural topics. In 1863 farmers' institutes were developed in a few states, and by 1899 such institutes in 47 states were building their programs around successful farmers and agricultural teachers. Boys' and girls' club work began as early as 1900 with the organization of corn clubs in a few midwestern states.

In Missouri a number of educational services, in addition to the farmers' institutes, were offered farm people by the University of Missouri as early as 1906. As listed in the annual report of the Agricultural Experiment Station for 1909-1910 by Director F. B. Mumford, these services included Farmers' Week, a 5-day meeting at the College established in 1906; special summer courses for teachers desiring to teach agriculture in rural schools; special publications for teachers and pupils in rural schools; farm management demonstration meetings carried on in cooperation with the U. S. Department of Agriculture on farms in various parts of the State; the employment of a traveling dairy instructor; judging livestock at county fairs; agricultural trains operated over three Missouri railroads; agricultural night schools in Kansas City and St. Louis; and state corn growing contests.

County agricultural agent work had its beginning in 1904, when Dr. S. A. Knapp of the Bureau of Plant Industry of the United States Department of Agriculture, appointed 22 men in the Southern States to set up demonstrations of the best methods of growing cotton despite the boll weevil. Each of these men served 10 to 20 counties in establishing the demonstrations and holding meetings. On

November 12, 1906, one of these men, W. C. Stallings was appointed to work in Smith County, Texas, and thereby became the first county agent in the United States. From that time until the passage of the Smith-Lever Act in 1914 many agricultural agents or "farm advisers" were employed under the joint sponsorship of the Office of Farm Management of the U. S. Department of Agriculture and state and local organizations.

Early Work in Missouri

In Missouri 10 county "farm advisers" were at work prior to the passage of the Smith-Lever Act. The counties in which these men were employed, the dates on which their appointments with the University became effective, and the names of these first ten county extension workers in Missouri are as follows:

Cape Girardeau, July 1, 1912, C. M. McWilliams
Pettis, January 1, 1913, S. M. Jordan
Buchanan, March 1, 1913, F. W. Faurot
Johnson, March 7, 1913, C. M. Long
Dade, April 1, 1913, E. J. Rodekohr
Audrain, April 1, 1913, E. W. Rusk
Jackson, April 20, 1913, E. A. Ikenberry
Marion, April 21, 1913, H. H. Laude
Scott, September 13, 1913, H. B. Derr
Cooper, September 24, 1913, J. D. Wilson

In these pioneer efforts toward extension work, Missouri farmers had the cooperation and support of the Missouri Bankers Association, the Federation of Missouri Commercial Clubs, the State Grange, various farmers' organizations, local clubs, and numerous other groups.

The First Appropriations

Just one month after the passage of the Smith-Lever Act, the University of Missouri Board of Curators established the Missouri Agricultural Extension Service as an administrative organization within the College of Agriculture.

The first federal appropriation for extension work in Missouri became available July 1, 1914 in the sum of $10,000 for the fiscal year beginning on that date.

The appropriation of state and county funds in Missouri, for the specific purpose of carrying on extension work under federal, state, and local cooperation was first officially sanctioned by the Missouri Forty-Seventh General Assembly early in 1913, with an appropriation of $25,000 to be used during the succeeding biennium. At the

ARTHUR JOHN MEYER

Director of the Missouri Agricultural Extension Service
1914-1930

Mr. Meyer was first identified with the University of Missouri College of Agriculture in 1910 as assistant to Dean F. B. Mumford. He served for three years as superintendent of short courses and had an important part in the development of Missouri's first farm agent work in 1912 and 1913. With the passage of the Smith-Lever Act he was placed in charge of cooperative extension work in Missouri, being first designated as secretary and later as director. He served in this capacity until his death on September 19, 1930.

same time county courts were authorized "to appropriate funds for a county farm adviser to act in cooperation with the Missouri College of Agriculture, in aiding and encouraging the agricultural development of a county."

Even prior to the passage of this law, the first county appropriation for extension work had been made by the county court of Cape Girardeau county. This court, on June 15, 1912, approved a petition signed by one thousand persons asking that the court appropriate $1,500 a year for a period of three years. The members of the court were, M. L. Haupt of Egypt Mills, Chas. Sievers of Jackson, and William Hirsch of Cape Girardeau. With the aid of this appropriation, C. M. McWillians was employed on July 1, 1912, as the first county farm adviser to do extension work in Missouri under a complete cooperative set-up involving county, state, and federal funds.

Some months prior to this historic beginning in Southeast Missouri, Pettis county had its "Bureau of Agriculture" and employed S. M. Jordan as "farm agent," effective on April 12, 1912. Cooperative relations between the Pettis county organization, the Missouri College of Agriculture, and the U. S. Department of Agriculture were formally established on January 1, 1913.

Early Extension Projects in Missouri

Plans of organization and methods used in extension teaching in the early days of the work in Missouri are of interest. The first step in the plan used from 1912 to 1914 was the organization of a county farm bureau, with supporting groups known as township and district farm bureaus. Concerning the district bureaus, D. H. Doane, first state leader of county agent work in Missouri, stated in the first annual report of the Missouri Agricultural Extension Service that, "The best results have been accomplished in these small organized groups. In these organizations, farmers meet for the purpose of discussing subjects of local significance. Each farm adviser, with this type of organization behind him, has found it possible to carry this work to all parts of his county through the cooperation of local leaders who can be counted on for effective service in the cause of better farms and farm homes."

The teaching projects were few in number. From 1912 to 1914 they included chiefly anti-hog-cholera vaccination, poultry production and egg marketing, the organization of cow testing associations, and the holding of one-week movable schools of home economics. Boys and girls were visited in schools and given instruction on farm subjects. In addition to organized work under these projects, the farm advisers gave out information on soils, crops, livestock production, fruit growing and gardening, and insect control. It is significant to note that all of the 10 first farm advisers in their

first year of work advocated the use of lime for soil improvement, developing local sources of limestone and getting farmers to apply a total of 4,478 tons.

Work Done in 1914 and 1915

Rapid expansion was made in the scope of extension teaching following the passage of the Smith-Lever Act in 1914. In reporting the first full year of work under this law, July 1, 1914 to June 30, 1915, A. J. Meyer, secretary of the Extension Service, reported the organization of boys' and girls' clubs with 1,652 members working on six different club projects. Movable schools for farm homemakers had been developed in 14 counties.

One of the earliest extension meetings in Holt county; a poultry culling in September, 1918.

Dairy work was carried on in 25 counties. The demonstration of vaccination as a preventive of hog cholera had been carried on intensively in three counties with a total of 14,203 hogs vaccinated.

County agents did much teaching and rendered a great deal of direct service to farmers on a wide variety of farm problems outside the organized extension projects.

Women's Club Work

Women's clubs as a means of doing extension work in home economics were first widely used with complete plans for organization in 1915. Project Announcement 8, published in January, 1916, sets forth the plan for organizing such clubs, together with standard constitution and by-laws, monthly programs of work, and a list of some 30 subjects on which special helps were made available by the Extension Service.

The First Ten Years

By the end of the first 10 years of extension work under the Smith-Lever Act, Missouri had 54 counties in which county extension agents were employed and 10 in which home demonstration agents were at work. The state administrative and specialist staff included 39 persons.

Ten years of experience in extension teaching had resulted in the development of 86 organized subject matter sub-projects, each of which was fully outlined in a printed project announcement at the outset of the year's work. These projects also included the work planned for boys' and girls' clubs.

COUNTY AGENT WORK

County agents served the farm people of all the 114 counties in Missouri in 1939, through 112 county offices—two more than the highest previous record. Twenty-five years of experience in planning county extension programs, in the organization of advisory groups, in leader training, and in supervision of its own personnel had prepared the Agricultural Extension Service to render greater service to the people of Missouri through county agent work in 1939 than in any previous year.

Along with its better organized systems of work, the Extension Service also had the help of 50,800 local leaders, a great body of enthusiastic voluntary leaders, who gave 97,341 days of their time during the year to carry out the extension programs of farm and home betterment in their communities. In the preparation of these leaders for their work and in keeping them currently informed, county agents conducted more than 3,000 leader-training meetings during the year.

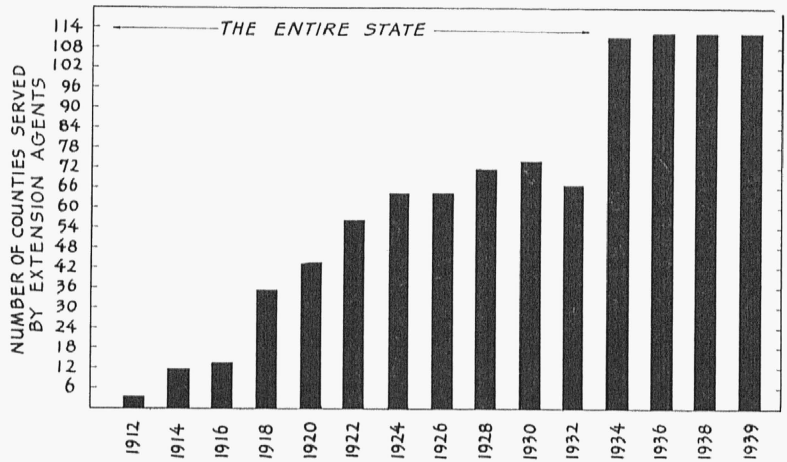
In view of these developments it is not surprising that the general attitude of the rank and file of farm people was highly favorable to extension work, an attitude that is reflected in the larger numbers of men and women reported as having used improved practices in farm and home management.

Attendance at meetings, always a reliable index of popular interest, also made significant gains in 1939. At 24,855 community meetings conducted by local leaders, the total attendance was 387,409. Drawing from somewhat wider territory, 22,299 meetings conducted by the county agents themselves, had a total attendance of 669,889.

County courts, farm organizations, extension boards, and others made available $176.569.61 for defraying the local expenses of the 112 county extension offices. This was an average of $55 more per county than the amount of local money supplied during the preceding year.

Continuity from one year to the next is made possible in all these aids to county agent work by the sustained interest and support of local leaders and their organizations. Not only did these leaders help the Extension Service make detailed plans for the work to be carried on in their respective counties in 1940, but also in building long-time programs of work for the solution of the problems considered most widespread and important in each county.

In working out these plans for all of Missouri's 114 counties, 8,070 farm men and women took part in 1,019 meetings, at each of which the local situation, needs, problems, and possible solutions were discussed.



Number of counties served by agricultural extension agents, 1912 to 1939.

Editors and publishers of 435 county and community newspapers gave support to local improvement programs week after week throughout the year, cooperating closely with county agents and extension boards. The total number of news and information articles supplied to newspapers by county agents was 29,651.

The demands made by rural people for specific information and assistance from county agents during the year, through personal calls, reached a total of 950,000 or an average of 8,500 calls per county.

The agents themselves, anticipating the needs of their people or responding to requests for information and service, visited 21,729 farms and mailed out 15,922 different circular letters of which 5,809,139 copies were distributed.

Local People Take Responsibility

The responsibility of local farm groups in the cooperative relationships implied in extension work has been recognized and de-

veloped from the very beginning of county agent work in 1912 down to the present time.

The first enabling act passed by the Missouri Legislature, providing for cooperative extension work in counties, specified that the county government was the local cooperating group. Appropriations made by county courts were, at the first, turned over to the treasurer of the University for disbursement. This plan did not work well in practice so the law was revised to provide for a county Farm Bureau composed of 250 members, each paying at least 50 cents per year membership fee, to be the cooperating group to whom the county government would appropriate funds and with whom the University would sign agreements.

This law was later revised to change the words "Farm Bureau" to "farm organization", since in many Missouri counties a county Farm Bureau organization was deemed not advisable. However, through most of the history of county extension work in Missouri until 1933, the local sponsoring group was the county Farm Bureau.

In a few counties during that period and in a larger number beginning in 1933, a local organization known as the "county extension association" has been developed, placing the responsibility on a local group not affiliated with any state or national organization. This type of local sponsorship has been especially useful in counties where farmer allegiance is divided among two or more farm organizations.

The "county extension board", still another type of local organization, was developed to assume the local responsibility for extension work in the Ozarks and other low-income districts where two or more counties were served by one agent. These boards were generally appointed by the county courts and varied from three members to a number equal to that of the townships in the county.

Regardless of these variations in form and name, the local group in every instance has assumed the following responsibilities: (1) cooperating with the University of Missouri in carrying out a program of extension work; (2) assisting in the selection of county extension workers; and (3) providing funds for local expenses.

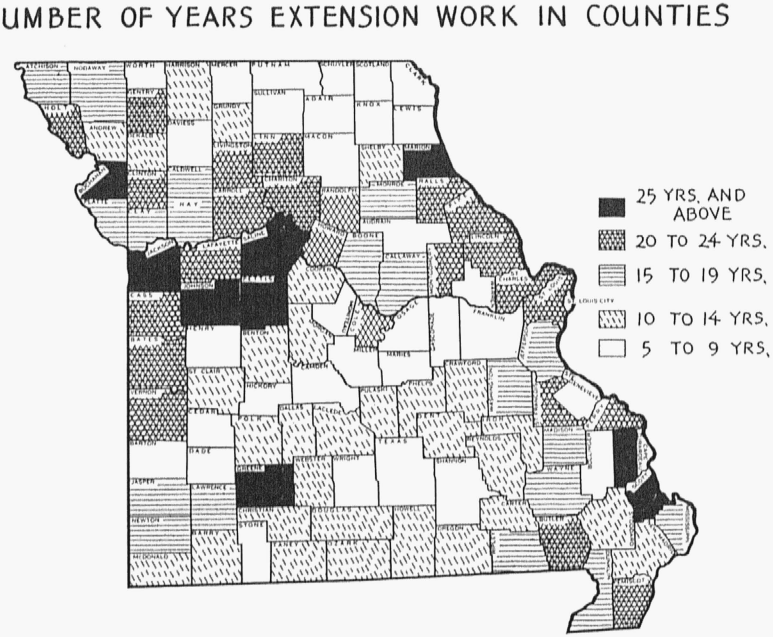
Today the agreements for cooperative extension work are signed in 43 counties by the County Farm Bureau, in 26 counties by the County Extension Association, in 44 counties by the County Extension Board, and in 1 county by the county unit of the Missouri Farmers' Association.

Financing County Agent Work

The salaries of county extension workers in Missouri, in 1914, were paid one-fourth from federal funds, one-fourth from state funds, and one-half from county or other local funds. This plan was continued until 1924, when the University agreed to pay from federal

and state funds $600 toward the salary of each agent and in addition one-half of the remaining amount up to a total salary of $2,500. From 1925 to 1928 a flat sum of $1,550 was paid by the University with the county contributing the remainder. In 1928 the University's portion of the agent's salary was increased to $1800.

Effective on March 1, 1930, following a ruling by the Board of Curators of the University, all salaries of county extension workers were taken over by the University and paid from state and federal funds. The primary purpose of this change was to make it possible for more counties to have agents. As a matter of record, nine new



Number of years that extension work has been carried on in each of the counties of Missouri, indicated by cross-hatching as explained in the legend at upper right-hand corner of the map.

counties were added in four months. This plan also cleared the way for more effective supervision of county agent work on a uniform, state-wide basis of efficiency.

Exceptions to the foregoing plan have been made at various times in Jackson and St. Louis counties, where assistant agents were employed in specialized fields such as dairying and horticulture. In district agent work, where one agent served two or more low-income counties, a plan used largely in the Ozark Region from 1924 to 1931, both the salaries and travel accounts of district agents were paid from state and federal funds.

From the beginning of extension work in 1914 until the present, the local county sponsoring organization has been responsible for all

local costs of extension work except the salaries paid from state and federal funds as described above. These costs included expenditures for travel, secretarial help, supplies, equipment, office space, etc.

District and Emergency Agents

Because the early spread of the county agent idea was especially slow in counties of low public income, district extension agents were appointed in 1924. Three men were put to work in 15 Ozark counties, the work of each being highly specialized; one in poultry raising, one in dairying, and one in fruit growing. This plan was modified in 1926 by the appointment of district agents, each serving two or more counties in all phases of farming. By this method the Extension Service reached the farm people of the entire Ozark Region.

Emergency agents have been used in two periods in the history of county extension work in Missouri. One of these was the World War period from 1917 to 1919, when emergency agents were sent into counties not served by county agents. This plan not only rendered service during the emergency but led in many instances to the subsequent employment of county agents. There were three times as many counties supporting county agent work at the end of 1919 as there had been immediately prior to the appointment of emergency agents.

Another period when emergency agents were used was that of the depression period and the starting of the Agricultural Adjustment Act programs. Again the counties without county extension agents were furnished with emergency agents. There were 32 such counties in 1933. And once more the idea of an emergency agent gradually gave way to the demand for a permanent county agent office. The emergency title disappeared in 1936, when the last worker of that type was employed as a county agent on the initiative of the people of the county.

DEVELOPMENT OF COUNTY PROGRAM PLANNING

A new emphasis on long-time planning was dominant in the work of the Missouri Agricultural Extension Service in 1939, when for the first time every county in the State had a well considered, written county program to serve as a guide to extension work in that county for future years. The term **"program"** had been used from the earliest annual report down through the years to mean only the yearly **"plan"** to be followed by extension workers.

The earliest county agents started extension work in their counties simply by giving attention to the obvious needs, such as disease control, without a formal canvass or survey of the problems of the county as understood by the farm people themselves.

Those early plans of work included chiefly hog cholera vaccination, poultry production, egg marketing, the organization of cow testing associations, and the holding of one-week movable schools of home economics. In addition to the organized work under these projects, the county agents gave out information on soils, crops, livestock production, fruit growing, gardening, and insect control.

Until recently, the idea persisted that the county extension worker should attempt to get the assistance of farm people in carrying out a plan of work, in the planning of which they had taken only a minor role.

As the Extension Service developed, and specialists were employed as an integral part of the organization, the idea of program making gradually came to mean that the specialists determined the type of things that should be done in the state, secured the assistance of the county agents, and the latter in turn secured the assistance of leaders to carry out such a program.

An attempt at building a county program, in the sense of the word as we now understand it, was started in 1932 in three counties: Linn, Ralls, and Howell. An intensive survey was made by farm leaders of the situation as they saw it in their communities. This information was given to specialists who attempted to propose remedies for the problems indicated by the situation. Agents and farm people then undertook the job of carrying out these proposed remedies.

This effort was an excellent start. Large participation was secured from farm leaders in each of these counties, but not enough time was devoted to a discussion of the remedies and the consequent plans for carrying out remedies. The machinery was a little cumbersome, in that all the specialists concerned with a particular county met with all the community leaders of that county in a one-day session at which the community leaders presented their problems, the specialists presented their answers or remedies, and then the farm leaders, with the specialists and agents, decided on what to do about these problems and remedies in their particular communities. This was not entirely satisfactory.

As a forerunner to the present plan of making programs, in 1929, 1930, and 1931 a system of securing estimated farm records from a large number of farmers by means of training farm leaders was undertaken in cooperation with the agricultural economics staff. This type of work was done in some 40 counties with excellent response on the part of leaders who secured from farmers a large number of estimated farm records. These gave a very clear picture, community by community and county by county, of the farming situation. This material was used as the basis for determining plans of work in each of the counties concerned for the following year.

This preliminary work meant that when the Agricultural Adjustment Administration started its county agricultural planning work, which was essentially the same type of work, many of the counties of this original forty were able to make full use of the county agricultural planning material. Leaders had been trained, agents understood what to do with the figures, and consequently another step was taken toward making county programs.

The 1937 rural program planning was undertaken in nine counties. These nine counties undertook to cover the entire rural situation, to review all the rural problems indicated by this situation, to determine the answers needed and to get some idea of the objectives. The nine counties did not all succeed in this venture, but each of the nine, because of this work, was well equipped to undertake the Land Use Planning activity, which is, in these counties, a segment of the rural program.

A Gradual Development

During the first several years a large part of the agent's time was devoted to explaining the purpose of county agent work and trying to form community groups to support extension work and to help in carrying out the program.

In 1917 and 1918 most of the agents' time was taken by campaigns for the production of meat and grain. This was the period that gave prominence to such slogans as "Make two blades of grass grow where only one grew before".

Following the war, the extension program stressed efficiency rather than volume of production. Cooperative marketing was widely promoted during this period.

With the trebling of the number of county agents immediately after the war period, there came a great need for improvement in methods and for an organized approach. It was about this period that definite plans of work were first used. During the early 1920's the plan of work in each county was determined about as follows: (1) Specialists suggested to each county the phases of their work which should be carried out, together with short-time and long-time goals; (2) The agent, after discussing these suggestions with representative farmers, would then prepare a plan for submission to the state director; and finally, (3) The plan as approved by the director was returned to the county as a part of the agreement between the Extension Service and the county organization.

By 1929 the work in nearly all the counties was planned on a county-wide rather than a community basis, the difficulty of establishing community boundaries having made it seemingly impossible to carry out the work on a community basis. About this time, also, the specialists ceased to suggest project plans for each county, leaving the selection of projects to the agent. After such

selection was made, the agent and specialist together would work out the detailed plan of work to be followed—with the approval of the farm people themselves—for the ensuing year.

In 1936 this procedure was modified to the extent that the planning was initiated in community meetings with farm leaders who indicated the projects which should be included in the year's work. In 1937 information obtained by County Agricultural Planning committees was also used in planning the work to be done.

After going through all the foregoing developments the procedure considered most effective at the present time is for the county agent to develop annual plans of work based on a long-time county program worked out by farm people. The county program indicates problems of the farm, home, and community; the desired objectives; and the known solutions which must be adopted in order to reach the objectives.

AGRICULTURAL ADJUSTMENT PROGRAMS

The Agricultural Extension Service continued in 1939 its work of bringing to the farmers of Missouri information relative to the various programs sponsored by the Agricultural Adjustment Administration.

County educational committees, composed in each county, of the county extension agent as chairman and one member of the county Agricultural Conservation Committee, assumed local responsibility for the educational phases of the Triple-A programs. Assistance was given by the Extension Service in training community committeemen and in providing these leaders with as much information as possible relative to approved soil conservation practices.

A manual of soil conservation practice recommendations, prepared by extension specialists, was placed in the hands of each community committeeman in the State. County agents supplemented this training by conferences with the committeemen and by personally aiding them in a thorough study of the recommendations outlined in the manual.

Results obtained by the education work were evidenced not only by a substantial increase in the number of Missouri farmers participating in the 1939 program, but also by a big increase in the number of soil-building units earned by those farmers participating as compared to previous years.

Agricultural conservation payments totaling about 16½ million dollars were earned in 1939 by the owners and operators of 190,202 farms, representing 79% of the total crop land in Missouri. Of this sum, $3,826,647 was earned by carrying out recommended soil-conserving and soil-building practices. This sum represented 83.5% of the total soil-building allowance set up for participating farms

in the State. A substantial increase was noted in the adoption of such desirable practices as liming, terracing, contour planting, and the seeding of higher type legumes.

Participating farmers also earned approximately 7½ million dollars in price adjustment payments for planting within allotments established for such special crops as corn, cotton, wheat, and rice.

The Wheat Crop Insurance Program, offered to farmers for the first time in 1938, was continued in 1939 with 21,687 policies as compared to 15,735 in 1938. For losses sustained on the 1939 wheat crop, 2,835 insured farmers in Missouri were paid indemnities totaling $90,015.

The Ever-Normal Granary feature of the program was continued in 1939 through the making of corn and wheat loans totaling $5,411,763 to cooperating farmers. These loans enabled farmers to keep corn and wheat in reserve on their farms or in warehouse storage and to take advantage of any price increase.

Aerial photographs were used in 74 Missouri counties in 1939, for the purpose of determining compliance under the farm program. The remaining 40 counties were flown in the summer and fall of 1939 so that pictures will be used in connection with the compliance in all Missouri counties in 1940.

County extension agents devoted approximately one-fourth of their time in 1939 to carrying out the educational work connected with the Triple-A program. In addition, the state agents and other members of the Extension staff assisted in conducting district A.A.A. conferences and various training meetings. County agents acted as secretaries of local agricultural conservation associations in 105 Missouri counties.

Development of Program; 1933-1938

When the Agricultural Adjustment Administration came into being in 1933, the Extension Service was given the responsibility of carrying on the educational work in connection with the various programs. County agents and other members of the Extension staff not only held meetings with farmers to explain the provisions of the program, but also assisted in the organization of the county associations and in the training of committeemen and other leaders selected to take charge of administration in the counties. Under the Agricultural Adjustment Act, the administration of the program is placed in the hands of local farmers. Community committeemen are elected by the farmers in each community, and these men or their delegates then elect a county committee of three members. The county agent is an ex-officio member of the county committee and usually acts as secretary of the county association, but does not have a vote. The state administration is lodged in a committee of farmers with the state director of Extension Service as

an ex-officio member. This type of administrative organization has conducted the Agricultural Adjustment Administration programs since 1933.

The Wheat Program of 1933 and the Corn-Hog Program of 1934 were recognized as emergency measures designed to do the most possible for American agriculture in the least possible time. At that time, huge crop surpluses, low prices, and a great load of debt had brought agriculture to dire straits. The wheat and corn-hog programs gave farmers benefit payments for reducing acreages of corn and wheat and production of hogs from a certain base figure determined for each farm on the basis of past production records. It was required that acreages retired from corn and wheat, known as "contracted acreages," be seeded to soil-conserving crops. Contracts were entered into with each cooperating farmer, and each agreed to make reductions in corn, wheat, and hog production in return for certain definitely specified payments.

In 1934, one of the most disastrous drouths in history struck Missouri, and many farmers found themselves without feed and funds. The Agricultural Extension Service was entrusted by the Agricultural Adjustment Administration with the responsibility of carrying out the emergency program designed to meet the immediate problems created by this drouth. County extension agents were made county drouth relief directors, and in cooperation with farmer drouth committees rendered valuable assistance in the government cattle buying program and in securing feed, seed, and other forms of relief.

The Corn-Hog and Wheat Programs continued through 1934 and 1935. In the spring of 1936, Congress passed the Soil Conservation and Domestic Allotment Act, which placed major emphasis on the diversion of soil depleting acreages to soil-conserving use. The Extension Service was again called on to explain the provisions of this program to the farmers. Through 1936 and 1937 this program was in operation. In 1938 the Soil Conservation and Domestic Allotment Act was amended by the Agricultural Conservation Act of 1938, which provided for the making of payments to farmers who planted within allotments of special and soil-depleting crops established for their farms. Special crops designated were those of which surpluses normally existed, namely; corn, wheat, cotton, tobacco, rice, sugar beets, commercial vegetables, and potatoes. In addition, payments were provided for farmers who carried out recommended soil-building practices on their farms. These practices included the seeding of grasses and legumes, application of lime and fertilizer, terracing, contour and strip planting, tree planting, and others. The 1938 Act also provided for price adjustment payments to be made to the producers of certain designated farm commodities when the farm price of these commodities fell

below 75 per cent of the parity. The period 1909-1914 is used as the base period for establishing parity relationships. The purpose of the price adjustment payments is to bring prices received by farmers for their products more nearly on a par with the prices farmers must pay for the things they buy. This program has been in operation through 1938 and 1939.

One of the major problems in connection with the administration of the farm program has been the checking of compliance on each individual farm. In 1935, aerial photographs were taken of two Missouri counties, Andrew and Nodaway, for the purpose of determining performance under the 1935 Corn-Hog Program. The results of this experiment were so satisfactory that additional counties have been photographed each year since. The entire State has now been photographed, the last 40 counties having been flown in 1939.

Commodity loans have been offered to Missouri farmers each year since the Agricultural Adjustment Act was enacted, but it was not until 1937 that this feature of the program became really effective. Since that year an increasing number of farmers have taken advantage of this "Ever-Normal Granary" feature of the program. Wheat Crop Insurance, offered to farmers for the first time in 1938 (on 1939 crop) proved so successful that it was continued in 1939 with a large increase in the number of farms taking out insurance policies.

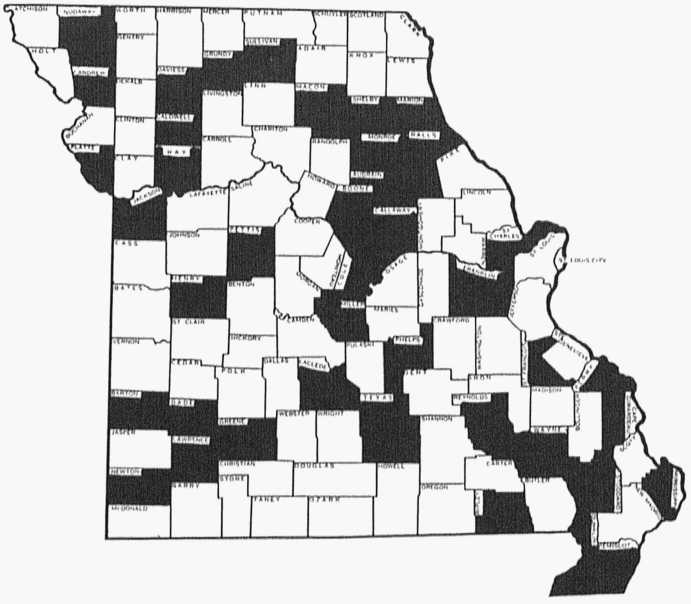
In the early stages of the Agricultural Adjustment Administration program, the Extension Service devoted a considerable portion of its activities to explaining the features of the program to farmers and to assisting county groups in the organization and administration of the program. As county and community committeemen have become familiar with the program and better trained in administering its details, the Extension Service has been relieved of many of the details of the program. During the past two years Extension work in connection with the farm program has been largely confined to the educational phases, particularly the promotion of recommended soil-conserving and soil-building practices.

Especial recognition must be given to the many local leaders who have cooperated so efficiently in the administration of the programs in the counties and who have helped encourage better farming practices. The Extension Service welcomes the opportunity to continue cooperation with these leaders in bringing agricultural information to the farmers of Missouri.

LAND USE PLANNING

Land use planning, first undertaken as a distinct project of the Agricultural Extension Service late in the year 1938, was placed under a full-time leader the following year and by the 31st of December, 1939, had reached an intensive stage in 39 Missouri counties. Preliminary work had been done in all other counties.

With the organization of the State Land Use Planning Committee and county planning committees in all counties, there are 12,294 farm men and women with some experience and special training for their duties now serving as members of these committees.



Progress in land use planning in Missouri, 1938 and 1939. The counties reached by the intensive stage of planning are shown in black.

Intensive activity in land use planning was carried on in 39 counties during the year just closed, with the result that specific action is already under way in most of these counties on the problems brought out by the committees.

The work in these counties, during the year, occupied one-fifth of the time of the five state agents, 735 days of county agent time, and 80 days of home demonstration agent time, in addition to the full-time work of the state leader in this activity.

The Bureau of Agricultural Economics representatives in Missouri have given nearly all of their time during the year to this work, and the Extension agricultural economists have given fully four-fifths of their time.

Even the preliminary work in other counties has been sufficiently thorough to furnish some contribution to the Extension program of every county in the State. If the pace set during the past year is maintained, Missouri will be near the completion of land use planning in 40 counties by December 31, 1940.

Origin and Purpose of the Work

Land use planning as a cooperative enterprise of the United States Department of Agriculture and the Land Grant Colleges and Universities was first agreed upon at the Mount Weather conference near Washington, D. C., on July 8, 1938.

The purposes clearly dominating the thought of the conferees were the following: (1) To stimulate farmer thinking about the farmer's problems; (2) To develop local information assembled by technicians but accurately reflecting farmer thinking and farmer experience; (3) To enable farm people to have an appreciation of the changes taking place in land use so that they will understand the capabilities of their lands and be better able to make adjustments in their farming operations; and (4) To insure better coordination of the various action agencies that are working on agricultural problems.

Land use planning, as visioned at the Mount Weather conference and as later carried into effect, is aiding the Agricultural Experiment Stations in getting at real farm problems and is furnishing a sound basis for the programs of the Agricultural Extension Service.

It is expected also to guide the Farm Credit Administration in making loans, the Soil Conservation Service in locating demonstrations, the Forest Service in administering the farm forestry program, and the Agricultural Adjustment Administration in apportioning county allotments and in designating appropriate conservation practices.

The results of land use planning may also furnish guidance to the Farm Security Administration, the Federal and State agencies for wildlife conservation, and to highway departments in laying out a sound road program.

These results should assist in the formation of flood control programs with due regard to farm income, in a more equitable distribution of the tax burden, and in the development of such public services as electric lines, schools, etc.

Furthermore, this work is bringing together information that will assist in working out satisfactory leasing agreements, in promoting economical farm management and organization, and in the recommendation of good uses for land not suited to agricultural purposes.

State and County Organization

The Missouri Land Use Planning Committee is composed of a representative farmer from each type of farming area in the State and a representative of each of the State and Federal agencies interested in land use. The membership at the end of 1939 was as follows:

Elmer Adams, farmer, Blue Springs, Jackson county;
Theodore Anderson, farmer, Montreal, Camden county;
James Arrowsmith, farmer, Grove Spring, Wright county;
A. M. Fry, farmer, Tipton, Moniteau county;
B. O. Gideon, farmer, Elvins, St. Francois county;
E. B. Hamilton, farmer, Elmo, Nodaway county;
John Jack, farmer, Salem, Dent county;
Carl Mueller, farmer, O'Fallon, St. Charles county;
Albert Painton, farmer, Painton, Stoddard county;
Eugene M. Poirot, farmer, Golden City, Lawrence county;
Tom Raines, farmer, Nelson, Pettis county;
S. P. Reynolds, farmer, Caruthersville, Pemiscot county;
Howard Shirkey, farmer, Richmond, Ray county;
John Stansberry, farmer, Jasper, Barton county;
Fearis Stephens, farmer, Madison, Monroe county;
Floyd Tuggle, farmer, Gallatin, Daviess county;
Preston Walker, farmer, Macon, Macon county;
Carl Brown, Chief Engineer, State Highway Department, Jefferson City;
J. W. Burch, Director of the Missouri Agricultural Extension Service, Columbia;
Paul D. Dalke, Federal Representative of the Biological Survey, Columbia;
James N. Diehl, Forest Supervisor, U. S. Forest Service, Springfield;
Tom Douglas, Administrative Assistant, State Department of Agriculture, Jefferson City;
K. G. Harman, State Coordinator, Soil Conservation Service, Columbia;
Steve Hughes, Acting State Director, Farm Security Administration, Columbia;
Paul D. Kelleter, Forest Supervisor, U. S. Forest Service, St. Louis;
J. H. Long, Highway Planning Division, State Highway Department, Jefferson City;
Ed. Mayes, Representative of the Missouri Conservation Commission, Jefferson City;
C. T. McGinley, Representative of the Bureau of Public Roads, Jefferson City;
M. F. Miller, Dean of the College of Agriculture of the University of Missouri, Columbia;
Paul Schowengerdt, Assistant to General Agent, Farm Credit Administration, St. Louis;
C. W. Sheppard, Chairman State Committee, Agricultural Conservation Program, Warrensburg;
Ross Silkett, Agricultural Economist, Bureau of Agricultural Economics, Columbia.

Of this committee, J. W. Burch is chairman and Ross Silkett is secretary. Serving in an advisory capacity are J. D. Monin, Jr., project leader in land use planning, and Charley Peterman, member of the State A. C. P. Committee.

County land use planning committees have been organized in all of the State's 114 counties, following the approval of the land use planning project in each county by the county extension committee. This latter group, including an average of some 40 men and women, also sets up the county land use planning committee, first organ-

izing a committee in each township or community and allowing each of these committees to designate a man and woman to serve as community co-chairmen and as members of the county committee.

Work Done in Preparatory Counties

Work done in 75 counties during the past year covered the preparatory phase, consisting chiefly of setting up the township and county committees, the training of committeemen, and the guidance of township and county committees in determining the problems most important to the people in the areas represented. They also indicated the problems on which they felt that immediate action could be directed with reasonable hope of beneficial results.

The following 14 problems, in the order named, are those which were recommended for action by the largest number of counties:

Need to increase fertility and conservation of the soil.
Problems pertaining to farm tenure and tenancy.
Lack of farm planning.
Insect, rodent, and plant disease control.
Lack of opportunity for developing young people.
Lack of recreation facilities.
Low poultry income.
Low livestock and dairy income.
Need for live-at-home plan.
Need for improvement in health and sanitation.
Need for home improvement.
Lack of sufficient income from sale of farm and home products.
Lack of information on consumer buying.
Weed control.

Use of Problems.—The Agricultural Extension Service and the county extension committees in all counties last fall used these problems for the purpose of building their annual extension programs. These programs were built on a problem basis.

These problems, while not backed up by factual data as in counties that have reached the intensive stage, do reveal the major ills of agriculture in Missouri. The developing of these problems has trained 7,721 committeemen in the holding of educational meetings. By holding these meetings they have brought to other thousands of persons the question, "What is the trouble?" and have caused them to think constructively on agricultural problems.

Cooperation of Related Agencies in Preparatory Counties.—Related agencies, as a group, gave freely of their time in preparatory counties. Where specific problems were set out by the farm people, these agencies in most cases were present to describe the contributions they could make toward the solving of these problems.

The agencies giving this type of assistance and the numbers of counties in which such cooperation was reported are as follows:

Farm Security Administration in 75 counties, Vocational Agriculture instructors in 43 counties, Bureau of Agricultural Economics in 42, Federal Bureau of Public Roads 39, State Highway De-

partment 39, Health Service 36, Social Security Commission 31, Farm Credit Administration 29, County Superintendents of Schools 16, Agricultural Adjustment Administration 13, and Soil Conservation Service 10.

In somewhat smaller numbers the counties also reported assistance from the Rural Electrification Administration, State Bankers Association, Missouri Employment Service, Federal Farm Loan Associations, Works Progress Administration, U. S. Forest Service, Federal Housing Administration, Commodity Credit Corporation, State Conservation Commission, Home Owners Loan Corporation, County Soil Improvement Associations, Child Welfare Society, and the Red Cross.

Assistance was given by chambers of commerce, civic clubs, business and professional men, religious groups, the public schools, county highway engineers, livestock marketing associations, the American Legion, and the State Planning Board.

Work of Intensive Counties

Statements of farmer committees from some of the intensive counties lead one to understand the thinking and interest that exists out where the real work is done. Some of these statements are:

"We recommend a more thorough study of the soil resources of the various communities this coming year, with the development of more definite land use plans. The soil is the source of our farm income and we recommend the more liberal use of lime, commercial fertilizer, green manures, barnyard manures, improved seeds, and the selection of adapted varieties of crops to insure greater production of feed for livestock on the acres that are cultivated."—Boone county.

"The problems of the farmers in these various areas were taken up one by one and finally a general recommendation was made as to what the plan should be if local farmers were to secure an adequate income, maintain the fertility of the soil, and have a standard of living that would be satisfactory."—Pemiscot county.

"The land use planning records which have been assembled during the past year have been a great help in understanding the diversity of this county's agricultural problems, and the completed report is expected to furnish the foundation on which extension programs of the future are to be built."—Stoddard county.

"The land use recommendations arrived at in this manner will represent the program of the people on the farm tempered with scientific research and planning."—Caldwell county.

Getting Action on Problems

Many of the counties that were in their second year of work in land use planning in 1939 were able to report definite results in action taken toward the solution of problems their people had desig-

nated for immediate attack. The following are but brief excerpts from a few county reports:

"The county committee mapped 11,500 acres of coal strip-mined land. Much of this land is tax delinquent and with the coal removed contributes little to the maintenance of essential public services, to the community, or to its owners. Since this land lies in the midst of a large prairie region practically devoid of natural recreational facilities, the committee recommended its acquisition by the State Conservation Commission for development as a public recreational, forest, and wildlife area. The Commission has acted on this suggestion by authorizing the purchase of tax title to several hundred acres of strip-mined land."—Barton county.

"The county committee has appointed community committees to cooperate with the Soil Conservation Service in plans for the acquisition, development, and utilization of land for the Cedar Creek Forest and Pasture Project, which includes some 264,000 acres in Callaway and Boone counties. . . . The significance of this type of cooperation between farm people, who will use the land, and the Soil Conservation Service, which has the responsibility of its development and administration, is that decisions made in the conduct of the program are continually influenced by the counsel of farmers."—Callaway county.

"County land use planning has resulted in a local attempt to prevent recurrence of the share-cropper strike which gained national prominence about one year ago. A sub-committee called a meeting of landowners to determine what might be done on a voluntary basis to provide shelter and land for as many families as possible. The landowners made a survey of the county and already have created widespread sentiment to do everything possible to remove the conditions that were responsible for last year's disturbance."—Mississippi county.

"The committee has reviewed the report of Federal and State research entitled, 'Land and Fiscal Problems of Reynolds County, Missouri', and has recommended its publication for general distribution in the county. The committee also recommended that the boundaries of the Clark National Forest be extended to include all of Reynolds county and that public grazing areas be developed adjacent to permanent agricultural communities."—Reynolds county.

"The county committee has asked the state committee to join them in requesting that State and Federal research be directed toward the problems involved in the development of an effective coordinated plan to supply guidance and help to some 600 rural families living in the county, who will be removed from their present home sites as a result of the acquisition of about 48,000 acres of land for flood control, in connection with the building of the Wappapello Dam by the War Department."—Wayne county.

"Recommendations of the St. Charles County Land Use Planning Committee have specifically called for a shift in type of farming, in a certain area, from arable farming to a livestock-grazing system. The objectives are to conserve soil resources and to increase and stabilize farm income. To accomplish these desired ends it was stated that the size of operating units should be increased from about 150 acres to about 240 acres, and that land, buildings, and fences would need to be rehabilitated to place the land in effective operating condition."—St. Charles county.

Accomplishments of the State Committee

Among the accomplishments of the State Land Use Planning Committee during the past year the following are most interesting and important:

Adopted a report containing many recommended changes in the Agricultural Conservation Program for 1940. These recommendations were submitted to the Agricultural Adjustment Administration. The 1940 program as recently announced by the A.A.A. had definitely been modified to conform with many of the recommendations submitted from Missouri.

Approved the procedure outlined by the Extension Service representative for initiating land use planning in preparatory counties. The procedure approved was to use farm men and women leaders trained at Extension program planning meetings to hold land use discussion meetings in their respective communities during the winter of 1939-1940.

Scope of Land Use Planning

In each of the counties in which intensive work in land use planning has been undertaken, the county committees have attempted to cover certain specific items that were originally set forth in the work outline developed by the U. S. Department of Agriculture. Broadly stated, these items were as follows:

I. The physical characteristics of the community, segregated into relatively homogeneous sub-areas.
II. The land use or types of farming, also delineated into relatively homogeneous sub-areas.
III. Land use problem areas within the community.
IV. The suitability of land for farming and classification by sub-areas as:
    a. Areas not now in farms which are
        (1) not suited for farming
        (2) suitable for farming
    b. Areas now in farms which are
        (1) not suited for farming
        (2) suitable for farming
V. The most desirable future use of land.

The Procedure Followed

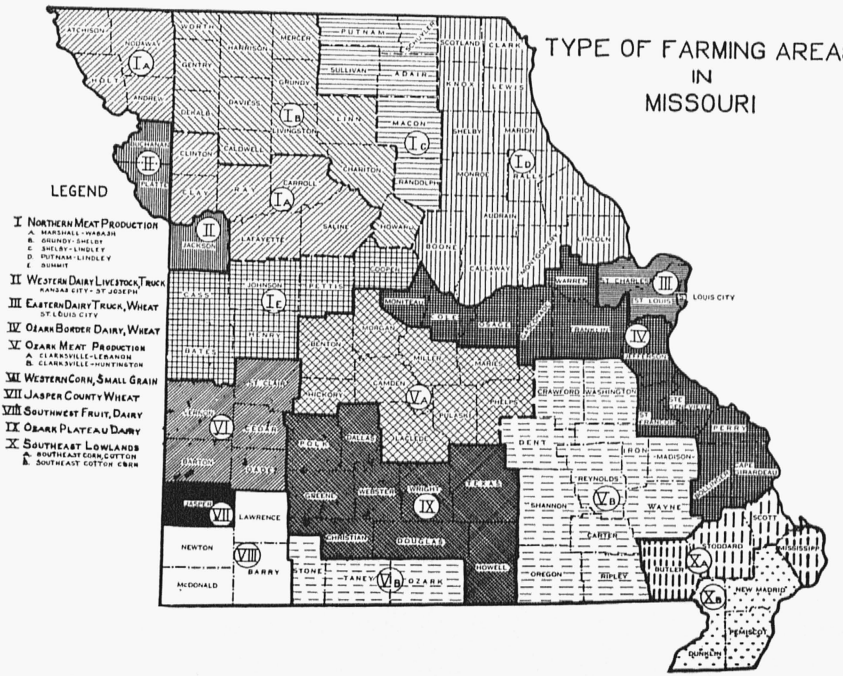
In selecting the counties in which land use planning might be carried out with the greatest benefit to the largest number, the attempt was made to begin with those counties containing type of farming areas that are representative of the entire state.

In such counties the possibilities of land use planning were next presented to the respective county extension boards. With the full approval and cooperation of these boards, the work was then initiated in the following counties:

Andrew county in Area IA; Caldwell in IB; Macon in IC; Boone, Callaway, Monroe, Ralls, and Shelby in Area ID; Henry and Pettis in Area IE; Platte in II; St. Charles in III; Cape Girardeau, Cole, and St. Francois in IV; Phelps in VA; Reynolds in VB; Barton in VI; Lawrence in VIII; Stoddard in XA; and Pemiscot in XB.

Later in the year a second group of counties was chosen for intensive planning that was expected to get under way during the fall and winter of 1939-40. This group includes the following:

Ray county in Area IA; Daviess and Grundy in IB; Sullivan in IC; Audrain and Marion in ID; Franklin and Perry in IV; Laclede and Miller in VA; Ripley and Wayne in VB; Dade in VI; Newton in VIII; Greene and Texas in IX; and Mississippi in Area XB.



Type of farming areas of Missouri which are recognized as basic in land use planning work.

BOYS' AND GIRLS' 4-H CLUB WORK

The number of boys and girls enrolled in 4-H club work in Missouri in 1939 was 25,853, the number of clubs 2,205, and the percentage of completions 73½ per cent. This work was shared by 11,008 boys and 14,845 girls living in 112 counties.

These clubs were led by 5,745 local leaders and assistant leaders, a considerably larger number than in any previous year. Systematic training for leaders was given in 648 training meetings with a total attendance of 9,917. The community basis of organization was used in all but 20 counties.

There were 556 achievement programs in 104 counties with a total attendance of 53,749 persons. Eight district judging days were held with 892 club members in attendance to receive training in livestock, dairy, and poultry judging.

The State 4-H Club Round-Up at the University in Columbia, August 14 to 18, reached a new high record of attendance of 851 persons from 89 counties.

A total of 35 camps had a combined attendance of 3,292 members and leaders from 97 Missouri counties. The standardized educational activities included geology for the boys and handicraft for the girls, under the guidance of 118 trained instructors. Of the 35 camps, 14 were county camps, 20 were district camps, and one was the state 4-H club conservation camp.

Dent county 4-H club fat lamb show at the community center in Salem, June 13, 1939. In this show 225 lambs were shown by the club members for prizes offered by Salem business and professional men.

Rural churches, to a total of 119, held special 4-H club Sunday services on dates ranging from April 30 to May 28. These services

had a total attendance of 9,609 persons, including 2,488 club members. Club members took part in singing, repeating the club pledge, giving special club objectives, served as ushers, took offerings, decorated churches and halls where services were held, gave demonstrations, and put on plays.

During the fall of 1939, the number of former 4-H club members enrolled at the University of Missouri College of Agriculture was 397, this being 34.1 per cent of the total enrollment of 1,162 students. This is an increase of 93 former club members, or 3.7 per cent, over the record of the preceding year.

Purpose and Plan of the 4-H Club

The purpose and plan of 4-H club work in Missouri are briefly stated by T. T. Martin, state leader, as follows:

"Its chief purpose is the improvement of farm, home and community practices. These ends are secured by using actual life situations on the farm, in the home, school or community, of which the club members are a definite part, to make learning more interesting and vital to them now. These experiences bring them in touch with the best in rural life, and as a result the members make of themselves more efficient, more public spirited, and more useful citizens.

"The club, itself, is largely an outgrowth of community effort. It is sponsored locally by a community organization or committee. A club may be formed by one or more groups of at least five boys and girls, 10 to 21 years of age, who are carrying on project work and club group activities. The club adopts its own constitution and by-laws, elects its own officers, helps to plan its own program, and meets regularly under the guidance of a community club leader and project club leaders whom the members help select.

"The county extension agents and home demonstration agents are in charge of the club work in their respective counties, working in turn under the guidance of the state club agents and extension specialists of the Missouri College of Agriculture, who prepare the necessary literature of instruction, records and report blanks, which are furnished free of cost to the leaders and members of standard community clubs. State leaders also aid the counties in developing more efficient methods of conducting 4-H club work."

4-H Home Economics Clubs

To the country girl 4-H club work offers advantages that are deeply appreciated by the parents as well as by the girls themselves. A typical case is that of Helen Foreman of Ralls county, winner of one of the 1939 Danforth scholarships at the American Youth Foundation Camp at Lake Miniwanca, near Shelby, Michigan.

In her report she writes: "My nine years in 4-H club work have meant more to me than I can ever express in words. Although I have spent many tedious hours at my projects, I have found that the interest and skill which are developed overshadow all that would otherwise be drudgery. . . . . My parents are very much in favor of 4-H club work and encourage all of us children in it. They are anxious for us to take part and to do our best."

The interest shown by Helen Foreman's parents is typical of the attitude of community leaders everywhere in Missouri, for Helen's parents have long been promoters of Extension work and other forward-looking movements in their county. Her mother is one of Missouri's Master Farm Homemakers.

Blue ribbon group of 4-H club style dress revue at the State Round-up in 1939. Counties represented from left to right are: Howard, Pettis, Audrain, Saline, Newton, St. Louis (state winner), and Jackson.

From one of the better rural communities of the state is reported a typical instance of the response made by the older girls to the character emphasis in club work. Mary Jean Lentz, member of the famous Six-Mile Club of Jackson county, completed her eighth full year of club work in 1939. For two years she has been a leader as well as a member and will again lead a club this summer. Though winner of many valuable prizes and net earnings of nearly $1,000 in club work, Mary Jean reported last year that the proudest moment of her club career came when she was chosen to stand on the heart petal of the four-leaf

clover at the State 4-H Club Round-Up—a recognition given for character and community service.

Members of Missouri food preparation clubs brought much credit to the state in 1939 at regional and national 4-H club meetings.

Ruby Hudson, 4-H club girl from Smithton in Pettis county, was first place winner in the national cherry pie baking contest held on Washington's Birthday in Chicago as a feature of National Cherry Week. Ruby received a free trip to Chicago and Washington, besides the $100 cash prize which she used for the completion of her high school education.

Two Saline county girls, Mabel Fischer and Jane Jackson, represented Missouri in the poultry utilization demonstrations at the World's Poultry Congress at Cleveland, Ohio, ranking as excellent in world-wide competition.

Another food preparation team, Melba Jean Buelsen and Emma Jo Minnis of Carroll county, represented Missouri in the 4-H club contests of the National Dairy Show at San Francisco, placing in the blue ribbon group.

Thelma Zagrodzky of Buchanan county became the Missouri state canning champion for 1939. She wrote in her report: "I am now preparing all the meals for our family of five and I try each day to have attractive and appetizing food."

Health clubs were active in 87 Missouri counties in 1939, with a total enrollment of approximately 4,000 members, one-half of whom had health examinations by physicians or nurses. Bollinger county reports: "Complete physical examinations were offered every club member in the county under the direction of the district health doctor and the district health nurse."

Clothing was the most popular 4-H club project in 1939 with a total enrollment of 9,033 members representing 108 counties. Outstanding results in this work were shown in the dress revue of the State 4-H Club Round-Up. The revue represented 25 years of 4-H clothing club work, by means of an album large enough for a girl to step from each page as the leaves were turned. Among the 64 girls entered in the revue, Donalee Wehrle of St. Louis county was the winner and later represented Missouri at the National Club Congress, placing in the blue ribbon group.

Boys Prove Themselves Good Farmers

From Cole county comes this report: "In the agricultural clubs, 84 members raised sows and litters, most of them buying gilts at the start. Not one gilt has been lost out of the 84, and most of them have brought two litters of pigs during the year."

In three counties, Audrain, Randolph and Boone, Kiwanis Clubs assisted in sponsoring 4-H ewe and lamb clubs, acting as guarantors to the Production Credit Corporation in financing the purchase of ewes.

This working relationship has been in effect for several years in these counties with excellent results. The 4-H club lamb show in Audrain county last spring drew 150 entries, and the fact was revealed that 95 of the 105 club members had their sheep clear of debt at the end of their second year in the work—ready to reap the profits of a well established, debt-free enterprise.

In Dent county, under the sponsorship of Salem business and professional men, 131 boys and girls became owners of 393 ewes and participants in a county-wide sheep production enterprise that drew the attention of hundreds of farmers to the possibilities of sheep growing. In the financing plan used in Dent county, each club member signed a note for $28 covering the following items; purchase of three bred ewes $19.95, PCA stock $1.30, insurance $3.00, pasture fee $1.50, hauling $1.00, and miscellaneous expense $1.25. This covered all expenses up to the day the ewes were distributed by lot to the 131 club members.

This Oregon county pig stands up to take his worm medicine at the hands of Howard Pease and Gentry Clark, 4-H club members.

Had all the baby beeves, owned by Missouri 4-H club boys and girls in 1939, been assembled at one point for shipment to market it would have required 65 railway cars to transport them. These beeves were valued at $69,787 and returned to their 1,004 owners a net profit of $16,471. The typical baby beef club member in Missouri takes a calf weighing from 250 to 500 pounds between the first of October and the first of January and puts him on feed under supervision of county agent and local club leader. As finally finished for baby beef the calf may weigh anywhere from 850 to 1,150 pounds. This type of club work was carried on in 70 counties last year.

Dairy calf clubs were developed in 45 counties, with nearly 400 members completing records that showed a total profit of $1,924. The work has been especially successful in Jasper county, where the Chamber of Commerce underwrites the loans for the purchase of the calves. This assistance is extended to both vocational agriculture students and 4-H club members and has done much to improve the quality of dairy cattle in the county over a period of years.

During the past year 300 members of field crops clubs, who completed their records, had a labor income of $6,897. Sunrise kafir, because of its drouth-resistant qualities and the increasing demand for seed of this type of crop on the upland soils of Missouri, has proved a profitable project for 4-H clubs.

The Grundy County Sunrise Kafir Club has been especially useful in producing and distributing certified seed of this crop. By the last of July, members of this club whose seed qualified for certification had completed the sale of 76,000 pounds of certified Sunrise kafir. After deducting costs of production and marketing, the boys realized a net profit of $1,447, or an average net return of $33 an acre. Similar service in the introduction of this new crop was rendered by 4-H clubs in nine counties.

Skill in handling tools and materials was acquired by 2,731 boys and 492 girls enrolled in farm handicraft clubs in the state last year. These members made 5,962 articles worth $2,010. From Mississippi county comes the report of work done by a handicraft club for the benefit of their rural school, as follows: "The entire group worked together to make a kitchen cabinet in a small room at the school house so that the girls in charge of the school lunch would have a convenient kitchen. When enameled white, trimmed in red, and finished with a linoleum top the cabinet was attractive as well as useful."

Conservation of Wildlife

Approximately 100 clubs last spring sowed 14,355 pounds of Korean lespedeza seed along fencerows and on odd strips of farm land to provide food for wildlife during the following winter. This work was done with the assistance of the State Conservation Commission, which reports that a total of 240 different local organizations, including 4-H clubs and others, sowed a total of 35,000 pounds of Korean lespedeza seed.

A community 4-H club in Laclede county last summer achieved the distinction of being the first in the state to sponsor a wildlife management area and to successfully construct and operate a fish-rearing pond. The wildlife management area includes 12,320 acres in the Falcon-Winnipeg-Nebo communities, where the farmers are faithfully observing wildlife conservation. Following the construction of a large fish-rearing pond by these people, the State Conservation Commission stocked it with 18,000 black bass fry, of which 47 per cent were harvested four months later and transferred to streams in that part of the state. An adult organization, known as the Twilight Community Club, worked with the boys and girls in both these enterprises.

At State and National Events

Missouri was represented at the National 4-H Club Congress in Chicago, December 1 to 8, 1939, by 45 club delegates and 4 leaders. Major honors were won by Missouri delegates as follows: Clyda

Conrad of Buchanan county was sectional winner in home beautification; Donalee Wehrle of St. Louis county placed in the blue ribbon division of the style dress revue; Betty Jo Clyde of Saline county was a blue ribbon winner in the wash dress class; and Ralph Thomas of Pettis county exhibited the top ranking sample of Reid's Yellow Dent corn from Region IV in the junior section of the International Corn Show.

Only exhibits were featured in the 4-H club department at the Missouri State Fair in 1939. In the 4-H club classes there were 124 home economics entries and 163 head of livestock. In addition to these were dairy animals shown by 4-H club members in the same classes with the students of vocational agriculture. Pettis county clubs won permanent possession of the Governor Lloyd C. Stark trophy for having merited three years in succession highest recognition for total number of exhibits, quality of products, showmanship, and sportsmanship.

Ruby Hudson, Pettis county 4-H club girl, winner of the national cherry pie baking contest, received a check for one hundred dollars and free trips to Chicago and Washington.

At the St. Joseph Inter-State Baby Beef and Pig Club Show, Missouri 4-H club members exhibited more than half of the animals shown by representatives of the four states competing. Missouri exhibits included 84 individual steer entries, 200 steers in car lots, 99 pigs in pen entries, and 16 ton litters. At the American Royal Livestock Show in Kansas City, 28 counties were represented by 115 official 4-H club delegates. A total of 133 head of beef calves, lambs and hogs were shown by Missouri club members. At the Joplin Inter-State Fat Stock Show, Missouri club members exhibited 160 head of beef cattle. At the Junior Exchange Show and the Producers Baby Beef Show and Sale in East St. Louis a total of 759 baby beeves were shown by Missouri club members.

Missouri 4-H clubs were represented at the World Poultry Congress, Cleveland, Ohio, July 28 to August 7, 1939, by the following state champion teams; Poultry judging team from Pettis county, Walter McClure, Ruth Rose and Anna Romig, ranking excellent; production demonstration team from Vernon county, Kenneth Peters and Harold Knowlton, ranking good; and consumption demonstration team from Saline county, Mabel Fischer and Jane Jackson, ranking excellent. In addition to these teams, 52 members of Missouri clubs attended as delegates.

The Beginnings of 4-H Club Work

There were boys' and girls' groups in Missouri doing work in gardening, poultry raising, and flower growing prior to 1914 under the direction of R. H. Emberson who later became the first state club agent. That work was concluded each year with the awarding of prizes for best results shown. There was no club organization, and no reports were required.

In 1907, Samuel M. Jordan, as a representative of the State Board of Agriculture, did special work with farm boys of Missouri, when he conducted a series of encampments in which improved practices in agriculture were taught.

Three such encampments were conducted during the year. The first was held on the Glenview Farm near McCurrie in Mr. Jordan's home county of Gentry, at his own personal expense, with 132 boys enrolled. Another was conducted in Bates county, sponsored by a banker and a farmer, with an attendance of about 180. The third was held in Saline county with more than 300 farm boys present and was sponsored by the Sweet Springs community. Similar camps were held in subsequent years.

Farm boys, 10 to 20 years of age, were invited to attend the encampments for three days of study; while parents and friends, were invited to attend on a fourth and final day, known as "Everybody's Day".

The camp program was given by representatives of the State Board of Agriculture, by faculty members of the Missouri College of Agriculture, and by specialists from the U. S. Department of Agriculture. It included instruction periods accompanied by practical farm demonstrations, organized recreation under supervision, and group discussions; all of this work being designed to lead eventually to the organization of corn clubs. In the course of the week, the boys studied experimental breeding plots, methods of cultivation, and field demonstrations in the use of farm implements.

There was no organization in the State to follow up these early beginnings of club work and make them function, but the ideas and experiences survived and carried over in the memories of the people until 1914, when the Missouri College of Agriculture and the U. S. Department of Agriculture were made responsible for a club program for farm boys and girls.

Progress Made From 1914 to 1923

Regular 4-H club work, therefore, began with the passage of the federal Smith-Lever Act in 1914. It was known at first as "Boys' and Girls' Club" work. The present name, "4-H Club", was not adopted nationally until 1927.

The first clubs organized under this new sponsorship were two corn clubs in Iron county; one with 7 members under the leadership

of R. B. Burnham, the other with 9 members led by Melvin J. Kelly. Both of these clubs were organized June 30, 1914.

During the first full year of club work in Missouri, clubs were organized in corn growing, tomato growing, poultry, stock judging, sewing, baking, and canning. There were 96 clubs with 1,197 members, 60 of whom completed their work.

In 1915, in 72 counties, 391 clubs had 4,416 members. Of this number 15½% completed their club work.

In 1916 there were 416 clubs with 5,842 boys and girls enrolled and 28% completing. Nine projects formed the basis of the work; they were sewing, baking, pig feeding, corn growing, canning, garden, poultry, grain judging, and stock judging.

Junior Farmers' Week.—The first Junior Farmers' Week was held at the University in Columbia during the regular Farmers' Week in January, 1915. The program for boys and girls included competitive exhibits of canned tomatoes, a contest in which club members submitted written reports of their tomato club work, and instructional programs.

The second State Junior Farmers' Week, January 4-7, 1916, included contests in judging aprons, one-acre corn production, judging beef cattle, judging corn, judging draft horses, judging dairy cattle, judging hogs, judging poultry, judging sheep, stringing corn for seed, making biscuits, judging bread, making button-holes, judging canned products, a ciphering match, making fudge, making patches, spelling match, darning stockings, and attendance contest.

To supplement Junior Farmers' Week in 1915 and 1916 a total of 59 club fairs were held at convenient locations throughout the State from October, 1915, to March, 1916. Members in attendance were 2,341. There were 977 exhibits, which included poultry, corn, sewing, baking, canning, potatoes, pigs, and calves. Judging contests were held in all classes.

The War Period.—In 1917 club work was conducted in all of the 114 counties of the State. There were 960 clubs organized with 5,732 members enrolled and 58½% completing.

In 1918 there were 1,306 clubs organized with 20,554 members enrolled and 30% completing.

Because of the war motives of this period it was very difficult to maintain regular club organization. Groups were organized as War Clubs, Red Cross Clubs, Produce Clubs, Liberty Clubs, and Boys' and Girls' Clubs. Reports usually gave the amount of production and net profit. If there were losses, no report was made. Record yields and net profits continued to be high. This condition led to the possibility of creating the impression that the value of club work was based largely upon financial returns.

In 1919 there were 1,209 clubs in 94 counties with 22,348 members enrolled, the largest enrollment of this period. Of this number 47% completed. The net profits were $102,323.00.

First Leaders' Training Meetings.—In 1920 with an enrollment of 8,033 members in 468 clubs located in 96 counties, 25½ per cent completed the year's work. At this time, an attempt was made to bring about better club work by holding meetings of leaders to discuss organization, demonstrations, methods of procedure, and reports. In all, 50 meetings were held with a total attendance of 553 leaders.

The following year this leader training was supplemented by efforts to have a better plan of organization, a more systematic method of procedure, a planned program of work, and more accurate reports. In 78 counties, 1,162 clubs enrolled 12,285 members, with 37% completing.

In 1922 there were 1,018 clubs with 9,397 members enrolled and 30½% completing.

In 1923 membership dropped to 6,584 but the number of clubs increased to 1,116, and the percentage of completions increased to 39%. Club work was getting back to a peace-time basis.

In 1917 the club fairs, were discontinued in favor of a larger club program at the Junior Farmers' Week. As a result, 323 members from 17 counties were present at the 1917 meeting. Contests were held in judging corn and other seeds, canned products, different kinds of cloth, patching, baking, poultry, swine, sheep, beef cattle, dairy cattle, mules, draft horses and light horses.

First Club Demonstrations.—Demonstrations were made a part of the club program for the first time in 1917, in canning, making buttonholes, fancy stitches, and plain stitches.

In this same period the Missouri State Fair first became the show window for 4-H club work in the State. The contest feature in club work was prominent. The group system of awards, used in 1919, proved unpopular and was discontinued. Interest in club work was general throughout the State and liberal support was provided by business firms, chambers of commerce, civic organizations, and farm organizations.

Recent Developments, 1923 to 1939

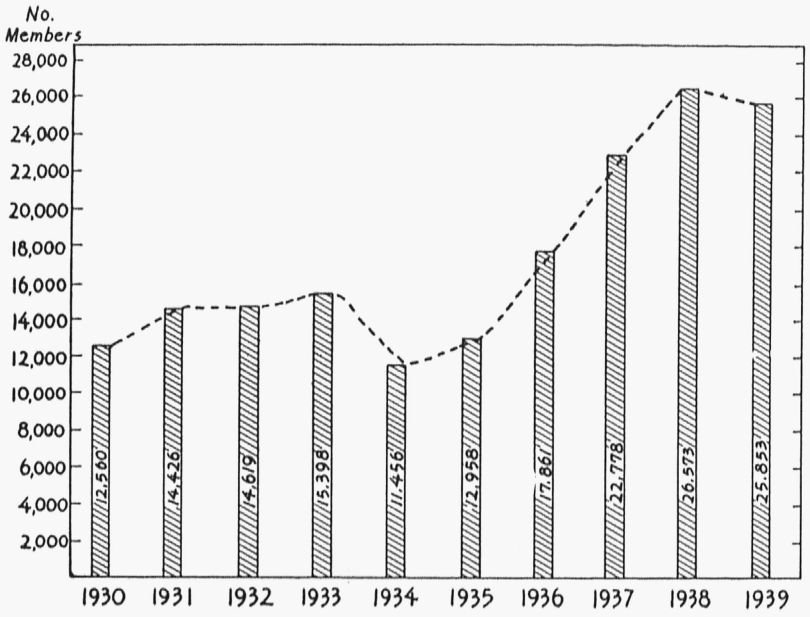
The record of 4-H club work during the last fifteen years is marked by fluctuations in enrollment that have been discouraging at times, yet there has been through it all a steady advance in leader training and organization, a marked improvement in literature, a strengthening of the ties between club and community, and a broadening of the club activities.

The enrollment rose from 8,228 in 1924 to 26,573 in 1938.

Improvements in Method.—Among the many improvements in method that have been developed by 4-H club experience in Missouri are the midsummer check-up on enrollment first used in 1924, the change from miscellaneous leader training meetings to regular

county councils in 1937, and the change from the project club unit to the community club basis in 1938.

The midsummer check-up has encouraged continuous enrollment carrying over from one year to the next, has established a uniform basis for the reporting of county enrollments, and has prevented active clubs organized after July 1 from being counted as failures simply because their work is not completed in time for the annual reports in December.



Progress in 4-H club work in Missouri, 1930 to 1939, as indicated by the number of boys and girls enrolled in clubs each year.

In using the county council plan, club leaders in most of the counties of Missouri have set up their own organizations under agent guidance, have met regularly throughout the year, and have developed helpful, challenging programs. Wherever the council has done this, it has been a decided advantage in keeping up the interest in club work, in maintaining the work on a continuous basis, and in organizing and carrying out club plans.

The community plan of club organization was made the local unit of club work in Missouri on July 1, 1938. According to this plan a community club is organized first and then one or more project groups are set up within the community club. This has the effect of making club work available to a larger number of boys and girls, besides making the club program more interesting and more nearly continuous.

State 4-H Club Round-Up.—By gradual adjustments to meet the demands of changing conditions and increasing enrollment, the annual statewide meeting for 4-H clubs became the State 4-H Club Round-Up in 1927. From that year until the present, the Round-Up has been held in August with a program exclusively for 4-H club members and leaders.

Originally a minor accompaniment of the adult Farmers' Week in January from 1915 to 1922, the annual 4-H club achievement program had been changed in 1923 to the first week in May with contests and instruction for students of vocational agriculture as well as for 4-H club members.

Notable Aid to 4-H Club Work.—The development of 4-H club work has from time to time received much helpful impetus from contributions made by individuals and groups interested in rural youth. In 1926 the Woman's National Exposition of St. Louis donated $1,000 to the Agricultural Extension Service for the training of 4-H club leaders. This fund was largely used to pay the expenses of outstanding 4-H club leaders to the state conferences in 1926 and 1927.

During the years 1925 to 1927, inclusive, the Missouri Bankers Association donated $1,600 annually to pay the expenses of outstanding club delegates to Junior Farmers' Week and the State Round-Up. Within the same period outstanding club work was rewarded with $1,200 in scholarships contributed personally by the late Edward Buder of St. Louis, for many years a member and officer of the Bankers Association.

Development of 4-H Club Camps

In the earlier years of 4-H club work in Missouri, up to and including 1929, the club camps were conducted as county or district camps by the agents, usually with the help of one state club leader and one extension specialist, and possibly that of some outside person trained in a particular line of camp work. This plan was feasible during the years when there were only 10 to 15 camps in the State each year.

With a steadily growing number of camps from 1930 to 1937, however, it became necessary to offer all camps a uniform program for at least one-half of each day and one entire evening. This statewide program, in any single year, covered only one of the following subjects: soils, forestry, weeds, grasses and wild flowers, or insects. Each summer's study program would be conducted by extension specialists, a state club agent, and technicians from cooperating agencies.

In 1938 and 1939, still further increases in the number of camps led to the development of a new plan, in which some 100 county extension agents and home demonstration agents were selected in

advance and trained in district conferences to direct study programs and handicraft work in the camps.

State Conservation Camp.—Beginning in 1935, Missouri has conducted a State 4-H Club Conservation Camp. Attendance at this camp has been definitely selective, based on records of outstanding club work and community service in the field of conservation. To defray the expenses of some fifty club members and leaders attending this camp, the Federal Cartridge Corporation of Minneapolis, Minn., has provided $500 each year.

A group of 4-H club girls at work during a handicraft period of the summer camp at Montserrat.

Changing Emphasis in 4-H Contests

The records of the past 25 years reveal a gradual change of emphasis in 4-H club contests. In the early days, before club work was definitely established, the contest received chief emphasis, often being set up in the form of competitive exhibits even before the club itself was organized or any meetings were held. The main purpose of the contestant too often was to beat someone. Impractical, uneconomical, and unethical things were done in order to be first.

These errors, however, have been outgrown by gradual changes, with emphasis now placed on good workmanship, sound management, good sportsmanship, and group achievement. Introduction of the

Danish system of group judging of 4-H products and activities probably has done more in Missouri than any other method to help correct the abuses of competition.

The Danish system, introduced in America in 1924, consists of the placing of all animals, articles, products, or processes of similar quality in the same general group, such as blue ribbon, red ribbon, or white ribbon division. By 1939 this system had been adopted by 16 states for judging livestock. It is used in Missouri for judging 4-H club demonstrations, in all home economic contests, in judging agricultural exhibits in several counties, and in judging beef cattle classes at the Missouri State Fair.

RURAL YOUTH PROGRAM

The rural youth program, designed for young people 18 to 30 years of age who are out of school and at home on the farm, was conducted in 18 Missouri counties in 1939. Participating in this program were 903 young men and women, the majority of whom were between the ages of 18 and 22. They elected their own officers and conducted their various activities in line with their own and their communities' interests in 26 separate local organizations.

The activities promoted by these groups ranged all the way from the acquisition of useful skills and knowledge in farming and homemaking, through social and recreational activities, to many types of community service. Members gained a better understanding of themselves, of one another, of their environment, their various needs, and common interests. They worked, played, traveled, camped, and studied together. They brought into conference their parents, their organization counselors, their county agents and home demonstration agents, their rural ministers, and workers from other local institutions.

The counties whose young people shared the rural youth program in 1939 were as follows: Buchanan, Cass, Howell, Jackson, Johnson, Knox, Lafayette, Livingston, New Madrid, Osage, Perry, Pettis, Pike, Platte, St. Louis, Saline, Stoddard, and Washington.

The 26 organizations were distributed as follows: Three each in Lafayette and Pike; two each in Cass, Johnson, Pettis and St. Louis; and one each in the others.

Some of the Things They Did

So varied are the interests of the young people in these several groups and so wide the consequent scope of the rural youth program, that their purposes and achievements can best be indicated by reporting some of the things they did during the year.

Many groups have furnished entertainment as their contribution to community events, at the same time developing their own powers

of self expression. Others have given entertainments for a small admission charge, using the money thus earned to meet club and community needs.

In New Madrid county the Fairview R. Y. O. (Rural Youth Organization) furnished leaders for two 4-H clubs and also contributed $50 to assist the club boys in buying their pigs.

In Johnson county the members of the Centerview R. Y. O. helped the county extension agent by conducting the recreational program at the county 4-H club night.

Groups in Lafayette county took an active part in the county celebration of the 25th anniversary of the Agricultural Extension Service, giving folk dances in costume and serving refreshments.

The R. Y. O. in Platte county has started a rural community library, arranging for the use of a second-story room in the county seat and obtaining 350 books in the first year of organized effort for this purpose.

The Coldwater Club in St. Louis county has earned about $175 for the purchase of equipment for community recreational programs, including phonograph and records, ping pong tables, two badminton sets, and equipment for softball games.

The Triple-F Club of Howell county presented its third annual rodeo, a two-day event to earn money for a community house. The two performances netted $91 which has been deposited with the trustees of the building fund, which now exceeds $200.

From Pike county the St. Clements Club was invited to the University at Columbia last fall to present a play as a night feature of the annual Farm and Home Week. These young people have developed a year-round program of recreation and dramatics for their own club and community.

The Pioneer Club in Cass county has made home gardening a major activity since its organization in 1933. This work does not end with the growing of the products needed for the family food budget but includes community service by members who work as demonstrators and leaders in home gardening. This phase of the club's activity extends even to the presentation of programs in community centers and by radio broadcasts.

Leader Training and Recognition

In the counties where the rural youth program has been most effective the county agents and home demonstration agents have given training to the young people in preparation for leadership in their educational and recreational meetings. In eleven counties leader training has been given in one-day and four-day recreation schools, in several of which help was given by the National Recreation Association.

Nineteen R. Y. O. leaders from seven counties attended Farm and Home Week at the University of Missouri. Four members and

the home demonstration agent from Pike county took an active part in the youth section of the American Country Life Association meeting at College Station, Pa.

Forty-seven members and ten agents attended the first State Rural Youth Camp held in August, 1939, at the Federal Recreation Area near Knobnoster. The camp was designed to furnish inspiration, leader training, and suggestions for future programs, as well as wholesome fun.

In several of the R. Y. O. groups the young men have enrolled in the eight-day training courses for leaders in soil conservation work offered by the soils, crops, conservation, and engineering specialists of the Extension Service.

Social Activities

Social activities, in addition to the more commonplace parties and hikes, have included programs in honor of parents and counselors, in recognition of holidays and anniversaries, and in celebration of seasonal festivals. Hiking has been expanded to include carefully organized trips to historic sites and beauty spots supplemented by competent instruction in local history and in nature study.

The St. Clements group of Pike county visited the State Capitol at Jefferson City and the Union Electric Power plant at Bagnell Dam.

The Platte county group visited Swope Park and the Nelson Art Gallery in Kansas City.

Pioneer club members from Cass county conducted an organized trip to the State Fair at Sedalia and attended the dedication of the Municipal Airport in Kansas City.

How Older Youth Work Began

Work for older rural youth in Missouri, as a part of the Agricultural Extension Service program, had its beginning in 1932, when a study of 4-H club records revealed that only a few members were continuing in 4-H club work beyond their sixteenth year. A committee representing the administrative, 4-H club, and specialist staffs decided to attempt some work for older youth groups in five counties. The work was to be under the supervision of the 4-H club staff.

Early in 1933, therefore, work was started in Cass, Holt, Jackson, Nodaway, and Pettis counties. The first group was organized in the Everett community of Cass county, February 21, 1933, and was known as the Pioneer Club. In each of the other four counties a community or county group was organized. The five organizations had a total membership of 148 young men and women, working under their own officers and meeting once a month. Each member worked on an individual farm or home project, such as gardening, farm accounts, clothing, home beautification, or corn growing.

How well these projects were handled is attested by county agent reports showing that 71 members completed their work in a satisfactory manner. However, this individual project work made such heavy demands on the agent's time that it was inadvisable to continue on this basis.

The following year a few of the members continued their individual projects, but in most instances group projects were selected by extension workers and presented to a committee of each organization for approval. Information was presented through monthly institutes, which included lectures on personality development, community organization, leadership, program planning, conservation, forestry, land utilization, social service, dramatics, and debating. In these institutes the Extension Service had the assistance of Christian College, the State Department of Education, the Works Progress Administration, and the College of Arts and Science of the University of Missouri.

These methods were continued through 1935 and 1936. In addition to these programs, the young people, of course, carried on a variety of recreational and social activities. A state conference for rural youth leaders was conducted by the University as a part of its annual Farmers' Week program in October, 1936. Special training was offered in the group discussion method and in recreation and singing.

During 1937, the Pioneer Club of Cass county, then in its fifth year, planned and carried out a continuous program of garden study. Most of the other groups carried on recreational and social programs only. Late that year, in preparation for further development of the rural youth program, Jane Hinote, state club agent, was appointed to take charge of the work.

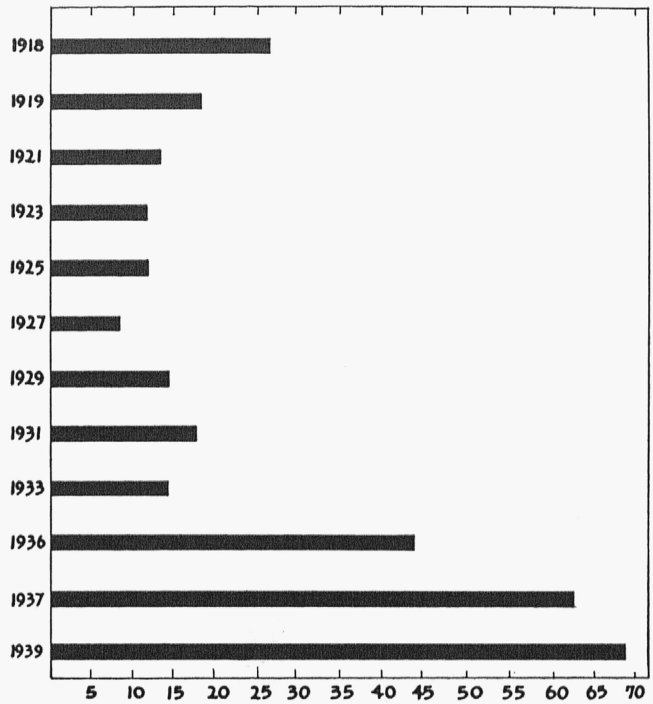
Following an intensive study of the needs and interests of young people from 18 to 25 years of age, it was possible in 1938 to develop a program that was eagerly received by young people in a widening area. That year the work was carried on in ten counties as follows: Buchanan, Cass, Howell, Jackson, New Madrid, Pettis, Pike, Platte, Lafayette, and St. Louis.

Since August, 1938, the purpose of the rural youth program in Missouri has been understood about as follows: "To provide opportunity for the growth and development of the individual members through group activity and cooperation, so that young people may increasingly be able to meet their own needs and to solve their own problems."

Happily for all concerned, the young people in striving for these objectives become more appreciative of their environment, more keenly aware of their own potentialities, and more considerate of others. In short, they become more successful personally and more useful to family and community.

HOME ECONOMICS EXTENSION WORK

With active assistance from 20,962 community leaders, the Extension Service in 1939 carried the benefits of home economics work into some 220,000 homes. County-wide plans of work were carried out in 113 counties. The number of county home demonstration agents reached a new high mark at 70, while the number of clubs closely affiliated with the Extension Service was 2,182 with a membership of 42,357 women.



Number of counties served by home demonstration agents, 1918 to 1939.

Of the 113 counties working through organized home economics extension clubs, four have more than 800 members per county, one has a membership exceeding 700, and 23 counties have memberships of more than 500 each.

The home economics work covers a wide range of problems that affect home, family, and community.

Much time was spent during the past year in giving detailed instruction and practice in the selection, alteration, and making of the family's clothing. Some 10,000 women learned the technique of adjusting ready-made dresses, others learned the alteration of patterns and the making of dresses and undergarments, while still

others were given special assistance in clothing and shoes for children.

Another universal problem that received much attention was that of bedding—the improvement of the family's rest by more skilful use of materials that are at hand on the farm; cotton, wool, or feathers. In Southeast Missouri 870 cotton mattresses of high quality content and finished workmanship were made by farm women under the instruction of extension workers and community leaders. In other parts of the State, women cooperating in extension plans made 272 feather mattresses and 2,245 wool comforts.

Better arrangement of kitchens with improved lighting and added conveniences made household tasks easier in some 5,000 Missouri homes in 1939.

More than 1,100 farm women kept farm and home accounts, studied outlook material, and in other ways improved their ability to make the best possible use of the family income.

Food budgeting, year-long planning of the family's food supply, beginning with detailed plans for the garden and following through with its care and the preservation of its products, met eager response in 60 counties and resulted in definite gains reported by 5,537 families.

Better nutrition for school children through attention to the noonday lunch was also a popular project during the past year. Many women's clubs through their child development committees aided in this work, with the result that hot lunches were served in 547 schools in 56 counties.

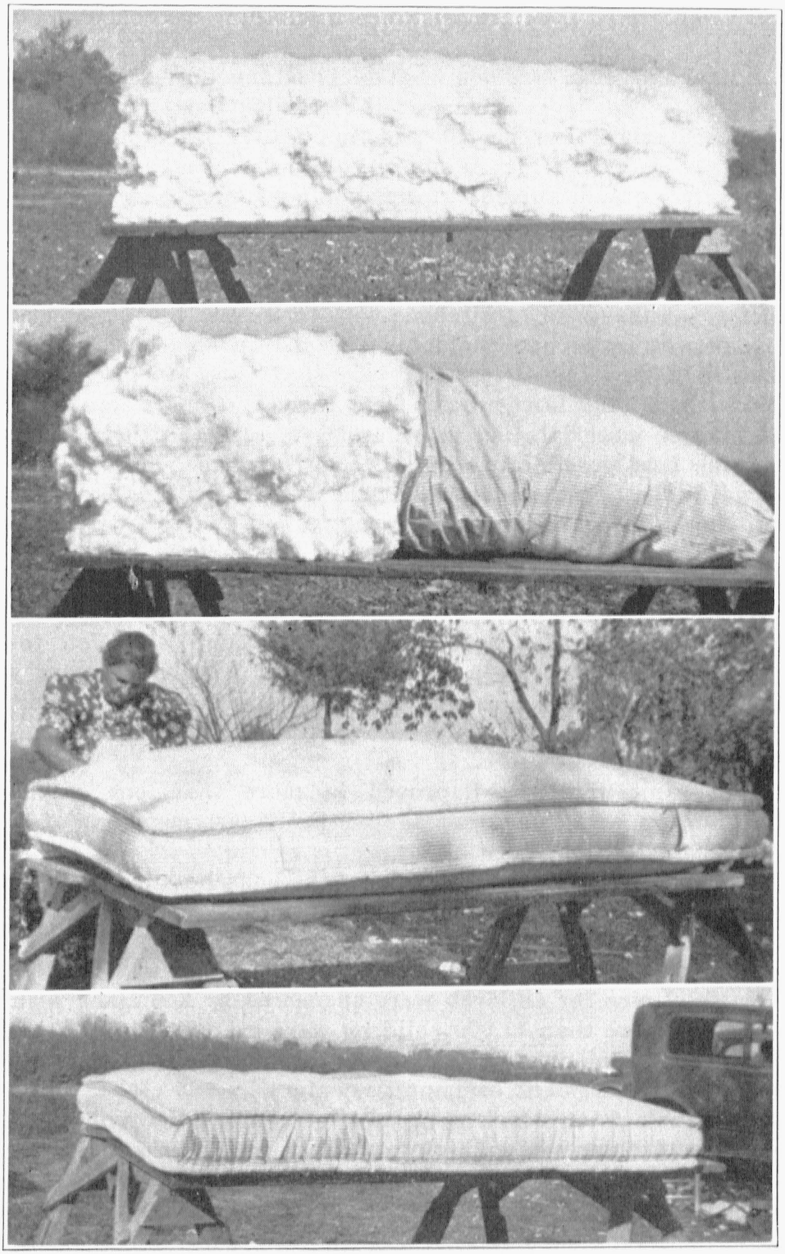
Home sanitation was improved in more than one-fourth the total number of homes represented by 42,000 members of home economics extension clubs.

Making easier the everyday tasks of the household by use of better methods, the application of short cuts, or the elimination of waste motion resulted in benefits for the members of more than 1,200 clubs.

Health clinics for children were sponsored by 340 clubs with the result that more than 11,000 children were examined by the cooperating doctors and nurses. Sick room kits were provided and made available at convenient community centers by 165 clubs.

Other subjects on which work was done during the year on a wide scale were fire prevention, highway safety, motor laws and courtesy, soil conservation, national and state legislation affecting farmers, home reading and library facilities, and the planning of future extension work.

Community centers or summer camps were provided in 44 communities, work centers for canning or curing meat in 4, libraries in 125, and recreation programs and equipment in 366 communities.



One of the many mattress making demonstrations held last year in Missouri cotton growing counties. In Mississippi county, where this particular demonstration was held, 71 mattresses were made at an average cost of $6 each and valued at $15 each.

Steps in making, as shown above: (1) The cotton spread and beaten into form, (2) The tick partly over the cotton. (3) Putting on the roll edge. (4) The finished mattress.

Not stopping with service to their own and neighboring communities, the women's extension clubs in the last few years have set up a student loan fund for the benefit of farm youth throughout the State at large. This fund was started in 1937 for the benefit of freshmen students at the University of Missouri and has been built up by $1 annual contributions from home economics extension clubs until the total last year was $1,740.

Special work among negro families in Southeast Missouri led many of them to do home canning for the first time in their experience, with a total of nearly 32,000 quarts of fruit and vegetables thus preserved for winter use. Instruction was also given in the making of cotton mattresses, supplying at small cash outlay facilities sadly lacking in many of these homes.

TABLE 1.—PROGRESS IN HOME ECONOMICS EXTENSION WORK; 1936-1939.

Measure of Results	1936	1937	1938	1939
Home economics extension clubs	1,679	1,913	2,017	2,182
Members in these clubs	32,037	36,526	38,371	42,357
4-H clubs organized	736	1,164	1,383	1,226
Members in these 4-H clubs	6,567	10,873	12,364	12,966
Older youth groups organized	17	9	19	24
Members in these groups	493	243	591	838
Communities with planned programs of home economics work	1,327	1,549	1,699	1,549
Local women leaders in adult work	10,048	13,088	16,803	20,962
Local women leaders in 4-H club work	1,976	2,578	3,020	3,279
Attendance at meetings	120,721	163,962	202,212	214,610
Rural families influenced by home economics extension work	197,848	189,852	221,622	217,653

Early Extension Work in Home Economics

The first record made of any work in home economics in the Agricultural Extension Service in Missouri was of September 1, 1915. At that time two workers were employed who spent their time on the work, and had the assistance of a woman 4-H club leader for one month during the year.

The home economics work at that time was conducted through extension schools in home economics, work given directly to women's clubs, at township fairs, round-ups, through judging exhibits, special meetings, demonstrations in farm homes, and miscellaneous lectures and demonstrations.

The extension schools were of two, three, or five days duration, the shorter schools being held in the fall, winter and spring months, and the longer sessions in the summer. These were held by the regular extension staff, the local community providing equipment and materials for demonstrations, along with board and lodging for the instructors.

It is interesting to note that a total of 76 schools were held by the home economics workers in 1915 with a total attendance of 3,402, and that 108 women's clubs were organized with a membership

of 2,000. The total number of counties reached with some phase of the work was 48.

The subjects covered in these early extension schools included meal planning, cooking, sewing, house planning, household conveniences, and health. Demonstrations were given in similar subjects and in judging household products at county fairs and roundups.

Other work with women's groups consisted of organizing homemakers' clubs, supplying them with outlines for study throughout the year, together with material for each month based on the program outlined. The Extension Service also sent out a monthly letter to clubs, maintained a department of questions and answers, and provided one visit per year to each club by a representative of the home economics staff.

In April 1917, the United States entered the World War, and this fact along with the slogan, "Food Will Win the War," gave a great impetus to home economics work. That year's work consisted mainly of canning demonstrations that were given in the most accessible and progressive counties.

By the close of the year 1917, there were two counties, Dunklin and Atchison, that had been organized for home demonstration work and each had an agent at work. Two counties were completing arrangements, two were in the process of organizing, and 12 others were waiting for assistance. By the end of the year 1918, the home economics extension force consisted of a state leader, three assistant state leaders, four urban home demonstration agents, one district agent, and 27 rural home demonstration agents.

The requirements at that time for a county to secure a home demonstration agent included a supporting organization with a membership of 250 women paying an annual fee of one dollar each, and the provision of other local funds to make a total of $1,020 for expenses for one year.

Some of the activities reported at the close of 1918 were: Libraries established in five counties, assistance with the 4th Liberty Loan in three counties, community sings established in two counties, rest rooms provided in courthouses in two counties, hot lunches introduced into schools in 16 counties, a community laundry in one county, and assistance given in nursing and preparing food during the influenza epidemic in four counties. Poultry culling campaigns were carried on in 20 counties with the home demonstration agents alone handling 405,157 birds. This work resulted in saving $102,239 on feed.

Because of a reduction in the extension budget effective July 1, 1919, no additional counties were organized at that time. The supervisory staff was reduced to a state leader and one assistant state leader, while one clothing specialist was released. By the

end of the year the only demonstration agents continuing their work were the urban agents in St. Louis and Kansas City and rural agents in the following counties: Butler, Cape Girardeau, Clay, Cole, Dunklin, Greene, Holt, Jackson, Jasper, Jefferson, Lincoln, Linn, Marion, and Montgomery.

By 1924 the work was reaching 84 counties with a total attendance of 590,000 reported at meetings and demonstrations. In that year and the two or three immediately following, the number of method demonstrations fell off, while the number of result demonstrations increased. More local leaders were being trained and more communities were planning definite programs of home economics work.

During the year of 1928, there was a notable increase in the number of women's clubs organized—from 129 to 450 clubs with a total membership of 8,169 women.

It was on December 6, 1928, that the first county council of rural women's clubs ever to be organized in Missouri was formed in Cass county by representatives of 29 neighborhood women's clubs, three

The group which organized Missouri's first County Council of home economics extension clubs, December 6, 1928, at Harrisonville, Cass county. The meeting was called by the home demonstration agent to aid in making the plan of extension work for the following year.

standard community organizations, and members of the executive committee of the county farm bureau. The meeting was called by the home demonstration agent, Miss Margaret Nelson, to aid the county committee in planning home economics extension work.

The following year five other counties—Carroll, Lincoln, Nodaway, Pettis, and Ralls—followed the example set by the Cass county women, by organizing county councils composed of the presidents of rural women's clubs.

By 1932, the Extension Service, with the help of some 6,000 local leaders, carried on home economics work in 74 counties, although only 15 counties at that time had home demonstration agents. That year approximately 250,000 improved practices were put into use in Missouri farm homes. It was at the end of this year that 1,099 clubs with a membership of 20,302 rural women decided to call their organizations "home economics extension clubs," instead of the various designations used prior to that time.

It was through a steady increase in the membership of these clubs that the Extension Service was able in 1934, despite lower state and county appropriations, to reach 22 per cent more homes than in the preceding year and to assist homemakers in 100 counties. Due to the drouth of that year, great emphasis was placed on home canning, with the result that many women completed family canning budgets, preserving larger quotas of fruits and vegetables for the members of their families than they had previously done even in favorable years.

During the same year, the community activities of the home economics extension clubs were stimulated by a community development contest sponsored by a Kansas City firm. Clubs were judged on the actual results of their work as shown in libraries established, recreation grounds provided and equipped, members attending summer camps, the sponsorship of local debates, community singing and ball tournaments, and many other activities devised to provide wholesome entertainment.

Although every county in the State, in 1935, was served with either a county agricultural agent, a district agent, or an emergency agent, the number of home economics workers remained approximately the same as during the two preceding years. For the major part of the year there were six state workers and 15 home demonstration agents.

The effects of this movement toward expansion were more fully realized in 1936, when the number of home demonstration agents increased to 44, while 26 additional counties shared the services of 13 district home demonstration agents.

This growth continued through the next two years, reaching a new high record in 1938, when 63 home demonstration agents were at work in 72 counties. Working with these agents were 16,800 local leaders, while the number of women's clubs had grown to 2,017 with a total membership of 38,371. The benefits of home economics work were felt that year in 221,000 rural homes.

CLOTHING THE FAMILY

Keeping the family well dressed on a scale of expenditure within the family income became an easier problem in 55,000 Missouri farm homes last year as the result of extension teaching in the selection, construction, and care of clothing. In carrying on this work the Extension Service was assisted by 4,261 local leaders.

Most eargerly received were the lessons on the pin-fitting of dresses, the correct method of setting-in sleeves, altering commercial patterns and ready-made garments to fit the individual figure, restyling and remodeling last year's clothing, the use of accessories to bring costumes up to date, the making of attractive finishes, the making of comfortable and smoothly fitting slips, and labor saving methods in all forms of home sewing.

Shelves and curtains transformed an unused doorway into a handy storage space in the home of Mr. A. R. Fulford of Laclede county.

Almost as popular were the demonstrations showing how to distinguish the many materials on today's market, how to judge their values, how to choose line and color appropriate to the individual's own personality, and how to buy children's clothing. Much help was given on problems of buying shoes, hosiery, and undergarments. Special demonstrations were given on buying ready-made coats and dresses.

In addition to this work with adult homemakers, instruction in sewing processes, the selection of materials, and the care of clothing was given to 7,033 girls in 4-H clubs.

Greater Interest in Home Sewing

In the last seven or eight years there has been a decided trend toward home sewing among Missouri farm women, due partly to low farm incomes and partly to the greater opportunities to acquire skill in sewing and fitting processes. Improvement of materials and equipment may also have contributed to this trend.

Home sewing offers several decided advantages, say the homemakers. Most homemade clothing lends itself to remodeling and adjustment to changing styles more readily than do the commercially made garments. Moreover, with the skills now within her reach,

the farm woman can have perfectly fitted homemade clothing and she can have better quality clothing at a cost no greater than that of ready-made.

Certain it is that thousands of farm women who formerly thought they could not possibly make dresses of acceptable fit and finish today know the joy of selecting the materials they want and turning out coats, dresses, and even leather gloves that fit perfectly and have the appearance of tailored garments.

Sewing Interests of Earlier Years

The large savings made in an even earlier period, from 1921 to 1925, are in part explained by the fact that the extension clothing program of those years included the construction of undergarments, dress forms, and millinery, as well as dresses. Construction problems, in fact, had been the basis of the very earliest extension work in clothing from 1914 to 1919.

In those years, clothing was the subject of at least one day's instruction in each of the "movable schools of home economics", through which the Extension Service then sought to lighten the labors of the rural homemaker. Not until 1919, however, was the full time of one specialist devoted entirely to the clothing project.

During that year and the next, the specialist traveled from county to county giving 2-day and 3-day sewing schools, while home demonstration agents gave much individual help in home visits. The subjects covered in these schools included the padded dress form, foundation patterns, dress fitting, dress design, decorative stitches, short cuts in sewing, cleaning and dyeing, millinery, and children's clothing.

The foundation for the more rapid progress of recent years was laid in 1921, when the Massachusetts plan of training local leaders in clothing was introduced in Missouri. In November of the preceding year, the clothing specialist had attended a Natural Clothing Conference at Iowa State College and had there heard the Massachusetts plan described. So convincing was the report of its results that the plan was copied not only in Missouri but in many other states, as well.

Using this plan, the two clothing specialists in Missouri in 1921 concentrated their efforts upon the training of leaders. Four-day county schools were conducted for the training of leaders in garment making, 2-day schools for leaders in millinery, and 1-day schools for leaders in the making of dress forms. To each school the interested clubs or communities sent their clothing leaders equipped with notebooks, scissors, needles, thread, patterns, and materials. These leaders, usually two from each community, would then repeat the demonstrations and relay the instruction to the women of their communities.

As the number of well organized groups of homemakers has increased from year to year, the number of trained leaders has also increased, transmitting the teachings and influence of a small number of extension workers to many thousands of farm women in widely scattered communities throughout the State.

How the Leader Training Plan Works

With this highly developed plan of teaching through local leaders it was possible in 1939 for the Extension Service to give systematic clothing courses to homemaker groups in 92 counties, including 73 counties served by home demonstration agents, on either a county or a district basis, and 19 counties having only county agricultural agents.

The accumulation of greater knowledge and skill from year to year is made possible for the rural women cooperating under this plan by the fact that county plans of work are changed yearly to include new phases of the clothing work. Within any single year the instruction offered in a county usually is limited to two, three, or at most five or six subjects in clothing. These are chosen by the women of the county a year in advance from a list of some 20 or more training courses that are available.

The complete list of these courses, 24 in number, which were given in varying numbers of counties during 1939 was as follows:

Accessories.
Making a slip.
Understanding and fitting patterns for today's styles.
How to fit and set-in a sleeve.
Methods of finishing garments.
Trimmings for the dress of 1939.
What a woman faces today in buying dress materials.
Buying of undergarments.
Fine laundry.
Last year's clothing with this year's styles.
Buying shoes.
Simplifying clothing problems with well selected equipment.
Sewing machine clinics.
Children's clothing.
Color harmonies for 1939.
Adapting the 1939 line to your figure.
How to fit with pins the dress you buy or the dress you make.
Making leather gloves.
When a woman buys a coat.
When a woman buys a dress.
Grooming.
Christmas gift suggestions.
Clothing planning and budgets.
Care of clothing.

Results in Typical Counties; 1939

As a result of the demonstration on slip patterns and their adaptation to the individual figure, 22 trained leaders in Bollinger county reported that 133 slips were made in meetings under their supervision. After receiving this instruction, many of the club members continued making additional slips and teaching still other women how to make them.

Fitting patterns for today's styles was reported to have been definitely helpful to more than 500 Chariton county homemakers who remodeled 1,000 garments, including some 350 ready-made dresses which required some type of alteration.

Four demonstrations on altering commercial patterns, as presented by extension workers in different sections of Knox county, were attended by 113 local leaders and other interested club members, with the result that 467 club members shared the benefits of this demonstration when repeated by the leaders.

Girls of the Altenburg 4-H clothing club, Perry county, at work on their summer dress project.

Sleeve troubles were corrected for 160 women in Cape Girardeau county by the use of practices demonstrated by the Extension Service. Each leader was given a leader's kit containing a sleeve correctly cut and fitted, a chart showing cause and remedy of common sleeve faults, and a set of paper sleeve patterns showing new sleeve ideas for the current season. These kits are the property of the clubs and are given each year to the newly elected leaders.

The most interesting part of the clothing work in Cooper county, according to local observers, was the open meeting on "problems the homemaker faces today in buying materials". A display of yard goods, showing different fibers and weaves, was loaned by local merchants. The home economics classes from Boonville, Prairie Home, Bunceton, and Pilot Grove high schools were invited to the meeting along with homemakers from all parts of the county. The women were particularly interested in the tests used on materials in order to determine how to clean them.

Three demonstrations were given to 200 women in St. Louis county on the buying of coats, stressing the ways to get good value in this important article of clothing. Coats borrowed from a local store were used as a basis for the study of labels, fabrics, weaves, linings, interlinings, finishing details, and warmth.

FOODS AND NUTRITION

Food and nutrition problems, affecting as they do the health, comfort, and living standard of every rural family, have been the object of systematic extension work in Missouri since 1915. From the beginning, the teaching and organization work in this field have had the three-fold purpose of promoting healthful food habits, conserving the family income, and creating an ever-widening knowledge

and appreciation of the foods that are essential for physical and mental well being.

The nutrition of children for normal growth and development occupied a prominent place in the early extension work on food, for this was the first phase of the nutrition problem on which farm women realized their need for scientific information. Child feeding still offers a fruitful field for service in nutrition teaching, though the spontaneous interest of the rural homemaker now reaches out for information on all phases of food and nutrition.

This fact was evident during 1939, when women's extension clubs, as well as many thousands of individual homemakers eagerly followed the demonstration and study courses offered by the Extension Service on a wide variety of sub-projects. These included child feeding, planning the family food supply, meal planning, better ways of preparing foods, food preservation, health problems, and food in the social life of the family.

As homemakers are better informed on foods and nutrition, they become more acutely conscious of the importance of getting all members of the famliy to eat regularly the foods that make for normal health and growth. Even though the necessary foods are available, some members of the family do not eat them because they do not understand nutritional values or because the foods are of poor quality, improperly cooked, or unattractively served. Both knowledge and artistry, therefore, are needed by the homemaker, and of this need the rural women of Missouri are now almost universally conscious.

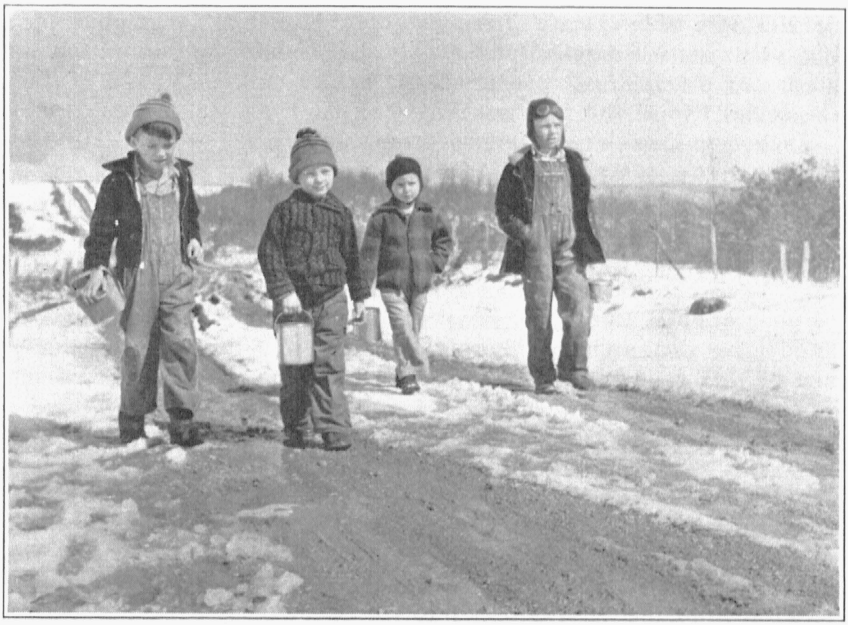
Typical is the case of a mother in St. Louis county, whose husband, six daughters and three sons had divergent and purely personal ideas about the foods they would eat. This homemaker, Mrs. Alex Hoeval, after following carefully the extension demonstration on "New Ideas About Everyday Meals", tacked on her kitchen wall the charts showing the values of common foods and made a special point of arousing her family's interest in the things she had learned. Very soon the members of her family were referring frequently to the charts and showing keener appreciation of their mother's efforts to serve essential foods in a variety of attractive forms and combinations. The results were highly successful.

The total service rendered to Missouri farm families in one or more phases of the nutrition problem in 1939 can never be definitely measured, yet the county reports show that 104,000 families cooperated with the Extension Service in the 81 counties doing systematic work on foods and nutrition.

A very important phase of the work in child feeding was the service rendered by extension workers and child development chairmen of homemakers' clubs in supplying advice and information to mothers of children under four years of age. Several thousand

mothers gave cod liver oil throughout the year to children under two and through the winter to older children showing symptoms of nutritional deficiency. Approximately 4,000 mothers gave orange juice regularly to all children under four years of age.

Home-packed lunches for school children were improved through work with some 7,000 families, while hot dishes were served to more than 11,300 children with their noonday lunches at school. Notable in this connection was the work of the women's extension club in the Roscoe Community of St. Clair county, where hot lunches were served to some 200 children in the consolidated high school and four outlying grade schools.



These and other pupils of the McDonald rural school near Linn enjoyed a hot dish daily with their noonday lunch last winter, as a result of cooperation between the teacher and the county home demonstration agent.

Women's clubs in Dunklin county raised $160 last fall for the purpose of cooperating with the W. P. A. in serving hot lunches in 40 rural schools. In the Washington-Iron district, hot lunches have been served during the last two winters to 965 children in 41 schools as a result of cooperation between teachers, the county health board, local home economics extension clubs, and the home demonstration agent.

Similar interest and cooperation, including that of the W. P. A., resulted in the serving of hot lunches last winter to more than 1,000 children in nine of the larger schools in Osage county.

Planning the Family Food Supply

For the ninth successive year much attention was given to budgeting or planning far in advance for adequate supplies of all the foods essential to family health and efficiency. As a result, 15,476 families reported they had reduced cash expenditures by producing a large part of their food. Some 6,500 families had budgeted their food expenditures for the year or had given more thought to nutritional values in their food purchases.

Storage of home grown foods in freezing and locker plants was widely discussed during the year, with a total of 870 farm families in 25 counties making use of this type of storage.

Demonstrations were used during the past year including 875 on the well planned food supply, 732 on food preservation budgets, 1,142 demonstrations on the uses of home canned products, 232 on the "Baby Shelf", and 892 demonstrations on the "Hospitality Shelf".

Canning done by individuals and groups under the guidance of extension workers and local leaders in 81 counties last year added more than $1,200,000 worth of food to the family supplies in 16,800 homes. More than half that number of families followed the recommendations for storage of home grown vegetables and fruits.

More than 4,400 women followed food preservation budgets—linking together their gardening, their daily meal planning, and their canning as equally essential in the provision of the family food supply and the conservation of cash income.

Working on a food preservation budget for the second consecutive year in 1939, Mrs. Alfred Nolte of Lincoln county canned 549 quarts of fruit and vegetables for a family of four. Her cash expense of canning was $56.55, while the value of the food thus preserved was $183.85.

Meal Planning and Preparation

Some 20,000 families enjoyed better balanced meals during the year as a result of extension work in meal planning. In most of these homes, a fruit or vegetable was served with every meal, with special attention to health and to new ways of serving these and other common foods to make them more attractive.

Emphasis was given to the family meat budget and to the importance of meat as the main dish—the feature around which a simple but satisfying meal can be planned. Much work was done also on the making of yeast bread from either hard or soft wheat flour, with comparisons between the cost of home-baked and that of baker's bread. Some 12,250 homemakers served dark or whole-grain bread at least once a day throughout the year.

Pleasing forms and time-saving methods of preparation were taught for many foods, including fresh raw fruits and vegetables,

potatoes, meats, fish, eggs, milk dishes, cheese, dried beans and peas, dried fruits, cereals, and breads. More than 12,000 families had whole or cracked grains in bread or as a cereal dish at least once a day. An equal number used more protective foods in the daily diet.

Many advantages have resulted from the use of better methods of food preparation. An instance is the report that 10,373 Missouri homemakers last year shortened the time they cooked vegetables—not only saving time but actually improving the palatability of the food. An equal number used lower temperatures for cooking all protein dishes.

The benefits gained by these newer methods are illustrated in the experience of Mrs. Irvin Huffman of Atchison county. For years she had been unable to eat bacon or scrambled eggs without discomfort, but after learning to drain off bacon fat and cook both the bacon and eggs at a lower temperature she was able to eat and enjoy them without any symptom of indigestion.

The problem of serving large groups of people at either club or community meetings also received attention, with 893 groups reporting they had reduced drudgery without sacrificing nutritional value by serving simple but well balanced meals on such occasions. Even greater savings of time and strength were made by many homemakers who adopted the buffet methods of serving big company dinners.

Approximately 16,000 homemakers reported they had cut down the family food costs and had added zest to their meals by growing and serving a greater variety of vegetables. An equal number reported good results from serving tomatoes or a fruit or vegetable —fresh or canned—at every meal, and potatoes every day.

The Nutritional Work of Earlier Years

Extension teaching in nutrition during the last five years has followed about the same pattern and has met with about the same acceptance among the rural homemakers of the State as in the year just ended; yet many changes have taken place since the first work was attempted in 1915.

The earliest work, from 1915 to 1918, was carried on with young people through the boys' and girls' clubs. Canning clubs were organized in 1915 with a total of 308 members enrolled and 52 completing the year's work. This emphasis on canning was continued through the three succeeding years, reaching a peak in the last year of the World War, when 1,846 boys and girls were enrolled in this work.

Work with adults on foods and nutrition was first definitely reported in 1918, when child feeding was the subject on which rural

women seemed most conscious of a need for guidance. During that and the following year an attempt was made to interest parents and teachers in improving school lunches, and a campaign for greater use of milk was carried on throughout the State. Pressure cookers were first recommended about this time.

The work of the nutrition specialist in 1919 was largely in the nature of propaganda; that is, an educational campaign to interest homemakers in the solution of problems of which they themselves were not yet acutely conscious. These efforts directed attention to such problems as balanced meals, the use of more leafy vegetables, storage of vegetables, and bread making.

In 1920, child feeding was again given much emphasis, but again most of this work was done through the schools. As a part of this campaign many hot lunch clubs were organized in the public schools. Nearly 600 boys and girls were enrolled that year, but only one-fourth of that number completed the work.

This type of teaching was continued, with the addition of a sub-project in food selection, during the early 20's. Child feeding contests in cooperation with rural schools were begun in 1923 and were continued successfully through 1927, when the occasion for awarding prizes was designated as "Child Health Day". In the earlier part of this period, the milk consumption in Andrew and Buchanan counties and in the city of St. Joseph was increased one-tenth by an educational campaign on the nutritional value of milk.

Local leaders in nutrition were given larger responsibilities in 1927, and as a consequence the effects of extension teaching were felt in many additional communities and homes. Leaders' duties in connection with demonstrations in food selection and preparation included the calling of meetings, the designation of places of meeting, the provision of supplies and utensils, and the making of reports. The special values of fruits and green vegetables were stressed.

Homemakers Show New Interest.—It was in 1928 that the nutrition specialist reported: "The former problem of arousing interest seems to have vanished; for now the chief problem is to meet the demand for nutrition work."

The planning of food preservation budgets came into use in 1929, and the following year county groups first worked toward definite county goals. Child feeding continued to be a subject on which information was eagerly accepted.

In 1931, the making of food preservation budgets and the planned use of canned foods were widely demonstrated.

By 1933, the food and nutrition program of extension work had become very nearly what it is today, including sub-projects on food selection and preparation, meal planning, and food budgets. Because of the difficult economic situation, much emphasis was placed on the

use of home butchered meats, gardening, canning, drying, brining, and home storage of foods produced on the farm. On these problems, the specialists in horticulture, animal husbandry, dairy husbandry, poultry husbandry, home management, and nutrition all cooperated.

This situation has continued from that time till the present, with steady increase of interest in the live-at-home idea since 1936 as a result of the Plant to Prosper Competition sponsored by the Memphis (Tenn.) Commercial-Appeal.

The improvements shown here, in the kitchen of Mrs. John Sites of Cooper county, were all paid for with the earnings of her turkey enterprise.

HOME MANAGEMENT

Extension work in home management aided rural homemakers in meeting household and family problems in 79 Missouri counties during the past year. Under the term home management are included those practices that aid in making the farm home comfortable, convenient, healthful, artistically satisfying, and economically sound; also those that lead to a well balanced use of the time and physical resources of the family.

By developing skill in the use of available materials and by teaching more effective use of both time and money, it has been possible to help many thousands of farm families to add greatly to the comfort, convenience and beauty of their homes, even though incomes are comparatively low.

By leading discussion groups and training leaders in the use of outlook and other economic information, it has been possible to aid many families in analyzing farm and home business and in family budget making.

Much larger numbers are helped to conserve available cash through instruction and encouragement in supplementary home arts and industries.

In all this work the cooperation of the women's home economics extension clubs has been of the greatest importance. From their membership come willing and intelligent leaders, as well as large numbers of eager participants, in all these movements for better homes and a higher standard of living.

Community and county leaders in problem and planning conferences all over Missouri last year listed home management as a major state problem. In county plans of extension work for 1940 no less than 103 counties requested systematic work on this subject.

Home Beautification

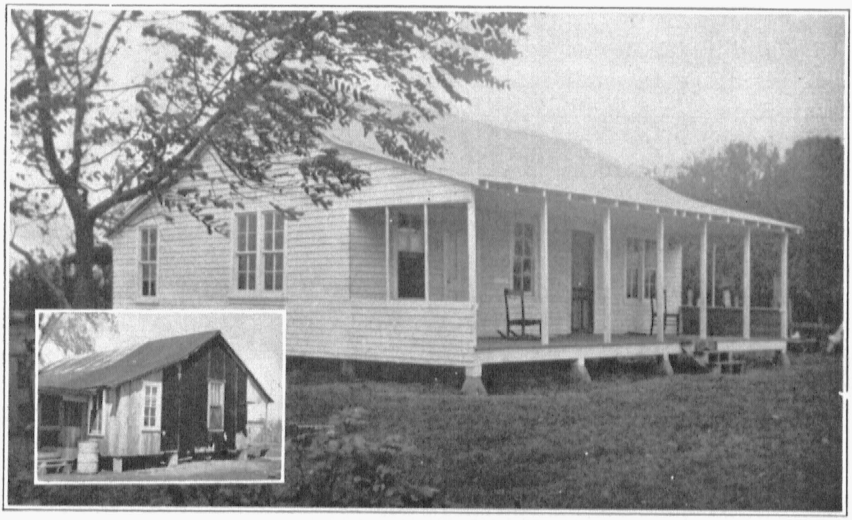
So popular was home beautification in 79 Missouri counties last year that marked improvement was made in the yards and other exterior features of more than 20,300 farm homes. Under the urge of extension campaigns and women's club committees, the grounds surrounding schools, churches, and community centers were improved in more than 2,000 communities.

Farm home exteriors were made more attractive by rearrangement of service buildings and movable equipment; the regrading and reseeding of lawns; the improvement of walks and drives; and by the construction of 459 rock gardens, 343 outdoor living rooms, and 336 outdoor fireplaces.

Trees and shrubs, annual and perennial flower gardens, and border plantings—all were widely used by the families and committees that engaged in the work of beautification. The outlook from thousands of

farm windows became more beautiful and satisfying as the result of these campaigns; yet the cost was small, due to the widespread practice of exchanging bulbs, seeds, and cuttings and to the use of native plants.

Among the farm homes showing the greatest improvement was that of Mr. and Mrs. John Masters of Dunklin county, state winners in the Plant to Prosper Competition. Using only $30 worth of hired labor, Mr. Masters built a new five-room house complete with bathroom, built-in closets and cabinets, running water, electricity, handy kitchen, and dining nook. Total cash expenditures were slightly less than $800. The yard was graded and reseeded, and perennials were used effectively for foundation plantings.



With modest expenditures for new materials, Mr. and Mrs. John Haubold in New Madrid county made great improvement in both the appearance and utility of their home. The house as it originally appeared is shown in the inset.

For three years a yard improvement contest has been held annually in Boone county under the sponsorship of the Extension Service and the Columbia Kiwanis Club, with the result that at least 42 rural families are carrying out long-time plans of yard and home improvement.

Home economics extension clubs in Carroll county reported 214 families improving their lawns and planting shrubs and flowers according to definite plans.

Native trees and shrubs used for foundation plantings, screening, and border plantings around the farm home of Mr. and Mrs. Elmore Spicer attracted wide interest in Johnson county. Mrs. Spicer has made very effective use of redbud, sumac, elderberry, wild gooseberry, and buckbrush.

Home Furnishings

Making home interiors more livable and attractive added even more to the happiness of Missouri farm families in the past year than did the work on yard improvement. Improvements in bedrooms, living rooms, dining rooms, and kitchens added to the comfort and satisfaction of every member of the family every day regardless of season or other outward circumstance. Better bedding and more adequate and convenient storage facilities are also given attention in connection with the bedroom improvement.

More than 13,000 rooms were improved in community campaigns, largely under the joint leadership of home demonstration agents and home economics extension clubs, during the past year. Approximately 1,000 of these homes were so well improved that they were used as demonstrations and were visited by large numbers of women taking part in extension tours.

Some 3,300 families improved bedroom storage by adding closets or improving old storage space. Both the quality and the quantity of bedding were improved in some 3,000 homes by making 272 feather mattresses, 826 cotton mattresses, and 2,243 wool comforts. (See page 50 for pictures and description of typical cotton mattress making demonstration.)

Improvements made in living room furnishings during the year included the refinishing of 11,159 pieces of furniture and the upholstering of 3,234 pieces. Newly made were 8,360 rugs, 4,184 slip covers, and almost 16,000 curtains.

The most popular demonstrations were those which stressed the use of home materials and the development of new skills. In addition to improvements made in individual homes, many club rooms and community houses were built or improved.

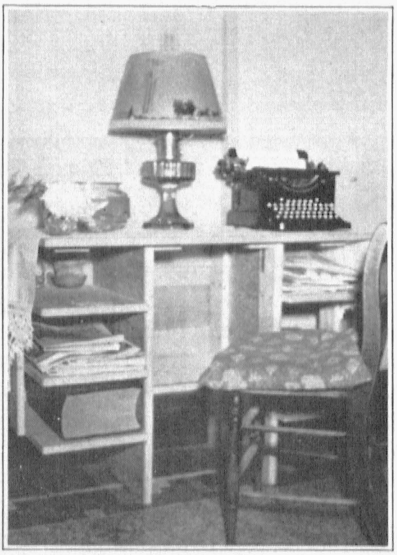
Kitchen Improvement

More than 4,700 families followed extension recommendations for the improvement of kitchens during the year, while almost the same number made better selection and care of kitchen equipment. Kitchen storage facilities were improved in 3,800 homes. Rearrangement of kitchen equipment in conveniently related work units saved a surprisingly large number of steps. Adjustment of working surfaces to suit the height of the homemaker saved both time and energy.

At each of the demonstration homes visited by the annual kitchen improvement tour in Cass county last summer, the hostess explained the changes made in her kitchen and the benefits experienced as a result. More than 400 farm women attended the tour.

A kitchen improvement contest was sponsored by business and professional men at Poplar Bluff with the result that 31 of the 60

entrants carried out kitchen improvement plans and turned in complete records. The winner, Mrs. Charles Penny, completely rearranged her kitchen and greatly improved its appearance at a cash outlay of only $12.50 for paint, wallpaper, and other materials.



(Above) One of three bedroom storage spaces built last year in the home of Mrs. L. A. Rollins of Laclede county. (At right) The desk which Mrs. Rollins built as an aid to her study of household accounts and budgeting.

Clever strategy was used in Cape Girardeau county by Mrs. Fred McDowell, who transferred her kitchen equipment to a smaller room having better light and more pleasing outlook. With carefully planned rearrangement of equipment in this smaller room, countless steps were saved.

In Laclede county a dozen home economics extension clubs cooperated with the home demonstration agent in the improvement of 172 kitchens.

Planning the arrangement of home furnishings and equipment in order to make the best possible use of electricity was a highly important subject among the farm homemakers in 50 counties where

current is being supplied to rural customers on R. E. A. and other transmission lines.

In preparing to use electricity from a new R. E. A. line in New Madrid county, Mrs. John Weston of Gideon spent $200 improving her kitchen. This covered wiring, installation of sink and drain, built-in cabinets, and other improvements. "I fixed up the kitchen before I did the rest of the house because I had spent most of my time there," said Mrs. Weston, "but now my work goes much faster."

Home Accounts and Business Methods

Complete household accounts and a record of family income, summarized in monthly business statements, were kept throughout the year by 108 farm women who worked with the Extension Service on business methods. More than 2,500 families used timely outlook and other economic information in making needed adjustments of income and expense. Some 864 families budgeted expenditures according to recommended plans.

Much impetus was given to family planning and the live-at-home idea by the Plant to Prosper Competition conducted by the Extension Service in cooperation with the Memphis (Tenn.) Commercial-Appeal. Some 266 Missouri families in 27 counties took part in this contest. Among the state winners were Mr. and Mrs. John Masters of Dunklin county, whose live-at-home record with a family of three persons showed cash expenditures of only $25.50 for food during the year.

Among the live-at-home records in Butler county, the best was that of Mr. and Mrs. Paul Black of Fagus. Producing, preserving, and storing $513 worth of food on the farm, they held their grocery bill for three persons to an average of only $4 a month.

Earlier Work on Home Management

The first work done by the Extension Service on home management consisted of a series of demonstrations in 1916, showing how to use the pressure cooker and other household conveniences. There is no record of additional work until 1918, when one specialist gave several demonstrations on home decoration.

In 1919 outstanding work was done in Jackson county, where an extension campaign to save the homemaker's strength by the use of mechanical aids resulted in the purchase of 73 washing machines, the rearrangement of 28 kitchens, and the installation of 68 kitchen sinks and 9 complete water systems. Excellent results were reported from similar work in St. Francois county.

During all this time home management work was a minor phase of the food and nutrition project and so continued until 1923, when the employment of additional personnel made possible the organization of definite programs of work in kitchen improvement, home beautification, and home furnishings. Work was continued successfully under

this general plan until 1935. The teaching methods used during these years included demonstrations, tours, contests, exhibits, training schools, illustrated lectures, flower shows, and the organization of bulb, seed and shrub exchanges.

Work in home beautification and house furnishing was given in 20 counties in 1927 with the result that 5,776 women learned new skills in home crafts and made definite improvements in their homes. During the same year, in 33 counties, there were 576 demonstration kitchens showing the methods and results of kitchen improvement.

By the end of the first ten years of home management work, nearly 6,000 farm families had adopted the practice of using economic information in planning the family food supplies, budgeting the income, and keeping family accounts. In the ten years ending in 1933, home beautification teaching and demonstrations had resulted in changes in 37,000 homes where improvement had been made in the grounds, the interiors, or both. By reconditioning more than 30,000 pieces of furniture, the homemakers working with the Extension Service had saved $46,000.

In the more recent ten-year period ending in 1939, the number of farm families sharing the benefits of home management work from year to year has shown steady growth. The number improving their yards grew from less than 4,000 to more than 13,000, the number improving their kitchens grew from 211 to 4,744, and the number of families improving their household business methods increased from 21 in 1930 to 1,800 in 1939.

ANIMAL HUSBANDRY

No department of the farmer's business has required more radical changes in practice during the last twenty-five years than the management of his livestock enterprises.

Revolutionary developments in the transportation, refrigeration, and merchandising of meat and many newer foods have led to equally radical changes in consumer demands. Mechanical power has reduced the number of work animals maintained on farms, besides taking over almost entirely the hauling of men and materials on streets and highways.

Depletion of soil fertility has turned great acreages of former plow land back into grazing land again. Labor difficulties have added to the disadvantages of intertilled crops and have made more desirable the harvesting of crops through pasturage.

Long occupation of farmsteads and feedlots has increased the prevalence of parasites that prey upon the livestock and rob the producer of his expected gains.

Through this quarter century of unprecedented change, the Extension Service has been able to guide the producer safely in making the needed adjustments. By the work of the experiment stations, the farmer has been saved the costly process of trial and error. Methods found safe and effective have been demonstrated by the Extension Service in every county in Missouri. By this type of schooling in his own community, the farmer has been shown how to get the most from his feeds by proper balance, how to destroy the parasites, how to prevent disease, and how to get his product on the market in the most readily marketable form and at the most opportune time.

And running consistently through the entire history of extension work in Missouri, there has been the annual, recurrent, unending campaign for better sires, better breeding stock—for the type of animal that has inherent capacity for the economical conversion of farm grown feeds into meat, or wool, or power.

More Efficient Use of Beef Cattle

Farmers cooperating with the Extension Service last year completed 103 beef cow herd demonstrations involving 3,049 cows that were maintained largely on home grown roughages and pastures, in keeping with the shift toward pasture farming as a means of economy in beef production as well as a soil conservation measure. These herds produced a 91 per cent calf crop and gave highly satisfactory returns. The labor required was evenly distributed, only small amounts of grain were used, and the objectives of soil improvement were well served.

There were 166 entries in the 1939 beef production contest for which prizes amounting to $3,000 were contributed by the Kansas City and St. Louis Chambers of Commerce. All of the prize money was applied to the purchase of good bulls.

The emphasis of the beef cattle work of the Extension Service in recent years has been placed on handling the cow herd as a means of utilizing sod crops, grain pastures, and other roughages with a minimum outlay for labor, a minimum use of corn, and a minimum exposure of the land to soil erosion.

The advantages of this system are well demonstrated in a contrast between the old and the new systems on two Boone county farms. One feeder still makes a practice of feeding big steers, buying both the corn and the cattle and feeding them out on bluegrass pasture. This past year he had a lot of prime fat steers which weighed about 1,500 pounds each and sold in three different shipments at $9.25 to $10.15 per cwt.

In contrast is the record of Edwin Nichols of Ashland, whose plan is typical of the methods recommended by the Extension Service. Mr. Nichols sold his late fall, winter, and early spring calves at less than one year of age, weighing around 650 to 750 pounds each and bringing $10.65 a cwt. These cattle cost a lot less to produce and fatten than did the older cattle on the other farm, and a very large proportion of their weight was produced as a market for grass and roughage which are the crops this county can produce much more profitably than corn.

Pasture improvement and the shift in farming systems from inter-tilled crops to sod crops and small grains to be utilized by grazing have been responsible for a definite increase in the number of beef cow herds maintained on Missouri farms in recent years. The number of cattle on Missouri farms at the end of the year 1939, according to the statistician of the Federal Bureau of Agricultural Economics for Missouri, was one-tenth greater than one year ago and the largest since a comparable date in 1933. The one-year increase in cattle numbers noted for 1939 was 255,000 head, approximately one-half of this number being cows and heifers over one year old.

Beef production has changed greatly since the earlier years of extension work. Some 10 or 15 years ago it was common practice to grain-feed calves while nursing; yet more recent work has shown the advisability of making larger use of pasture and less of fattening feeds such as corn.

Through these years the feeding demonstrations of the Extension Service have supplied timely guidance to farmers in adjusting their beef cattle operations to changing conditions. These demonstrations have been instrumental in bringing about a widespread increase in the number of beef cow herds in the State, as well as the

general change from feeding 2-year-old and 3-year-old steers to the feeding of calves and light yearlings.

Steer feeding records secured in Clay county in 1932 showed that calves would put on 100 pounds of gain for about 10 bushels of grain, light yearlings for 11 bushels, fleshy yearlings for about 14 bushels, and the 2- and 3-year-old steers for about 17 bushels of grain.

Wintered on sorgo silage, straw, and cottonseed meal, then fed out during the summer on bluegrass pasture, 34 Hereford steers on the Perry Hodges farm in Cass county averaged 1.82 pounds of gain a day from January 1 to August 21.

More Efficient Pork Production

Hog feeding demonstrations, varying in number from 16 to 94 a year, have been used in all parts of the State during the last 15 years to show the possibilities of reducing costs of pork production by following the Missouri plan of growing thrifty pigs.

There were 38 such demonstrations in 1939, with completed records showing that spring pigs were brought to market size and condition at six months of age with an average feed consumption of 5.34 bushels of corn and 20.5 pounds of tankage for each hundred pounds of gain. Fall pigs gained 100 pounds on 6.57 bushels of corn and 31.6 pounds of tankage.

Four essential steps are involved in the thrifty pig plan recommended by the Extension Service during the last 15 years, and these steps have characterized the practice of Missouri's most successful hog producers throughout the same period. They are: Clean sow, clean farrowing quarters, clean pasture (preferably legume), and pushing the pigs with a balanced ration.

The consistent efficiency of these practices in producing pork at a minimum cost through good times and hard times is shown in the following tables:

TABLE 2.—SPRING PIG FEEDING DEMONSTRATIONS (ON PASTURE).

Years	No. of Demonstrations	No. of Hogs	Bu. of corn per 100 lbs. gain	Lbs. tankage per 100 lbs. gain
1925	32	2,166	6.09	17.9
1926	50	2,909	6.08	20.7
1927	37	2,685	6.15	18.8
1928	42	3,006	6.10	20.3
1929	47	3,032	5.93	21.5
1930	67	5,087	5.95	23.6
1931	69	5,429	5.94	22.6
1932	41	2,697	5.85	20.1
1938	16	982	6.26*	22.6
1939	28	1,239	5.34	20.5

*The larger amount of corn required to produce 100 pounds gain in 1938 was due to three lots of unthrifty pigs. Their average requirement was 9.15 bushels of corn, and with these lots removed the average amount required by the other thirteen lots was 5.94 bushels.

TABLE 3.—FALL PIG FEEDING DEMONSTRATIONS.

Years	No. of Demonstrations	No. of Hogs	Bu. of corn per 100 lbs. gain	Lbs. tankage per 100 lbs. gain
1928	13	732	6.87	29.9
1929	14	788	6.51	33.6
1930	12	643	7.36	30.0
1931	25	1,578	6.51	31.3
1932	11	704	6.44	31.5
1939	10	478	6.57	34.6

Included among the 28 spring feeding demonstrations in 1939 were the records completed by entrants in the state pork production contest carried on through the cooperation of the chambers of commerce in St. Louis and Kansas City. The contest reached a total of 56 hog producers in 25 counties. These farmers had a total of 329 sows and raised an average of 8¼ pigs per sow.

Missouri's earliest use of the commercially sponsored pork production contest as an aid to extension teaching took place in 1927. The medal winners that year succeeded in raising 8 2/3 pigs to the litter and made them average 184 pounds each at six months. The popularity of the contest grew rapidly during the next three years, with 131,000 pigs raised in conformity to the specified sanitation and feeding methods in 1930. By that year the contest winners were making their pigs weigh 242 pounds at six months.

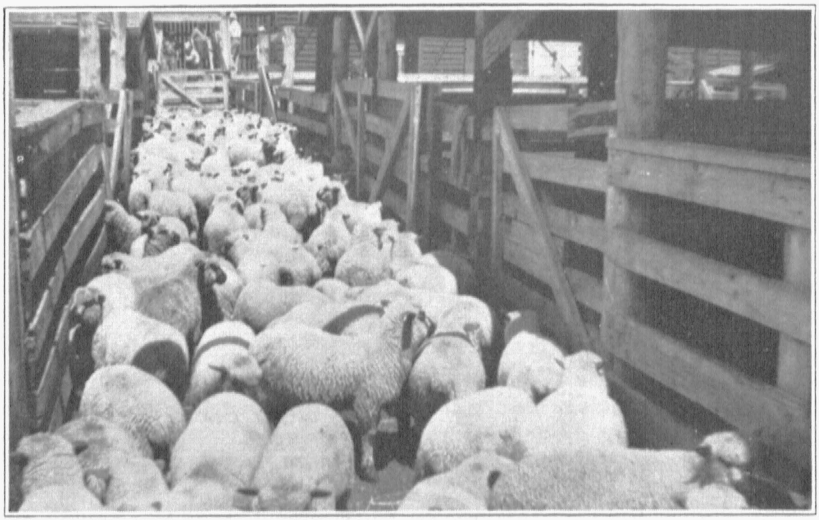
Improving the Sheep Enterprise

Sheep and wool growers in 108 Missouri counties worked with the Extension Service this past year in the adoption and demonstration of better practices. Sheep numbers on Missouri farms, 1,500,000 stock sheep and 170,000 sheep on feed, were the largest since 1870, and 9 per cent larger than one year ago.

Control of parasites received major attention by Missouri sheep growers in 1939, with 13,767 flock owners treating their sheep for

stomach worms and approximately 6,000 dipping their flocks for control of external parasites. The practice followed for the control of stomach worms involved drenching every 28 days with a 1½ per cent copper sulphate solution. The total number of sheep dipped was 201,307.

The use of registered mutton type rams was established on a steadily widening scale, with detailed records showing the placement of 3,948 such rams during the year. To assist farmers in obtaining better rams at fair prices, 15 cooperative sales of high type registered rams were organized at convenient centers throughout the State. The average price paid for 614 rams distributed by this method was $30.77 a head.



Two carloads of quality lambs in Laclede county, where 1,040 spring lambs were sold on a graded basis.

Other phases of sheep and wool improvement on which extension work was carried on during the past year were breeding for early lambs, winter care of ewes, docking and castrating, grain feeding early lambs, marketing lambs by grade, marketing lambs before July 1, and correct methods of shearing and handling wool.

The Missouri plan of sheep improvement was first organized as a part of the regular extension program of animal husbandry work for the State in 1925. It was designed to overcome the discrimination then prevailing against Missouri lambs at the terminal markets. Missouri then had the reputation of sending to market an inferior type of lambs, which lacked finish, and were neither docked nor castrated. It was not unusual for one-third to one-half of a shipment of Missouri lambs to be sold as culls.

The plan set up to remedy this situation was based on six essential steps for improvement, including better breeding stock, better winter care of the ewe flock, control of parasites, docking and castrating, grain feeding the lambs, and grading before shipment to market. The extent to which lamb production practices were changed throughout the State in the years from 1926 to 1937, inclusive, is revealed in the following table.

TABLE 4.—THE SPREAD OF LAMB IMPROVEMENT IN MISSOURI; 1926 TO 1937.

Year	Purebred Rams placed	Sheep treated for stomach worms	Lambs docked and castrated	Lambs sold on a graded basis
1926	158	15,434	8,107	460
1927	304	28,500	21,380	1,454
1928	527	68,255	59,880	7,880
1929	673	70,237	132,779	12,155
1930	732	159,023	278,311	24,649
1931	1,250	176,660	324,119	24,413
1932	1,370	119,835	369,590	27,306
1933	1,028	121,310	410,380	18,604
1934	1,394	186,960	552,570	11,154
1935	2,047	408,390	796,680	11,557
1936	2,535	482,600	1,100,000	24,425
1937	2,981	482,380	.....	26,662

A practical test of the effectiveness of this work in removing the discrimination against Missouri lambs was met successfully by the sheep growers of the State in the National Lamb Improvement Contest. For three successive years, 1929, 1930, and 1931, Missouri ranked first among the nine states entering the contest. Of the ten county prizes offered each year, Missouri counties won four the first year, five the second, and seven the third. The contest was then discontinued, but Missouri sheep growers had learned the advantage of producing high quality early lambs, docked and castrated, finished and graded for the early market.

Improving the Farm Work Stock

The major lines of extension work for the improvement of horses and mules on Missouri farms in recent years have been the encouragement of farmers to raise more and better colts, the demonstration of big-team hitches for more efficient use of horse power, better care of brood mares and colts, special meetings for breeders, and the control of diseases and parasites. Results in disease and parasite control are given in another section of this report, under the heading, "Animal Disease Control."

The Missouri Colt Production Contest was carried on in 1939 for the third successive year, with 61 entries. Of this number, 22 colts made the required gain of 600 pounds in 12 months. The feed consumed to produce 100 pounds of gain was 1.41 bushels of corn, 7.11 bushels of oats, 35 pounds of legume hay, 140 pounds of non-legume hay, 30 pounds of bran, and 2/3 of a pound of protein supplement, plus pasture.

In the three years that records have been kept in the colt production contest, the average daily gain of draft colts handled according

to the recommendations of the Extension Service was 1.92 pounds the first year and 1.88 pounds for the second and third years. The amount of corn and oats consumed for each 100 pounds of gain was almost exactly the same for all three years. The kinds and amounts of roughage fed varied with the year and the locality.

The total number of horse and mule colts raised in Missouri in 1939 was 58,000, or 5,000 more than in the preceding year. On the other hand, the total number of work animals of all ages did not increase during the year, remaining still the lowest in many years. The number of horses, 524,000, was the lowest since 1870; the number of mules, 219,000, was the lowest since 1881.

In the first ten years of extension work in Missouri, the farmers asked for little or no help in connection with their horses and mules. Among the sub-projects under animal husbandry in 1923 no mention was made of the farmer's work stock. County agents and state specialists were fully occupied in the task of working out more economical methods of producing beef, pork, mutton, and wool; in protecting classes of livestock that were much more subject to contagious diseases than horses and mules; and in adjusting livestock operations to meet the conditions of a less productive soil and a less remunerative market.

Consistently through all those years, however, the extension workers pointed out the value of brood mares as a profitable source of power and replacement stock. They emphasized the importance of good care, the need of economy of feed in developing colts to workable or marketable age, the value of good breeding stock, and later the advantages to be gained through the use of big-team hitches.

Results in the Counties; 1939

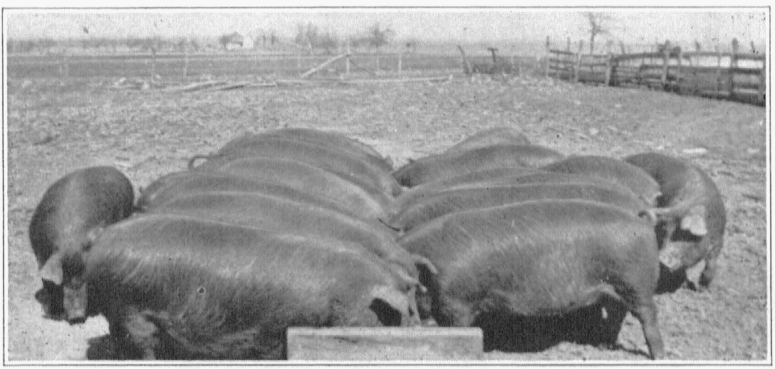
The highest average weight record on 180-day-old pigs in the state pork production contest this year was made in Johnson county by J. W. Mutti, who raised from four sows 37 pigs that averaged 267.9 pounds each, or 2,478 pounds to the litter. The ration fed these pigs contained corn, wheat, soybean meal, tankage, skimmilk, and clover pasture.

The record made in the pork production contest by J. H. Mudd & Son of Montgomery county is especially interesting because of its similarity to the record made on the same farm three years ago. This year, from 9 sows, the Mudds raised 76 pigs that averaged 253 pounds each at 180 days, having consumed 5.77 bushels of corn, 5.4 pounds of oats, 4 pounds of bran, and 29.3 pounds of protein supplement for every 100 pounds of gain. The consistency with which the thrifty pig plan is followed on the Mudd farm and the uniformity of results obtained are shown by the record of three years ago, when 82 pigs were raised from 9 sows and brought to an average weight of 241 pounds at six months, with a feed consumption of 5.78 bushels of corn and 27.3 pounds of tankage for every 100 pounds of gain.

Beef herd management demonstrations were completed in Harrison county on the farms of Archie Smith and Ora Elliott, who produced calves with an average cost of $12.37 and a sale value of $34.30 a head, demonstrating that beef cow herds properly managed give a good return for pasture and roughage crops, besides making a contribution toward soil conservation.

Records kept on two flocks of ewes by J. W. Dodson of Schuyler county demonstrated the advantage of producing lambs for the early market. Ewes lambing in January and February returned $5.80 per head above feed cost as compared to $2.81 per head for the ewes lambing in April and May. The early lambs were creep-fed and marketed in June, while the late lambs were handled as feeder lambs and sold in the fall.

The Missouri Valley Colt Show, held at Jefferson City in 1939 for its fourth consecutive year, is really making the public "horse power conscious" in Cole and adjoining counties, just as it was expected to do. Last year 128 colts were shown. Better condition and breeding were apparent, as well as an increase in entries and attendance as compared to former shows.



These thrifty, worm-free pigs on the Dewey M. Knier farm in Dade county averaged 1.6 pounds a day for 102 days, making 100 pounds of gain for every 6.2 bushels of corn and 26 pounds of protein mixture.

ANIMAL DISEASE CONTROL

From the earliest days of the Agricultural Extension Service to the present time, the dissemination of knowledge on the control of livestock diseases has been a highly important link between the University and the farmers of the State. With millions of dollars worth of property at stake when contagious diseases threatened herds or flocks, science repeatedly proved itself an indispensable servant of agriculture.

Even prior to the passage of the Smith-Lever Act in 1914, the College of Agriculture rendered a widespread service in demonstrating the use of anti-hog-cholera serum.

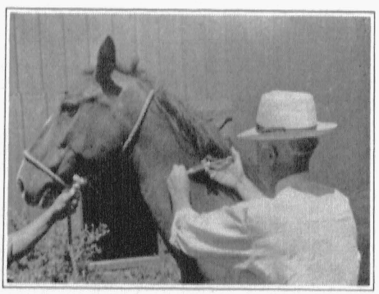
From time to time new diseases have appeared or old ones have suddenly become a widespread threat to the animal wealth of the State, thus requiring constant vigilance on the part of farmers and scientists alike. Even in those years when livestock appeared comparatively safe from virulent contagions, there remained the continuous need of information on sanitation and the control of internal and external parasites.

In meeting the needs of Missouri livestock men during the past year, extension work in animal disease control has been directed chiefly toward the prevention of encephalomyelitis in horses, the elimination of Bang's disease from the cattle herds of the State, ridding the poultry flocks from pullorum disease, combatting the internal and external parasites of all classes of livestock, and general sanitation practices.

Sleeping Sickness in Horses

To prevent a recurrence of encephalomyelitis among the horses of the State in 1939, a total of 193,547 animals were vaccinated under the leadership of the Extension Service. The chick embryo vaccine was used and was apparently almost 100 per cent effective. Only 2,409 cases of the disease were reported in the State, as compared to 23,514 cases the preceding year.

The outbreak of the preceding year had been widespread and virulent, invading 111 counties and causing the death of 4,456 horses. So suddenly had the outbreak appeared that control measures could not prevent widespread losses in 1938, but fortunately the measures that were applied fully demonstrated the effectivenses of the chick embryo vaccine. The experience also prepared the farmers and their leaders to apply the preventive measures in ample time the following year with the results stated in the foregoing paragraph.



Local veterinarian administering chick embryo vaccine for prevention of sleeping sickness; Christian county.

Eliminating Bang's Disease

The work of blood-testing the cattle herds of the State for Bang's disease was continued during 1939, with a total of 215,935 samples taken and tested. As a result, 6,766 reactors were found, branded, and shipped to market. This work was done mainly under the supervision of the Bureau of Animal Industry of the U. S. Department of Agriculture.

Outstanding in the year's work on Bang's disease was the cooperative attitude shown by the owners of the herds tested. In the absence of available state appropriations for indemnity payments, the federal funds for this cooperative work were also withheld after May 1, 1939; yet cattle owners signed waiver of indemnity agreements, permitting the work to go on with only a slight decrease in the number of blood samples taken each month.

The waiver of indemnity, on the basis of which the work has continued, states that the Federal Government will not pay any indemnity on the cattle unless the State also appropriates funds to pay indemnity, and that without such state appropriation the Federal Government's obligation will be null and void two years from the date on which the condemned cattle were appraised.

The Extension Service has continued the educational campaign for blood testing all herds for the diagnosis of diseased animals and the elimination of the reactors. County extension agents have continued to accept the applications of herd owners desiring to have their herds blood-tested.

Horse Parasite Control

Nine years of work on the control of bots and other internal parasites of horses were climaxed in 1939 by a new high record in the number of farmers having their work stock treated. In 113 counties, 25,344 farmers had 104,502 animals treated, as compared to the 2,000 treated at the beginning of this work in 1931.

Results have been highly profitable. Colts 1½ to 2 years of age have gained as much as 3½ to 4 pounds a day for a period of 40 to 60 days after treatment. Mature animals show improvement of condition on less feed during the winter months, are able to do heavy spring work without loss of condition, and continue able to do hard work every day during the heat of the summer.

Parasite Control in Sheep

Reports from 108 counties in 1939 showed that 13,767 flock owners were following the practice of treating their sheep every 28 days during the grazing season for the control of internal parasites. The former recommendation for the use of 1 per cent bluestone or copper sulphate solution was changed to 1½ per cent, because experimental work at the Missouri Station had shown the stronger

solution to be much more efficient in removing stomach worms from the fourth stomach of the sheep.

Approximately 6,000 farmers dipped 201,307 sheep for the control of ticks and lice. The benefits of this practice are readily apparent in larger quantity and better grade of wool, earlier fattening of lambs, saving of feed, and less scouring during the summer.

Protecting the Hog Crop

Better sanitation practices in hog production have been widely adopted throughout the State in the last ten years or more, but the extension agents and their cooperators continue the educational work on this project, conducting 69 complete sanitation demonstrations in 36 counties last year.

Control of external parasites was widely demonstrated, with 34,585 hogs dipped or oiled for lice, and dipped or hand-treated for mange.

Other Control Measures

Vaccination of calves for the prevention of blackleg was practiced by 17,978 Missouri farmers in 104 counties. In localities where stomach worms in cattle were reported, control measures were demonstrated and 335 owners had their herds treated.

In poultry sanitation and disease control, 11,164 poultry producers cooperated with the Extension Service in the use of better methods in raising 2,000,000 chicks. More than 1,000,000 pullets were raised on uncontaminated ground.

Symptoms of vitamin A deficiency, found in many herds of cattle and flocks of sheep during the months of January and February, were corrected by improving the rations with alfalfa leaf meal. Both cattle and sheep were suffering from corneal ulcers, which had frequently been mistaken for pink eye. In one instance a flock of 130 ewes had been vaccinated and treated for pink eye without beneficial results; yet the feeding of one-tenth of a pound of alfalfa leaf meal per head per day cleared up the trouble in 10 days.

Screw worm infestations, which have been affecting livestock in Missouri for the last five or six years, broke out with new virulence in 1939. In all, 21,299 cases were reported from 48 counties, the largest outbreak in any one region being reported from Crawford county, where some 8,000 cases occurred.

Results in the Counties

The Nubbin Hill community in Christian county held their sheep dipping on the 4th of July. Every farmer in the community helped, and 264 sheep were dipped in the community vat. This is one of 21 vats in use in the county. These vats have added greatly to the wool production. The dipping cost on the average is about 3 cents a head.

Our county was re-accredited this year as free from bovine tuberculosis. We also had 2,600 herds tested for Bang's disease.—Greene county.

This year, 89 per cent of Knox county's 6,200 horses and mules were vaccinated and only two cases of sleeping sickness occurred. In contrast we remember 1938, when 70 horses worth $6,000 died from this disease.

Early in the year the extension veterinarian was called to the farm of E. E. Benson near Meadville, where 40 head of western calves were suffering from an eye ailment. The diagnosis was "lack of vitamin A." Green-cured soybean hay was added to the ration. The eyes cleared within two weeks.

Three demonstrations of hog cholera control were given in Madison county and the extension office had 91 calls on the subject. As a result 50,000 cubic centimeters of serum were purchased cooperatively and used to protect the herds in threatened areas.

The total benefit gained through the sheep dipping program of 1939 in Schuyler county is conservatively estimated at $5,000. In dipping 20,000 head of sheep, the sheep growers of this county used 30 stationary vats which are operated on a community basis. The average cost of dipping is 2 cents a head.

AGRICULTURAL ENGINEERING

The farm people of Missouri made greater use of the modern methods in mechanics and engineering in 1939 than ever before, their interest centering chiefly on rural electrification, erosion control, and farm ponds. On these and related problems the Extension Service during the year helped farm people make savings and increased earnings totalling more than two million dollars.

Progress in rural electrification during the year was 50 per cent greater than that of the year immediately preceding, while the construction of complete terracing systems and properly constructed and fenced farm ponds also greatly exceeded the record of any previous year.

Through the entire history of the Agricultural Extension Service there has been widespread interest in farm engineering problems among Missouri farm people. Even in 1913, before cooperative extension work was organized, farm people were showing keen interest in the mechanization of the farm and household. The age of mechanical power was at hand, world markets still were absorbing the products of American agriculture, and the people were eager to increase the efficiency and lessen the drudgery of farm work.

This interest was first reflected in 1912 in the appointment of a full-time instructor in farm machinery and buildings as a member of the resident staff of the College of Agriculture. Popular interest in these subjects has grown throughout the entire quarter century from that day to the present, with the results briefly recorded on the following pages.

Soil Erosion Control

Engineering phases of erosion control put into effect by farmers cooperating with the Extension Service during the past year gave increased earnings valued by the farmers themselves at nearly one-half million dollars.

These earnings resulted from the improvement of 25,736 acres by terraces with properly constructed outlets and with all cropping on the contour, from the contouring of 150,099 additional acres without terraces, and from gully control on 122,209 acres.

Better crop yields and savings in production costs were estimated as follows: on terraced and contoured land, $123,035; on other land cropped on the contour, $230,105; and on fields where gullies were brought under control, $94,450. The total of $447,590 does not take into account the long-time effects in soil saving that will continue through the years if these structures are properly maintained.

Terracing.—Only high-type terrace systems with proper outlets and contour cultivation are included in the report for the last year.

The totals under this limitation are somewhat lower than those of the preceding year, yet they show a big increase in the number of complete terracing systems.

The Extension Service emphatically discourages the building of terraces without adequate outlets and proper farming methods. Unless they are correctly made and maintained, terraces are neither profitable to the owner nor helpful in extension teaching. On the other hand, a good terrace system continues year after year to hold soil and moisture and to give valuable service as a result demonstration.

In Cooper county from 1928 to 1931, under county agent guidance, 60 farmers built terraces of good design. As a result of this successful experience, at least 20 additional farmers built terraces in the two following years even though the county did not have an agent during the latter period.

Outstanding progress was made during the year in the completion of terracing systems by the addition of the necessary outlets and waterways. County reports show that 650 terrace outlets were constructed and 1,412 grassed waterways were established.

According to Adolph Boehmer of Osage county, who has had terraces on his farm for more than three years, the organic matter and the fertility of the soil have begun to increase, the soil has changed from a light to a darker color, and the yield in field crops has increased as much as 10 per cent.

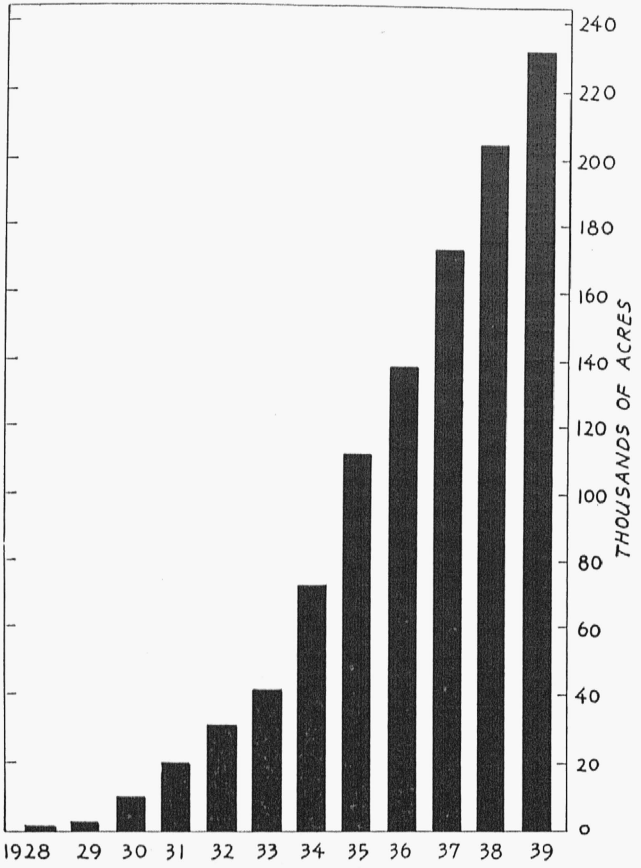
Terracing, as an extension project in Missouri was first undertaken in 1917, and the work was reported as follows: "A few fields were sized up, terraces laid out, and meetings held; but attendance was unusually small".

The first annual report of extension work in this field stated: "The terraces make an ideal demonstration . . . Soil erosion is such an enormous problem in Missouri that men are greatly interested in any method of stopping it."

After the World War, erosion control was again made a part of the extension program in 1919, yet terracing made no considerable progress until 1928, when slightly more than 1,000 acres were terraced.

Standardizing Custom Construction.—The first terracing and conservation contractors' association in the United States was organized in Missouri on October 27, 1938, with four active members, and has grown in a little more than a year to a membership of 13. This small group of contractors built about one-fourth of all the terraces and outlets that were constructed in the State during the past year. This organization was the outcome of leader training given by the Extension Service in former years and of the increasing demand for custom built terraces that will meet the specifications of the college engineers. Contractors are admitted to the association by

vote of the members, only after they are approved by an investigating committee, which includes the county agent of the applicant's home county.



Progress in terracing in Missouri, 1928 to 1939, as indicated by number of acres protected, in accumulated totals, year by year. Records for 1938 and 1939 include only terracing systems supplemented by satisfactory outlets and farmed on the contour.

Gully Control.—While 5,467 farmers last year used some form of gully control to protect more than 122,000 acres of farm land, these measures have not been advocated as a substitute for good land use practices. Too generally farmers have thought of gullies as the points at which their chief soil losses are taking place, overlooking the more important damage to the entire field by sheet erosion. Moreover, attempts to stop erosion by merely building structures in the main drainage channels are but partially effective and very costly.

For these reasons, gully control has been advised by the Extension Service only as a part of a larger plan of soil conservation, which includes terraces and proper outlets together with contour farming and the use of the right crops.

Contour Tillage.—Contour planting and cultivation have made rapid progress during the past year, for farmers find in these practices a method of holding both soil and moisture on sloping fields without spending any money. The cost of "rough" contouring is practically nothing, since only a change in the direction of the rows is involved. Even the more accurate method requires only slightly more time in laying out the lines, a few additional point rows, and some additional time in cultivating.

There is no lack of enthusiastic endorsement of contouring among the farmers in any community where the plan has been demonstrated.

Contour Furrows on Pasture Land.—A small amount of contour furrowing has been done in Missouri for several years, but only recently has there been widespread interest in this method of moisture conservation. In the year just ended, 227 farmers used this practice on slightly more than 4,000 acres.

The Hickory county agent reports that a contour furrow demonstration on the Charles Herbert farm worked well, conserving enough moisture to provide green pasture during the August and September "dry spell", when other pastures were dried up.

From Putnam county: "The Orval Gill demonstration of contour furrows was outstanding. The furrows were constructed on a rather thin point and the whole hill seeded to timothy, redtop, and lespedeza in 1937. This year the furrowed area was simply a mass of lespedeza with some timothy and a few weeds, while the rest of the pasture was predominantly bracted plantain. In and below the furrows the lespedeza was so much greener, thicker, and taller that the lines could be seen for a quarter of a mile".

Rural Electrification

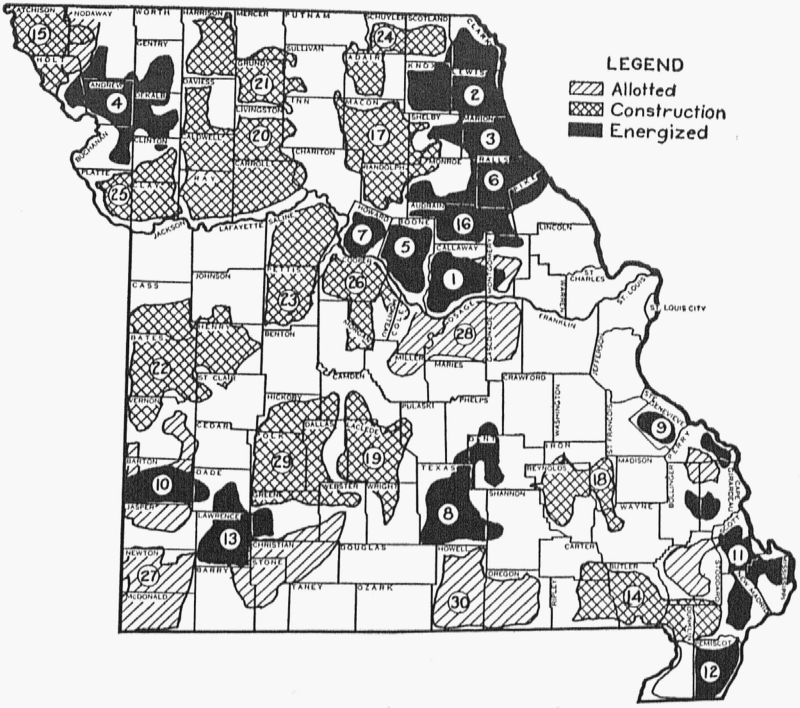
The number of Missouri farm homes reached by some phase of the rural electrification program in 1939 was 50 per cent greater than during the preceding year. With the completion of projects now under construction, Federal Rural Electrification Administration lines will make electricity available to 33,498 farm homes.

The location and progress of the 30 Missouri REA projects are shown on the accompanying map. These projects provide for 10,887 miles of transmission lines constructed at a total cost of $11,386,700, and supplying electricity to farm homes in 100 counties.

Rural electrification activity in 1939 was reported by county extension agents in 88 counties, a significant feature of these reports being their praise of the work done by local leaders who gave time and effort unselfishly to bring electric service into their communities. It

was shown that 2,327 leaders gave a total of 3,671 days of assistance to this program without pay and without remuneration for expense of travel.

Says the Oregon county agent: "The local leadership of Judge Florea has been outstanding in this work, as he has attended meetings night after night to explain this electric program in every section of the county".



Map of Missouri showing the location and extent of each of the 30 rural electrification projects to which funds had been allotted by the Rural Electrification Administration up to the last of November, 1939. The extent to which work has progressed in constructing and energizing the service lines in each project is also shown.

In Nodaway county, "The leaders conducted most of the preliminary organization work and completed all of the sign-up".

From Clinton county the report states: "It is doubtful that any other service that has been brought to farm people will have a more favorable influence on farm life than that afforded by rural electrification service."

Although Missouri farm people and extension workers in former years labored earnestly to make electricity available to farmers, the progress was exceedingly slow. Less than 1½ per cent of Missouri's farm homes had electricity in 1924, and even up to the beginning of

the recent REA program only 8 per cent had electricity. At the end of 1939 approximately 20 per cent of the farm homes in Missouri had electric service.

During the late 20's and early 30's, and particularly throughout the year 1930, the Extension Service promoted rural electrification with assistance from the power companies of the State. This work resulted in a number of additional lines being built and in a much greater use of electrical equipment by farm people located along lines previously established.

Missouri farm people were well prepared, therefore, to accept the assistance offered by the rural electrification program of the Federal Government in 1936. The Missouri State Rural Electrification Association, organized in February, 1937, is believed to be the first state association organized to cooperate with the federal program.

The extent to which farmers are taking advantage of their opportunities in this field is typified by the following report from Boone county. "There are now 300 miles of electric line in the county with 690 farms using the service. The present lines have a possibility of reaching about 1400 customers. The gross revenue of the electric cooperative in November, 1938, was $1,676, and one year later, with about double the former number of customers, it was $3,250.

In Lewis county, there are 403 users of electricity, an average of 2½ customers per mile, with each customer using an average of $4.00 worth of current a month.

Construction of Farm Buildings

Much of the work on farm buildings during the past year has been directed toward the demonstration of low-cost building methods, including thin-section concrete floors for poultry houses, remodelling of laying house, cobblestone construction, and temporary silos.

More than 2,500 temporary silos built during the year were used to preserve 334,000 tons of feed, increasing the value of this feed at least $2 a ton.

Among the 2,535 temporary silos built in the State last year, 1,235 were trench, 689 paper sack, 335 wood, and 276 of undetermined or miscellaneous types.

Remodelling of old poultry houses and the building of thin-section concrete floors were demonstrated in many counties during the year. The cost of remodelling is small, yet the changes in arrangement, lighting, and ventilation result in better health of the laying flocks and higher records in egg production.

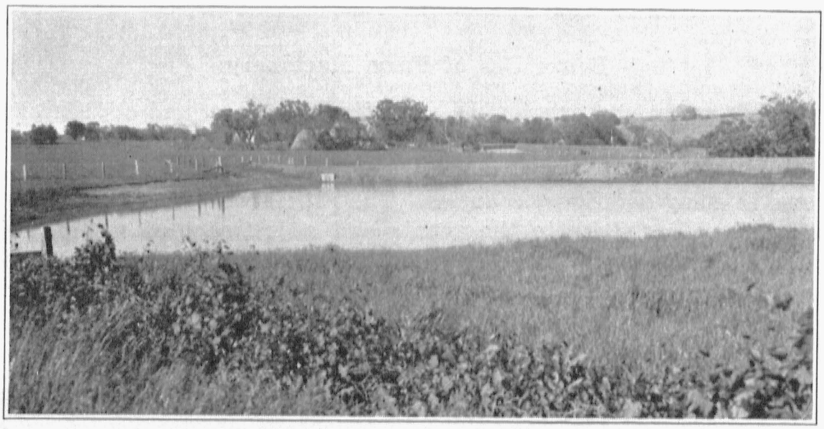
Work was resumed during the year on cobblestone construction, an economical building plan, which had been pushed intensively by the Extension Service in the early 30's and in which farm people still are very much interested.

The earlier experience with cobblestone construction in Jefferson county is reported as follows: "In 1932, Herman Martin built the first cobblestone milkhouse in the county, and during the same year 28 others were built. The average cost of construction on the 29 houses was $2 a linear foot of wall around the buildings."

The Blue Print Service.—The building plan service, which has been maintained jointly by the Experiment Station and the Extension Service throughout the entire history of the agricultural engineering department, distributed a total of 1,298 complete farm building plans in 1939. These included 1,004 blue print plans sold at actual cost, in addition to 294 mimeographed plans distributed free.

Starting with 55 plans of farm buildings in 1916, the year the department of agricultural engineering was organized, this blue print service has grown until it now includes 380 plans.

Among the thousands of boosters for this service is A. E. Beckner of Dallas county who told his county agent: "I did not have one board foot of waste lumber left over in building my brooder house. The list of materials surely is worked out accurately."



This farm pond, one of 6,358 built in Missouri last year, will serve as a dependable source of water, an erosion check, a beauty spot, and a game preserve.

Water Conservation

For water storage, erosion control, and wildlife conservation, 2,054 large ponds more than 8 feet deep were built and protected according to the better specifications, while 4,304 ponds of lesser depth were built during the past year.

The larger ponds properly fenced and with watersheds protected by the proper plantings and farming practices are rapidly becoming a source of great satisfaction to Missouri farm people. The following report is typical.

From Ray county the extension agent writes: "S. M. Keller of Tinney's Grove community has a large pond holding approximately 300,000 gallons of water. Water stands at a depth of 10 feet when the pond is full. The pond is located in a blue grass pasture and water is piped to barn and feedlot. The entire system cost somewhat less than $300 and Mr. Keller says he wouldn't take a thousand dollars for it if he couldn't have another one."

The agent in Caldwell county states: "Our farmers are building ponds of adequate size, fenced, and with water piped to stock tanks. Among 106 ponds built in the county this year, 65 met every requirement for a good pond."

The return of near normal rainfall in most areas of the State during 1938 and 1939 has not caused any decrease in the irrigation of crops and gardens. As a matter of fact, 46 farmers pumped water from rivers to adjoining field crops or truck gardens in 1939 as compared to 17 in 1938, to 18 in 1936, and to 8 in 1934. Increased production due to irrigation in 1939 on 342 acres, mainly on truck gardens, averaged $78 an acre.

Assistance on drainage problems was given to 488 farmers, chiefly in the Southeast Lowlands.

Better Use of Farm Machinery

Thirty county schools on the selection, use, care, and adjustment of farm machinery were held during 1939, and work was done through county agents to assist farmers with their machinery problems in many additional counties. The estimated savings resulting from these activities in the repair and adjustment of machinery and a better understanding of uses and maintenance amounted to more than $100,000. Similar work had been a regular part, also, of the earlier program of the Extension Service.

Work of Former Years

A notable series of campaigns to encourage greater use of running water and home conveniences in farm homes began in 1921, when a truck was purchased and outfitted to show different kinds of farm water systems. In various forms these demonstrations were continued through most of the 20's, usually in cooperation with the home management project. These efforts included the "Kitchen Improvement" tours of 1923 to 1925, the "Home Help and Health" tours of 1926 and 1927, and a demonstration train operated by the Wabash Railway Company in cooperation with the Extension Service in 1927.

In the very early 30's the building of portable farrowing houses and brooder houses enlisted wide cooperation from the lumber dealers of the State. In 1931 alone, the county agents reported the

building of 1,448 portable farrowing houses and 6,918 poultry houses and brooder houses. Economical farm egg coolers were introduced and widely built in 1935, and during the same year the thin-section concrete floor for the poultry house was introduced.

The distribution of war explosives for ditch blasting, removal of stumps, and limestone blasting was a prominent activity from 1922 to 1928, with a resultant use of 700,000 pounds of salvaged war explosives for these purposes at extremely low cost. A home-made stump puller was also demonstrated and widely used during this period. These measures assisted in the drainage or clearing of three and one-half million acres of Missouri bottomlands.

COOPERATIVE MARKETING

Farm income in Missouri was four million dollars greater in 1939 due to the use of the practices recommended in extension work in a co-ordinated production and marketing program. These additions are equal to about 2 per cent of the entire cash farm income of Missouri for the year.

Benefits so great as these, of course, are not the result of extension teaching in 1939 alone, but the cumulative effects of work done during a period of twenty years. They are due also to the combined activities of many groups, including: research men, both production and marketing specialists, extension agents, farm leaders, cooperative associations, farm organizations, dealers, processors, and many others.

These cash gains in the year's income are made up of definitely measurable items that lend themselves to statistical evaluation. Even larger, perhaps, are those gains no less real that are impossible of definite monetary measurement.

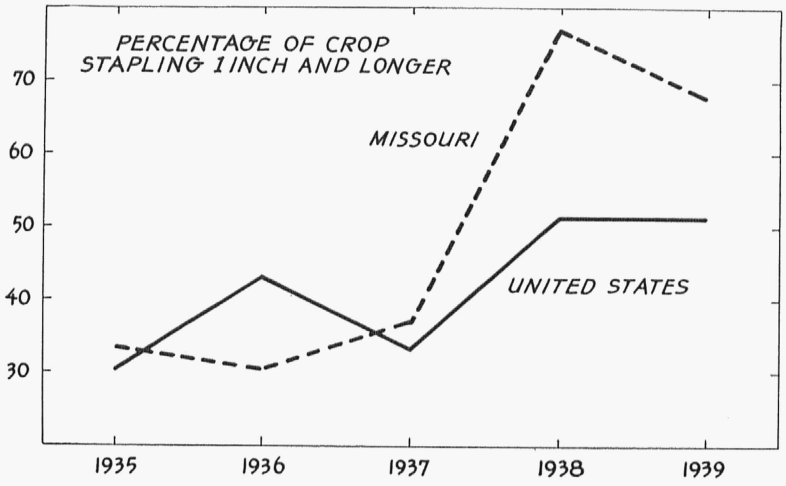
Cotton Marketing

Considerably more than three and three-fourths millions of dollars were added to the cotton income of Southeast Missouri during the past year, as a result of the cotton improvement program first widely organized in 1936. This program includes: the growing of the best adapted varieties, planting pure seed not more than two years removed from breeder, picking and ginning so as to obtain higher grades, and the sale on a basis of grade and staple.

Previous tests have shown that the better seed produces a 25 per cent higher yield and staple 1/16 inch longer than the kind of seed planted in Missouri before the initiation of this program. This increase in yield and staple length, at prices prevailing this year, would give an increase of $13.24 per acre, on the 293,000 acres planted to this kind of cotton in 1939.

Also, since the beginning of this program, some 80 of Missouri's cotton gins—approximately half of the total number—have installed and used cotton driers. Tests have shown that the use of these driers adds from 70 cents to $2.50 per bale to the value of cotton picked when green, dew laden or damp.

Growers and ginners alike have become "cotton quality conscious" and growers pick their cotton cleaner and drier and gin operators are more careful of their gin adjustments. Both of these practices result in a higher grade of cotton.



Improvement of Missouri cotton during the last five years, as shown by increase of average staple length, together with a comparison with average staple length for the United States.

The availability of larger quantities of even-running, better grading, longer stapled, better prepared cotton has brought into the territory keener competition and higher prices than have heretofore prevailed. Producers are now being paid on a basis of quality.

Livestock, Wool, and Grain Marketing

Forty meetings attended by 2,600 feeders were held at which the seasonal movements of prices of the different classes of cattle were discussed. Regional meetings of leaders from 12 counties were held in September, with Mr. W. B. Stout from the Bureau of Agricultural Economics discussing the trends and broader phases of livestock marketing.

Twenty wool marketing meetings attended by 2,200 people were held in the spring of 1939 at which the factors to be considered in marketing wool were discussed.

A school at which grain buyers could become more proficient in grading grain was held in Kansas City, and was attended by 110 Mis-

souri grain dealers, as compared with 61 in 1938. This school is the beginning of a program to establish more equitable local price differentials for the different qualities of Missouri grains. Cooperating in this school were the Kansas City Board of Trade; the U. S. Department of Agriculture; Missouri Grain, Feed and Millers Association; crops and marketing specialists of the Missouri College of Agriculture; crops and marketing specialists of the Kansas State College of Agriculture; and several other organizations.

The purpose of the school was to increase the appreciation by Missouri grain buyers of the differences in the values of the different grades of grain and to increase the proficiency of these men in grading grain. This is a preliminary step in an attempt to establish quality differentials for grain in local markets in Missouri.

Poultry and Egg Marketing

In the Quality Egg Program 447 producer-cooperators sold 11,660 cases of eggs, on which they received premiums of $9,246. This is the largest amount of premiums received any year since the program was started in 1935.

Another important result of this program is the improvement in the average quality of *all* eggs sold in these areas due to the educational work of the program.

TABLE 5.—FIVE YEARS' PROGRESS IN EGG MARKETING PROGRAM (THROUGH 61 LOCAL M.F.A. EXCHANGES IN SPRINGFIELD AREA)

Year	Premiums	No.of Cases	Average Premium Per Case	Number Cooperating Producers	Av. Net Increase Per Farm
1939	$8275.53	10,442	79.2c	428	$19.33
1938	7699.62	8,799	87.5	445	14.73
1937	7494.62	10,370	72.2	876	8.50
1936	7416.82	12,542	59.1	744	9.97
1935	3906.17	7,430	52.6	242	16.97

Note: In addition to the work in the Springfield area, equally good results on a small scale were obtained with the cooperation of exchanges at Warrensburg and Higginsville in both 1938 and 1939 and at Nevada and Eldorado Springs in 1939. Premiums received by producers in these areas amounted to $1,127 in the former year and to $971 the latter.

Ninety-five turkey producers cooperatively marketed on U. S. grade nearly 6,000 birds on which the additional returns were 49 cents per bird, or a total of $2,891.38, due to better production and marketing practices.

The chief values of the turkey project in 1939 were demonstrational. This program, even though dealing with one of the State's minor sources of income, could mean the addition of a half million dollars to this income.

Outlook Meetings

At 2,600 outlook meetings, 80,000 farmers were given information that would enable them to comply more nearly with market requirements in the amount, kind, and time of their marketings. This rep-

resents an increase of 72 per cent in meetings and 22 per cent in attendance over any previous year.

Organization Assistance

One hundred and eleven cooperative marketing and purchasing associations, with a volume of business of more than 3 million dollars annually, were assisted by 42 county extension agents in 1939, ten of these associations having been organized during the year. More than 6,000 persons not in associations were given assistance in buying and selling.

The benefits accruing to farmers from the cooperatives cannot be estimated with any degree of accuracy. It is generally acknowledged by those familiar with the field that prices of farm products are higher and prices of farm supplies are lower in towns having cooperative dealers. It is significant that in 1936, Missouri cooperatives, after presumably paying and charging prevailing prices, made profits for their members of more than a million dollars.

Twenty Years of Marketing Work

Organized extension work in the field of marketing has been carried on continuously in Missouri since July 7, 1919. In the emphasis placed on certain phases of marketing activities and subject matter in successive periods within these 20 years, four periods are rather clearly defined as follows:

The demonstration and promotion of cooperative marketing associations;
Improvement in the efficiency of cooperative marketing practices;
The use of economic information in marketing; and
The coordination of production and marketing extension work.

These periods relate to *major* emphasis and are not clear cut in the sense that the former phases are discontinued when the latter phases are begun, but each overlaps the phases coming before and after and is never entirely discontinued, even though it may come to occupy a very minor place in the marketing project.

The Period of Demonstration and Promotion of Cooperative Marketing Associations.—This period began with the beginning of extension work in marketing in 1919 and received major emphasis until about 1923. It had a sudden and vigorous revival of one year in 1930, due to the promotional activities of the Federal Farm Board, but since that time it has required little of the marketing specialist's time.

Missouri must have been an inviting field for cooperative associations in 1919. While there were more than 100 cooperative associations at that time, they must have been small and had exercised little influence in the marketing of the State's agricultural products —when considered as a whole.

It was demonstrated that livestock shipping associations saved producers, on an average, $85 per car in handling charges and in

some localities added $1.75 per hundred pounds to the amount the producer received for his hogs.

Cooperative elevators frequently reported savings fully as great. Several reported having added in a single season to the amount received by farmers for their grain more than the original cost of the elevators. One reported having reduced the differential between the country loading point price and the terminal market price of wheat by 35 cents a bushel.

It is no wonder that the proponents of cooperatve associations, with stories like these, would find a ready response from producers. According to the extension reports, 91 cooperative associations were organized in 1919, followed by 191 more new cooperative associations in 1920, and 48 additional cooperatives in 1921. After 1921, the numbers of cooperatives organized decreased each year until in 1926 only 3 new ones were reported. For work in cooperative marketing, Missouri agriculture owes a debt to the general farm organizations, particularly the Missouri Farmers' Association and the Missouri Farm Bureau Federation.

The 1921 report states that "there were livestock shipping associations in all counties except those which either had no railroad facilities or produced feeder pigs mainly and those within trucking distance of St. Louis, Kansas City and St. Joseph."

The 1925 report states "Every strawberry of the 1,500 cars shipped from Missouri this year was sold cooperatively". The 1921 report also records "net savings of $816,925 on the $10,789,845 sales by cooperative associations.

These reports must have woefully under-estimated the accomplishments of the cooperative associations, for a careful survey in 1925 showed 1,090 cooperatives in operation in the State, with an annual volume of business in excess of $100,000,000. These included 463 livestock shipping associations, 301 produce exchanges, 164 elevators, 78 fruit marketing associations, 8 cotton marketing associations, and 54 of other types.

The Period of Improvement in Operating Methods and Efficiency of Cooperative Associations.—This phase of the work began in 1922 and was a major project through 1929, after which it was relegated to a minor place.

While it was early recognized that the operating methods used by cooperatives could be materially improved, the differences in the benefits to producers between the operations of average and the most efficient cooperatives was so much less than the difference between the average cooperative and the average of other prevailing methods of marketing, that the work on increasing the efficiency of existing cooperatives was largely deferred until the work of organizing these needed cooperatives was largely completed in 1921.

The reports from 1922 to 1929 deal mainly with improvements in the operating methods of cooperatives. In 1922, accounting forms

suited to livestock shipping associations were prepared; in 1923, suitable articles of incorporation and by-laws were written and methods of marking the individual shipper's livestock were devised; in 1924, improvement in stock yard equipment and methods of prorating expenses were worked out; and in 1925, the grading of livestock prior to shipment was advocated.

From 1926 to 1929, the emphasis was in securing the adoption of the improved methods devised in the preceding four years. Definite and complete methods of operating the marketing associations were agreed upon, and a plan of "accrediting" those associations meeting certain requirements was adopted. Short courses, schools, and conferences were held to secure the adoption of these plans. In one year, 950 association directors and 10,000 other persons attended such schools.

By 1930, many of the local cooperatives had adopted these approved methods, and most of them had affiliated with regional or overhead organizations that took the lead in standardizing operating methods, accounting, etc., so this phase of the work has required less and less emphasis.

However, much was accomplished in this period, some associations reporting that they had lowered their operating costs one-third, by adopting the practices recommended by the Extension Service.

The Use of Economic Information in Marketing.—The use of outlook and other economic information in marketing extension began in 1926 and has received increasing attention up to the present.

It was early noticed that producers felt kindly or unkindly toward their marketing agencies during a particular year, depending on whether they received what they considered a favorable or unfavorable price. So to protect the cooperative selling agencies, the marketing specialists indicated at the beginning of each year whether the trend of prices would be up or down—this tending to soften the blow of unsatisfactory prices.

In 1926, some 25 outlook meetings were held, attended by 2,700 persons. In 1927, this was supplemented by monthly "economic notes" and a chart service to extension agents and cooperative associations. Special outlook reports were prepared on strawberries and hogs.

The most important development in extension outlook work since its beginning has been the increase in the numbers of trained leaders disseminating outlook information. In the beginning, the economics specialists participated in all outlook meetings, and up to 1933 not more than 116 meetings were held, nor did more than 9,000 persons attend outlook meetings, in any one year. In recent years, the combined efforts of economics specialists, production specialists, county extension workers, and volunteer leaders have made possible the holding of 2,600 meetings attended by 80,000 persons per year.

The Coordination of Production and Marketing Extension Work.—The period of systematic coordination of production and marketing work in joint production and marketing projects may be said to have begun in 1935. Since the beginning of that year nearly all of the projects in marketing have been written as joint production and marketing projects and have attempted to follow a commodity from the beginning of its production to its final marketing. They also have given consideration to the general outlook for the commodity, the type of that commodity most in demand at the market, the most favorable time at which to market, the production methods necessary to produce that kind of commodity at that time, and the grading and marketing methods that would produce the highest net returns.

FARM MANAGEMENT

As a result of extension work in farm management in 1939, more than 19,000 farmers made carefully considered changes in their farming systems in keeping with plans worked out in personal conferences with county agents, local leaders, and planning committees.

The number of leaders assisting in this work was 417, while 604 complete farm accounts and almost as many complete cost-of-production records were kept throughout the year. All records were made available for teaching purposes.

This work was but a part of a long-time, statewide effort on the part of the Extension Service to assist individuals in replanning their farming systems in such a way as to eliminate unprofitable enterprises and strengthen those more favorably adapted to the local type of farming area. This involves, not only a study of the land itself and the community surrounding it, but also close attention to family conditions and to farm and household accounts.

Farm management extension work in Missouri was begun in 1914 through a farm management survey in the Blue Springs community of Jackson county. Records of the year's operations on individual farms within the community were summarized and analyzed. Factors affecting farm income on individual farms were compared with group averages. Results were presented at demonstration meetings, and each operator was assisted in keeping farm records as a means of measuring the year's operations, locating weaknesses, and initiating adjustments directed toward improved income.

The work was discontinued early in 1915 but was resumed the following year through community groups of farmers who were assisted in farm record keeping, analysis, and farm management adjustments. During 1916 and 1917 farm records were again emphasized, and the efforts of the College were supplemented by

a farm management contest under the sponsorship of the Missouri Farm Management Association. In this contest many farmers, banks, and industrial organizations cooperated.

Farm accounting work was continued through 1917, 1918 and 1919 as the major activity in farm management, with contacts established through schools, demonstration meetings, and individual farm visits. In 1918, a simple farm record book was prepared to assist farmers in keeping their accounts and in connection with record keeping in 61 counties. The farm record book was adopted by the Missouri Bankers Association, which financed its publication and its distribution to 17,000 farmers.

From the end of 1919 until the autumn of 1924, farm management extension work was discontinued, but during the remainder of the latter year and through 1925 farm record keeping was again carried on. In Buchanan county this work was augmented by a farm management survey, in which some 300 farm owners participated.

Aside from the ordinary objective of leading farmers into improved management for increased incomes, the results of this survey proved a decisive factor in preventing an increase in taxes on farm land in that county. The survey data were examined by the State Board of Equalization, which then advised against a movement to increase the taxes on farm lands within that county.

This was a timely demonstration of the value of cooperative effort on the part of farmers of a county to get at basic facts and to use them in gaining a voice in governmental decisions.

In 1926, the national program of disseminating agricultural outlook information to farmers through the Extension Service was inaugurated, and the outlook project was added to the Missouri farm management and marketing extension program.

From 1927 to 1933, the agricultural outlook received great emphasis in Missouri and provided opportunity to farm leaders in every county to gain an insight into economic trends, their influence on individual and collective agricultural welfare, and to begin acquiring viewpoints and collective voice in national agricultural policies.

It is believed that extension work in disseminating outlook and other economic information to farmer leaders throughout the State during this six-year period had great value in preparing farmer thinking and support for the national action programs which were launched in 1933.

In 1930, farm leaders in 20 Missouri counties were interested in undertaking county economic surveys. These were completed in 19 counties with such helpful results that similar studies were carried to completion in 41 additional counties the following year. This marked the beginning of county planning and county extension

program determination in Missouri. The objectives were to appraise the local economic situation and trends, to ascertain the adjustments needed in each area, and thereby to develop county extension programs by a more scientific approach.

The planning work was initiated primarily to provide farm leaders in the counties with accurate information, which would enable them to localize and vitalize the outlook information presented at county and community conferences. In making the surveys, the counties were divided into major land use areas in which farm leaders collected economic data from representative farmers. These data were submitted to the extension economists for analysis and for interpretation in tables, charts, and graphs for presentation at local meetings.

This phase of the work was interrupted in 1933 by the participation of specialists in the educational work required for launching national action programs.

In 1935 and 1936, county agriculutral planning was given great emphasis in Missouri, and the results of this work made available a statewide background for county extension program planning.

Beginning in 1935, 1936 and 1937, much emphasis has been given by farm management specialists to individual farm planning, as well as to farm planning demonstrations and short courses.

DAIRY HUSBANDRY

Missouri farmers entered the year 1939 with approximately one million milk cows, the average productive capacity of which was somewhat greater than that of the Missouri milk cow of six years ago, or prior to the heavy liquidation of dairy herds during the drouth years.

Extension work in dairying continued, as in most former years in the last quarter century, to emphasize not greater production but greater efficiency and a product of higher quality.

Raising the inherent producing ability of herds through better breeding and by elimination of the unprofitable animals was carried forward through dairy herd improvement associations, bull associations, and county exchanges.

Reduction of feed cost was accomplished through the use of locally mixed rations including home grown grains, the production and feeding of more legume hay, greater use of silage, and the seeding of supplementary pastures.

The activities and influence of many organizations were coordinated in a statewide campaign to build a better reputation for Missouri dairy products in the great consuming centers of the country by definitely and continuously improving the quality of these products.

Dairy herd improvement association work, dating without interuption from 1915 to the present, continued in 1939 to be one of the most

important educational programs in dairy extension. The average production of more than 5,000 cows completing the full testing year in time to be summarized was 7,300 pounds of milk and 310 pounds of butterfat. The average cow in the associations paid her owner slightly more than $100 above feed costs. In the herds owned by members of the 23 associations, a total of 9,331 cows were tested all or a part of the year.

The production and cost records maintained in association herds clearly demonstrated the fact that only those herds that averaged 275 pounds or more of butterfat per year are returning their owners a sufficient income to make the dairy enterprise a profitable one under current conditions. These records not only enabled association members to improve their business, but also served as effective demonstrations.

More than 600 low producing cows were discarded by association members last year, and their removal saved from $5 to $50 a year per cow on feed costs alone, inasmuch as such cows were not even paying for their feed. Cows producing up to 150 pounds of butterfat returned only $5 to $10 a year above feed costs to pay for labor, shelter, breeding, taxes, interest, insurance, etc. Cows producing around 275 pounds returned $40 to $60 a year above feed cost.

Another important service rendered Missouri dairy farmers through the herd improvement association in 1939 was that of furnishing breeding animals of superior quality in the statewide program of herd improvement through better foundation and replacement stock.

By a new system of identification and reporting, a total of 45 sires were proved during the year and 82 purebred sires have been proved during the last two years. All these sires were proved under the uniform rules of the associations in the proved sire program.

Twenty-five Years of Cow Testing.—First established as a part of the Missouri Agricultural Extension Service dairy program in 1915, by the organization of a cow testing association in Jackson county, the cooperative testing work has been carried on continuously from that time until the present.

The educational work preliminary to the establishment of the first associations had been done in 1912 and 1913 by county farm advisers with the cooperation of members of the resident staff of the College of Agriculture. With the appointment of an extension dairyman in January, 1914, this work was greatly strengthened and the cow testing associations were gradually developed. During these early years, it was necessary, also, to establish demonstration farms to put the dairy enterprise on a sound business basis.

By 1918 the cow testing associations were exerting an influence that was utilized in the organization of bull associations for the cooperative purchase of good bulls to replace inferior animals in association herds and in dairy herds generally.

Both types of organization and their usefulness in extension work reached their peak in 1929, when there were 38 dairy herd improvement associations and 65 bull associations. From that time the work continued on a gradually diminishing but satisfactory scale until 1933, when the accumulative effects of earlier agricultural deflation and the more recent business panic had borne down the prices of dairy products to a ruinous level. To this situation the problems of feed shortage and heavy liquidation of dairy herds were added by the drouth of 1934.

Despite these difficulties, the associations have continued through 25 years to supply demonstrations and records which have had a value beyond calculation in extension teaching. A summary of association records, at five-year intervals from 1915 to 1930 and at yearly intervals from 1930 to 1938, is given in Table 6.

TABLE 6.—MISSOURI COW TESTING SUMMARY; 1915 TO 1938.

Year	Number of associations	Number of cow-years	Aver. milk per cow	Aver. fat per cow	Value product per cow	Value above feed cost	Feed cost 100 lbs. milk	Feed cost per lb. of fat
1915-16	1	215	5984	254	$127	$ 67	$1.11	$ .24
1920-21	10	1940	5633	262	177	106	1.28	.27
1925-26	23	7190	6572	283	192	111	1.13	.26
1930-31	29	6901	6971	295	198	127	1.02	.24
1931-32	26	4662	7448	315	180	126	.73	.17
1932-33	23	3374	7623	322	173	125	.63	.15
1933-34	20	3398	7442	316	169	114	.74	.17
1934-35	18	2532	7552	323	197	119	1.03	.24
1935-36	22	3150	7054	306	190	121	1.00	.24
1936-37	22	3231	7223	303	196	110	1.19	.28
1937-38	21	5105	7130	307	188	111	1.09	.25

The Use of Better Sires

Continuing the bull association work that was started in 1918, dairy leaders throughout the State aided the Extension Service in the placing of 1,472 purebred bulls in Missouri dairy herds in 1939.

Supplementing these individual purchases, 15 bull associations serviced the herds of their 112 members with production bred sires, 22 county sire exchanges made 100 bulls available on a rotation basis, and the Farm Security Administration established 20 cooperative breeding units during the year.

The average yearly production record back of all bulls now owned by Missouri bull associations is more than 600 pounds of butterfat. Reports of county agents show also that there are 111 proved bulls in use in the State.

Bull associations have become the most practical means of establishing community breeding centers in Missouri. In counties where these associations are operating, the surplus purebred bull calves are rapidly replacing scrubs in farm dairy herds.

Two county associations for the purpose of employing artificial insemination as a means of improving their herd stock have been formed in Missouri; one in Webster and the other in Pettis county. Operations

in the former county ceased, however, during the past year because the small number of cows in association herds made the cost too high. The Pettis county association is still in operation.

Work in Dairy Feeding

Extension work on the utilization of home grown grains and roughage best suited to economical production was continued in 1939 through the dairy herd improvement associations, individual herd feeding and pasture demonstrations, dairy schools, the year-round pasture plan, and the cooperation of mills and feed dealers.

In mixing and offering for sale the grain rations recommended by the College of Agriculture, 262 mills and feed mixing plants cooperated with the Extension Service during the past year. This plan permits the dairyman who is not equipped to grind and mix his own feeds to take his home grown grain to the mill, purchase the supplementary feeds, and have the mixture made up according to the recommended formula.

Recent advances in the expansion of Missouri's acreage of legumes and drouth-resistant silage crops have been satisfactory. During the past year, nearly 31,000 dairy farmers grew and fed 520,000 acres of legume hay, while some 1,200 new converts to the use of silage built and filled emergency silos in addition to the many thousands already in use. Many of these new silos were of the trench type, which was first proved practical on a Jackson county farm in 1927, under the joint initiative of the farmer, the county agent, and the dairy specialist.

Dairy Pastures

During the past year Missouri dairy farmers seeded drouth-resistant pasture crops of Korean lespedeza, sweet clover, and Sudan grass on 1,043,000 acres. Supplementary pastures for late fall and early spring, including winter barley, wheat, crimson clover, vetch, rye, and winter oats, were sown on 350,000 acres. Abundant pastures of the types just mentioned, according to herd improvement association records, reduce the feed cost of butterfat almost one-third.

The so-called year-round pasture program of the present day has evolved gradually from earlier work on supplementary dairy pastures carried on with the more fortunately located dairy farmers in South Missouri. A typical example is taken from a historical summary of extension work in Newton and McDonald counties, as follows:

"A pasture campaign, started in the fall of 1930, was continued the following year with widespread results. One seed house in Neosho in 1931 sold seed sufficient to plant 8,000 acres of Sudan, 1,000 acres of lespedeza, 1,600 acres of winter barley, 1,200 acres of crimson clover, and 900 acres of vetch. The needs of dairymen for drouth-resistant summer pasture and supplementary pastures

for spring and fall had been keenly felt in the years immediately preceding the campaign."

Another significant development of the year 1930, coming at the most opportune time possible to give impetus to pasture work in Missouri, is noted in the same report, as follows:

"It was in 1930 that Korean lespedeza came into this area. The new crop was introduced by means of 5-pound lots of seed received from the Experiment Station by six farmers in Newton and McDonald counties for trial and report."

The degree to which these trials were successful may be judged by the fact that 1,000 acres were seeded to this crop in the two counties the following year.

A legume demonstration meeting in Cape Girardeau county.

Better Quality in Dairy Products

The quality products campaign was continued during the past year with the cooperation of creamerymen, cheese and ice cream manufacturers, teachers of vocational agriculture, the State Department of Agriculture, the State Department of Health, and the Federal Food and Drug Administration.

Cream and Milk.—This movement now has the support of practically every creamery and cream buying station in Missouri. It has eliminated the sale of third grade cream and greatly reduced the volume of No. 2 cream produced on Missouri farms. The volume of sweet cream delivered to Missouri creameries has greatly increased, with the results that the quality of Missouri butter has

gone up at least 1 point on a statewide basis, while in some localities the improvement has been 1½ to 2 points with a resultant increase of 1 to 1½ cents a pound in the selling price of the butter.

Better sanitation and improved cooling facilities have been installed by 2,000 cream buying stations and producers have been induced to make more frequent deliveries of their cream.

In carrying out the milk quality program within the St. Louis, Kansas City, St. Joseph, and Springfield milksheds, 1,282 new sanitary milk houses were constructed during the past year. In 20 counties in these areas, 75 meetings were held on improvement of quality in milk and cream, the cooperative marketing associations were given assistance, and some 2,600 individual dairymen were assisted in getting better returns for their products.

Ice Cream and Cheese.—Further increase in the consumption of dairy products in the form of ice cream and cheese was made during the year, due to the continued improvement in quality. Missouri cheese factories cooperating in the campaign have improved their methods and equipment, have promoted more sanitary methods of transporting milk from farm to factory, and have set up more exacting standards for the milk purchased. All this has resulted in noticeable improvement of the cheese made in many Missouri cheese factories.

This work, from its beginning in 1936 to the present time, has steadily gathered impetus as it became evident that higher quality products are not only bringing immediate increases in the selling price but are also building up a stronger consumer demand for Missouri dairy products in the larger markets.

Other Dairy Extension Work

Breed associations cooperating with the Extension Service were active during the year, with these groups holding some 25 meetings and 17 shows to promote a wider use of purebred, high producing breeding stock in the dairy herds of the State. Jersey breeders perfected the organization of 10 districts in the State and held eight parish shows. The Holstein breeders exhibited registered cattle at five shows, while the Guernsey breeders held four shows.

All of these organizations assisted the Extension Service during the year in developing the Missouri plan of a county breeding program. This involves setting a minimum standard for the county, making a complete bull survey of the county, and organizing a county bull book and related measures to assist herd owners in obtaining the use of purebred sires.

Dairy farmers and extension workers again cooperated in the State and Federal campaigns for the elimination of Bang's disease and tuberculosis. More than 72,000 herd owners took part in the

disease control program. Forty-five counties in which federal veterinarians retested herds for tuberculosis were recommended for reaccreditation, since only 13 reactors were found among 24,358 head of cattle tested, or a percentage of only .0005 infection.

One of the most effective methods recently developed in the Extension dairy program has been the dairy school set up on an enrollment basis and offering a series of five lessons. These schools cover the general history and development of dairying, feeding and digestion, veterinary problems, genetics of breeding, and dairy management. Schools organized on this plan with one all-day class period each month for a duration of three to five months were held in 28 counties in 1939, with a total enrollment of 1,720 dairymen.

ENTOMOLOGY AND BEEKEEPING

The constant threat of insect damage to field crops, livestock, orchards, gardens, shade trees, and even the household itself has long forced upon farm people the responsibility of serving as humanity's shock troops against the never-ending assaults of a ravenous and relentless enemy. Against this motley and multitudinous horde, mankind would be helpless without the information supplied by science or without the added advantage of effective organization.

Many insect outbreaks have been serious enough to enlist not only statewide organization of farm leadership on county and community fronts but also the aid of the entire population of this country through the Federal Government.

For more than fifty years before the beginning of extension work, losses running into millions of dollars annually were caused by cyclic waves of Hessian flies, chinch bugs, and grasshoppers, and by the insidious but incessant multiplication of codling moth and San Jose scale. Chinch bugs devastated many Missouri grain fields in 1910 and 1913, Hessian flies in 1916 destroyed $6,000,000 worth of wheat in this State alone, and our orchardists for years saw fruit crops dwindle and trees slowly die under the advance of San Jose scale.

By study of the life cycle and feeding habits of these pests, methods of control were gradually developed. The zoning of the State with a system of safe seeding dates for wheat reduced the Hessian fly to a minor threat. Wide use of spraying equipment and the development of the lime-sulphur dormant spray, beginning about 1918, have conquered San Jose scale. Oil barriers have set a limit to the overland marches of the chinch bug from small grains to later crops.

Poison baits, suffocating mixtures, strategic timing of appropriate measures for every species, and the organization of control cam-

paigns as matters of community action have enabled farmers to make reasonably effective resistance against the destroyers of man's food, clothing, shelter, and comfort.

Orchard and Fruit Insects

Codling Moth.—Although the codling moth continued to be insect enemy No. 1 in Missouri orchards in 1939, most growers were able to produce from 85 to 95 per cent clean fruit by following closely the information supplied by the College on the timing of their sprays, and use of supplementary measures.

The detailed information on the development of the successive broods and the exact time of maximum emergence of each brood is worked out for widely separated areas by field research men under the direction of the Experiment Station. These men, through the local county agents, send out weekly notices to the growers and work with the Extension Service in meetings. Newspapers and radio stations give this information wide and speedy distribution.

The codling moth has been on the increase since the early 20's and only by the procedure just described have orchardists been able in recent years to produce reasonably clean fruit. Up to 1924, they could produce 80 to 90 per cent clean fruit with two or three sprays. Up to that time the pest was raising only one full brood with perhaps a partial second.

By 1926 to 1929, however, two full broods and a partial third each season were requiring as many as six sprays. In 1931 and 1932 many growers were applying eight or nine sprays of arsenate of lead and getting only 40 to 50 per cent control. The situation reached its worst in 1933, when growers with old trees were not able to get more than 30 per cent clean fruit.

To bring the pest once more under control has been the work of the last six years, brought to a successful issue largely through the remarkable cooperation of orchard men in all the apple producing areas of the State. Practically to a man, they have timed their operations in accordance with the information worked out for their respective areas by the College. They have used chemically treated bands on the trunks of their trees to kill the larvae as they would spin up. They have scraped their trees and cleaned up their orchard residues and kept their packing sheds closed during spring and summer to prevent escape of moths emerging from the former year's packing equipment.

From the standpoint of sustained cooperation from the individual growers, this control program has made an outstanding record. It is next to impossible today to find an orchadist who is not thoroughly familiar with the latest codling moth control recommendations.

Other Fruit Insects.—The fruit tree leaf roller continued in 1939, as in several recent years, to be a serious pest in the eastern part

of the State. Growers who followed recommendations however, obtained about 90 per cent control. Well timed arsenate of lead sprays gave about as good control as the dormant sprays with 6 per cent oil.

The Oriental fruit moth, a peach pest of comparatively recent importation, has so far been held by rigid control measures to certain localities in the southeast and south central portions of the State. Field research on this pest has revealed that early maturing varieties of peaches largely escape damage regardless of the use or absence of insecticides. On the later varieties subject to greatest danger, the use of nicotine sprays and oil dusts were found effective. Natural parasites of the pest have also been introduced with helpful results, while native parasites in large numbers are attacking the fruit moth larvae. Recent progress in control has been very encouraging.

Protecting Shade Trees

The spring canker worm has caused widespread concern to owners of shade trees in Missouri in very recent years, completely denuding elm trees in many large areas of the State. The Extension Service during the past few years has widely demonstrated the use of bands to trap the wingless females in their ascent up the tree trunks in late winter and early spring, as well as the use of sprays to kill larvae feeding on the leaves later on.

Insect Pests of Field Crops

Chinch Bugs.—More than one thousand Missouri farmers built oil barriers against chinch bugs during the past year, using the creosote furnished by the Federal Government in most cases and in others purchasing gas tar locally. County agents report a total of 250 miles of oil barriers. Despite the use of barriers in some 23 counties, there was severe damage to small grains, corn, and cane in the western part of the State.

A chinch bug survey conducted late in the year with federal cooperation indicated extremely large numbers of over-wintering adults in the west central, northwestern, and north central parts of the State. From this survey it was estimated that probable infestation in 1940, with weather conditions favorable to the pest, might require a total of 1,400,000 gallons of creosote for effective control. It was clearly evident that the potential threat, in some 60 or more counties, was greater than that of the fall of 1933, which culminated in the great outbreak of 1934.

The chinch bug has been one of the worst pests of Missouri grain crops for many years, building up peak populations and subsiding to negligible numbers in cycles of varying length. The greatest outbreaks in which the farmer has had the help of extension work were those of

1920 and 1934, with infestation again building toward a major outbreak apparently in 1939.

In coping with the 1934 outbreak, some 25,000 Missouri farmers used a million gallons of creosote.

Grasshoppers.—Although the year 1939 found the grasshopper outbreak of the three preceding years greatly subsided, a thousand local leaders trained in former control campaigns continued to work with the Extension Service in maintaining supplies of poisoned bait and in organizing farmers to apply it to fields in the 25 counties most seriously infested. In these counties about 200 tons of bait were used, while in other localities the grasshopper numbers were so small that all federal bait materials were removed from 68 counties.

From 1932 to 1935 the grasshoppers had built up their numbers in several parts of the State without doing widespread damage. In 1936, however, these pests swept through 70 counties as a major outbreak, concentrating their attack on the farm crops, which had come through the drouth somewhat better than other vegetation. The situation became an emergency that called forth federal aid and gave the Extension Service opportunity to assist farmers by organizing county and community committees and by setting up cooperative mixing stations.

During the two following years the pests continued to spread despite all measures of control, reaching 90 counties in 1937 and 103 in 1938. In the four years of severe infestation, 1936 to 1939, poisoned bait was used by 20 to 30 thousand farmers each year, and the total amount of bait used in the four years was about 20,000 tons.

The grasshopper control work of these last four years was carried on jointly by the Federal Bureau of Entomology and Plant Quarantine, the Extension Service, and a state committee. On this committee are representatives of the State Department of Agriculture, the College of Agriculture, the State Insect Pest Control Association, and the State office of Federal Grasshopper Control.

The value of the crops saved by these measures in the four years was estimated at close to $20,000,000.

Hessian Fly.—The small numbers of Hessian fly present in Missouri wheat fields in 1939, as in the two years immediately preceding were quite at variance with the great outbreaks of some earlier years before the system of fly-free seeding dates had been worked out by the experiment stations of Missouri and other grain states. Not since 1921 have these outbreaks compared with those of the 25 years preceding the development of this control measure and the establishment of the Extension Service.

About the same time that extension work was beginning in Missouri, the Hessian fly had worked up to such enormous numbers that the damage to one year's crop, that of 1916, was estimated at $6,000,000. This still stands as the greatest loss ever caused by any one pest of wheat in the State.

Very shortly after this calamity, the zoning of the State in a system of safe seeding or so-called fly-free dates was worked out and entrusted to extension workers for dissemination to wheat growers. The results have been highly satisfactory. Only after periods when the fields have been comparatively free from this pest is there a general tendency to become lax in observing the safe seeding dates.

Cotton Insects.—Both the cotton leaf worm and the common red spider require constant watchfulness on the part of extension workers in Southeast Missouri if the cotton growers are to be prepared for the attacks of these erratic pests. They do not occur every year, yet infestations develop so suddenly that growers are at great disadvantage unless prepared to apply control measures at their earliest appearance.

The cotton leaf worm was not nearly so numerous in 1939 as in the preceding year, when active control campaigns were carried on with very satisfactory effect. Red spider, for the control of which growers had been organized in 1938, appeared in only a few isolated spots in Pemiscot, New Madrid, Mississippi, and Dunklin counties in 1939. The damage was not widespread, for most of the growers controlled the spider with sulphur. Where dusting was not done, however, within the infested areas the crop was a total loss.

Other Pests of Field Crops.—New control programs were organized in certain sections of the State during the past two years to fight pests that formerly had caused but little trouble. The clover root worm appeared in 1938, doing its greatest damage to corn planted on spring-plowed lespedeza ground. Knowledge gained that year, however, enabled extension workers to recommend control measures for 1939 in sufficient time to render them effective.

Widespread campaigns were organized during the past year to protect from insect damage some $4,000,000 worth of stored grains on Missouri farms. The methods of treatment were demonstrated and a policy of frequent inspection and prompt treatment was urged upon all county workers.

Garden and Truck Crop Insects

More than 22,000 farm families in Missouri last year followed the College recommendations for the control of garden insects, and for the first time in extension history county meetings were held for training community leaders in insect control. Popular interest in this work was greater than ever before, as shown by office calls and requests for printed matter.

Insects Affecting Livestock

So important is the control of insects in maintaining the health of livestock and poultry, in preventing waste of feed, and in maintaining economical production of power, meat, milk, eggs, and wool, that greater and greater attention has been given to this phase of extension work in the last ten years or more.

Bot control work in the past year reached more than 25,000 farms and resulted in the treatment of some 100,000 work animals saving large amounts of feed, increasing the weight and endurance of the animals, and undoubtedly lengthening their years of usefulness. Nearly half a million head of sheep were protected from parasites, external, internal or both, through dipping and drenching.

Household Insects and Termites

The problem of household insect control received attention last year in 89 counties, with special emphasis on sanitation, and resulted in definite benefits in more than 12,000 homes. Intensive work was done in 15 of these counties. Much interest was aroused and additional counties requested similar assistance for the following year.

There is also a growing demand for information on control of termites, but most of these requests so far have come from urban home owners.

Rodent Control

Rat damage to stored grains and other property on Missouri farms has become unusually serious in the last year or two, reaching an unprecedented record in 1939. Several counties used county-wide campaigns, including demonstrations of effective control methods. This work was reported in Carroll, Cooper, Johnson, Macon, Marion, Mississippi, Pettis, Scotland, and Scott counties.

The most successful work appears to have been done in Mississippi county, starting as early as February and continuing into the spring months, with the result that more than 10,000 of the rodents were killed on 30 farms where demonstrations were held.

Throughout the State at large 4,500 farmers in 40 counties were reported as having successfully used rat extermination methods on a large scale.

Beekeeping

Beekeeping still is a live subject throughout the State, although the honey industry is largely in the hands of a few well informed operators, who require the help of the College chiefly in connection with disease control problems. In the entire State last year county agents received a total of only 456 calls for information on beekeeping. They report 117 operators following disease control suggestions.

Entomology in 4-H Club Work

A new development in entomology extension work, that of giving boys and girls field experience and instruction in the study of insects at 4-H club summer camps, took place in Missouri in 1931. This plan has since been adopted by many other states and has been

very useful as an introduction to insect study from the scientific as well as the practical point of view.

The statewide interest aroused by work done at these camps was met in 1937 by the organization of a standard 4-H club project in insect study and control. Some 1,200 boys and girls enrolled in this project in the two years immediately following its announcement.

FORESTRY

Rapid and widespread has been the acceptance of better practices in forestry among the farm people of Missouri since extension work in this field was started in 1936. By the end of 1939, the third full year of the work, 103 of the 114 counties in the State had established local demonstrations in one or more phases of forestry. In 42 of these counties the active participation in forestry work has been continuous since the very first year.

Interest in tree planting has increased far more rapidly than that in any other phase of the work, with 847,500 trees planted in 93 counties last year. The total acreage forested by these plantings in a single year was 889, including farm windbreaks on 213 farms. Of the total number of trees planted, 63 per cent were black locust, 22 per cent were conifers, and the remaining 15 per cent included catalpa, osage orange, green ash, and other hardwoods. With the assistance of a technically trained forester provided by the Missouri Conservation Commission, it was possible last spring to conduct tree-planting demonstrations giving instruction to farmers in 71 counties.

Other phases of forestry on which work was done during the year included erosion control, timber stand improvement, thinning and selective cutting, fire protection, controlled grazing, estimating and scaling timber, and 4-H forestry club work.

When the Norris-Doxey Farm Forestry Act became effective through appropriations released during the past year, work was begun on a farm forestry plan for Missouri. Through this program it will be possible to carry out a complete farm woodlot management plan on demonstration farms throughout the State. The educational value of these demonstrations should be due to the thoroughness with which they will be put into effect.

Farm Windbreaks

The establishment of farm windbreaks, like all other types of tree planting, has increased each year since forest seedlings were first made available for this purpose. The increase has been from 28 such plantings in 1937 to 153 the following year and 213 in 1939. Such plantations contain, on the average, from 500 to 1000 trees each and occupy from ½ to 1½ acres each.

Many farmers of the State are enthusiastic advocates of this type of planting. Among these men is Charles Minick of Atchison county, who planted his white pine and Norway spruce windbreak over 30 years ago. So valuable has this windbreak been to Mr. Minick that he has spared neither effort nor expense when necessary to keep the stand in perfect condition.

Windbreak of white pine and Norway spruce on the Charles Minick farm in Atchison county. Five rows wide, this dense windbreak affords year-round protection for the entire farmstead.

According to engineering experiments, a good windbreak planted on two or three sides of a farm house will reduce the annual consumption of fuel for heating by as much as one-third. Such protection is naturally just as important around other farm buildings and to shield crop land from hot winds in summer.

Erosion Control and Farm Woodlots

Approximately three-fourths of all the trees planted in Missouri last year were used for erosion control and in establishing farm woodlots. This work has received strong local support in many localities from men who made similar plantings years ago.

One of the outstanding plantations in the State was made 22 years ago in Dunklin county by S. E. Bage, who raised his own seedlings to establish a 2-acre stand of catalpa. Since that time he has cut 5,000 posts from the tract, selling them at an average of 15 cents each. The total gross income has amounted to $750, which means $17.04 an acre each year since planting.

A similar example is reported from Howard county. On the Warner Hammond farm north of Fayette, all of the post material was cut from a 1-acre black locust stand 15 years ago. This same stand was cut again two years ago and yielded 1,600 posts valued at 10 cents each. The gross return of $160, spread over the 13-year period, was equal to an annual income of $12.30 an acre.

From recent plantings highly satisfactory survival and growth have been reported in many instances. In November, 1939, C. H. Taylor of Boone county had 980 living trees from 1,000 black locust seedlings planted early the preceding spring.

Woodland Protection and Improvement

A timber stand improvement demonstration was set up during the past year in Phelps county, on a 5-acre tract of uneven-aged timber, where much unmerchantable material and "wolf trees" were holding back excellent stands of reproduction of various species. Improvement cutting consisted of removal of the wolf trees, diseased and damaged trees, and weed trees. In addition, an average of 26 trees per acre were pruned to a height of 14 feet. Only those trees which were considered capable of producing an 8-inch diameter increase and a clear bole of 17 feet were pruned. The cutting yielded 184 posts and 12 cords of stovewood.

Possible Results of Good Management

According to the U. S. Forest Service, the average merchantable timber sold in Missouri is subject to a 30 per cent cull loss due to fire damage. In 1934, approximately $2,000,000 worth of wood products were cut and sold from farms in the State. This income, it is estimated by the same authority, could have been increased 20 per cent or $400,000 if these woodlands had been protected from fire damage in previous years.

Earlier Forestry Work in Missouri

Not until 1933, when the national forest purchase units were established in Missouri, did a comprehensive program of forestry education and improvement begin to take form; yet a number of earlier attempts had been made.

As early as 1899 the General Assembly passed a law which provided that the State Geological Survey should investigate the State's forest resources. At the same time, and later, various laws aimed at the prevention of forest fires were passed by the General Assembly.

In 1925 provision was made for the creation of a Department of Forestry under the State Board of Agriculture. This department was authorized to practice forestry upon lands owned by the State, to promote forestry practice throughout the State, to acquire additional lands for forestry purposes, and to sell timber from the

state forests. In cooperation with the federal government under the Clark-McNary Act, the State in 1925 initiated a small program in fire protection, education, and the production of nursery stock.

After two or three years of development this program was gradually curtailed to the point of ineffectiveness because of insufficient state appropriations, and finally abandoned in 1933 when the law providing for the Board of Agriculture was repealed.

Other early contributions to the development of a forestry program for the State included forestry instruction and the management of University-owned forest lands by the University of Missouri from 1911 to 1921, the part-time farm forest extension program of the University from 1925 to 1927, and the educational program of the Missouri Forestry Association from 1921 to 1933. These activities, although initiating forestry work of various kinds on a small scale, failed to develop a sustained program, apparently due to the lack of public support.

Although the state forestry work was discontinued temporarily in 1933, interest in forestry soon was revived through a more widespread appreciation of the value of the work brought about by the establishment of the national forest purchase units and the development of state-owned forest areas by the Civilian Conservation Corps. In 1936 both resident instruction in forestry and extension work in forestry were added to the activities of the University of Missouri.

Further widening of this stream channel on the Ed. Meyer farm in Morgan county has been checked by black locust plantings.

HORTICULTURE

Several important gains were made by Missouri orchardists, truck growers, and home gardeners in 1939 as the result of their cooperation in extension work. Probably the most notable single accomplishment was the successful educational campaign following the enactment of a state apple grading and marketing law. The work was necessary in order to familiarize growers with the newly established requirements. Both the producers and consumers of the Missouri apple crop profited and will long continue to profit as a result of this work.

Notable progress was made also in standardizing the quality of watermelons, strawberries, and canned tomatoes through the establishment of shipping point inspection, the employment of skilled graders, and the payment of a premium for the higher grade products.

The improvement of family gardens was another high point in the year's record, with an ever increasing number of farm families reducing their grocery bills and improving family health through the use of better gardening methods.

Work with the Orchardists

Extension work in behalf of the fruit growers of Missouri in 1939 covered all of the areas where commercial plantings are at all extensive. Timely information was given on production and marketing problems. A total of 111 meetings were held in the commercial fruit growing areas.

Improvement of Marketing Practices.—The newly enacted apple grading and marketing law became effective on September 1, 1939. This was the State's first marketing regulation on apples and required an immediate follow-up by the Extension Service to teach growers how to grade their fruit to meet the requirements of this new law.

Briefly stated, the provisions of this act require that all apples sold in Missouri must be labled as to grade, variety, and minimum size, while all apples inferior to the recognized grades must be labeled and sold as "culls". Though the law does not say that all apples sold must be graded, it does plainly specify that ungraded apples if sold at all must be labeled and sold as "culls."

As a consequence of this act and the educational work done prior to the harvesting season, Missouri's apple crop in 1939 reached the market with a much closer approach to standardized quality than ever before.

Additional work for the improvement of the consumer demand included cooperative movements on the part of the growers to advertise apples and to limit the sale of culls on the fresh apple mar-

ket. An extension campaign was carried on among the homemakers clubs of the State to demonstrate varied uses of apples and their value in the family diet.

Production Problems.—Although nearly all commercial orchardists consistently follow the recommended production practices, they have come to depend on the College for current information on regional conditions, improved sprays and equipment, recent progress in control of diseases, and the advances made in use of fertilizers to improve the vigor of trees and the quality of fruit.

Foremost among the problems on which the Extension Service was able to assist apple growers were the codling moth, apple scab, apple leaf roller, apple blotch, leaf hoppers, aphids, spray injury, and cultural practices to improve the quality of the fruit. Peach growers were assisted in the control of scale and borers, in the use of early ripening varieties to avoid injury by the Oriental fruit moth, in the control of brown rot, and in the use of fertilizers and cover crops.

Earlier Work with Tree Fruits.—During the first 10 or 12 years of extension work with fruit growers, attention was directed chiefly to pruning and spraying demonstrations, teaching both the technique and the results of these operations. Taking note of new developments in both these practices, these demonstrations were continued till about 1925 to 1928. Up to that time growers were fairly sure of a profitable market for all the apples they could produce; consequently their chief aim was to produce more bushels.

By 1930, however, the apple industry in Missouri experienced a complete reversal of the former situation. Pruning, spraying, and fertilization were so generally followed by the surviving orchardists that the College needed no longer to introduce these measures but only to perfect them and adapt them to changing conditions. Cost of production had become a more important factor—together with the business of marketing a product of more uniform and attractive quality.

Local buyers had become the orchardist's best customers, and trucks the important means of transportation. Wholesale jobbers no longer bought crops at harvest time and stored them for winter use, but had left this responsibility to the orchardist himself. As a result, extension work since 1930 has been directed more and more toward the development of better grading, marketing, and storage along with cooperative efforts to eliminate wasteful competition and to improve the consumer demand.

Strawberry Production

Extension work with strawberry growers during the past year consisted mainly of demonstrating the better production practices such as early planting, good cultivation, early mulching, renewal

of old fields, and the use of green manure and cover crops prior to setting the strawberry plants.

Tests of the more promising new varieties were continued. Premier and Blakemore have largely replaced older, lower yielding varieties in the North Missouri areas, while Blakemore is slowly replacing Aroma in the larger commercial areas in Southwest Missouri.

In cooperation with the State Department of Agriculture, the Extension Service aided in the increase of facilities for shipping point inspection of strawberries with resultant benefits to both producers and consumers.

Production in the North Missouri areas adjacent to the larger cities has remained fairly stable during the past 25 years, with acreages only sufficient to supply the local demands. In the Southwest Missouri area, where plantings have ranged from 10,000 to 20,000 acres, the industry has suffered from the decline of soil fertility with the passing of the virgin timber soils. Since 1930, growers have had to depend almost entirely on old land with resultant decreases in their acre yields. The main production problem of the last ten years, therefore, has been that of soil improvement previous to planting.

The strawberry industry is a very valuable asset to Southwest Missouri even with declining soil fertility, since this is a region of diversified farming, in which berry culture provides an additional cash income at a timely season, and utilizes family labor.

Grape Production

During 1939, Missouri's grape acreage was again nearing stablization after a decade of drastic retrenchment. To the surviving growers the Extension Service was able to give assistance chiefly in spraying—the only phase of grape management in which the growers show an active interest.

Practically all of the better grape growers continuing the enterprise at the present time are located on general fruit farms, while most of the larger commercial plantings made in the early 20's as a result of railroad promotion activities have been removed or abandoned. Over-production had combined with the general depression to force prices down to the point where growers were getting barely enough to pay the costs of harvesting.

During the "boom" days, the Extension Service assisted growers in pruning, spraying, grading, and marketing; but in more recent years all efforts to create a profitable demand for fresh grapes, juice, or wine have been without effect, and the growers in most instances have refused to invest additional labor in the care of their unprofitable plantings.

Tomato Growing and Cannery Work

For the first time in the history of tomato canning in Missouri, the tomatoes bought by at least one factory in 1939 were bought according to U. S. grade and were received and graded by an expert under federal license. This factory received a premium of 5 cents a dozen cans on all its Extra Standard canned tomatoes as compared to the very highest prices received by other factories in the State. Furthermore this factory packed an average of 1,018 No. 2 cans per ton of tomatoes bought, while factories not buying by grade got 768 to 985 No. 2 cans per ton. One additional factory bought all its tomatoes by grade during the 1939 canning season, maintaining a grader who was efficient though not federally licensed.

The cannery employing a federal grader was that of Roland Williams and Alex James at Glasgow. These men paid the growers $12 a ton for No. 1 tomatoes and $8 a ton for No. 2's. The other cannery which bought by grade was that of Pete Taylor at Trenton. Mr. Taylor paid his growers $12 for No. 1's and $7 for No. 2's. Both these factories were able to sell their tomatoes readily at top prices for the grades handled.

Certain it is that real progress was made during the year toward improvement of the Missouri pack of tomatoes and that the experience of operators who bought by grade will influence others to improve their methods in the future.

Much help was given tomato growers, also, in improving the vigor and quality of the plants used, since this is one of the most important factors in commercial canning. Ray Sharp, a Grundy county grower, carried out a demonstration with a flue-heated hotbed, growing his own plants at a cash outlay of $19 and increasing his returns $207 as the result of having early vigorous plants. By general use of this practice, factories in North Missouri could start canning one month earlier and earn greater income for both canners and growers.

In 1921, when the earliest work in this field was undertaken by the Extension Service, the commercial canning of tomatoes in Missouri was limited to the southwestern part of the State. At that time about 18,000 acres of tomatoes were grown annually for the commercial canners. The chief production problem was the need of fertilizer, though the encroachments of tomato wilt were turning the attention of growers toward wilt-resistant varieties, as well. Work on both these problems has continued till the present, with the result that wilt-resistant varieties are now used almost exclusively and the total tonnage of fertilizer used in canning districts has been doubled. Beginning in 1937, a long-time campaign for improvement of quality and standardization of the Missouri tomato pack has been under way.

Melon Production and Marketing

In Missouri's watermelon districts last year, extension work on pruning to improve the size of the melons resulted in notable gains for the growers. Cooperators who followed recommendations increased their returns about $44 an acre.

Shipping point inspection, used this year for the first time, also was shown to be highly profitable. At Charleston, where federal inspection was available, growers obtained an average of $10 more per car for inspected shipments, while the general price level was raised for all melons loaded at that point.

Other problems on which growers were given assistance were control of the striped cucumber beetle, field mice, and watermelon wilt; more effective use of fertilizer; choice of varieties suited to changing consumer demands; and the development of better handling and marketing methods through cooperative action.

Four cooperative groups of Dunklin county growers around Arbyrd, Bucoda, Octa, and Senath marketed 600 carloads of graded melons, gaining at least $10 per car because their melons were graded and sized in uniform carlots.

Missouri's melon industry, now about 45 years old and confined largely to five or six southeastern counties, has undergone many changes as new production and marketing problems arose through the years. Up to 1920, the main problems receiving the attention of the Extension Service were those presented by insects and diseases. In 1923 an eight-point extension program was started, covering wilt control, good seed, fertilizer, mouse control, thinning, pruning, clean cultivation, and better marketing methods.

Production problems continued to occupy most of the attention of growers and extension workers until 1931, when the grading and sizing of melons in uniform carlots was undertaken through the organization of a loading club in Dunklin county. This program has been expanded gradually and has had much to do with the more recent establishment of shipping point inspection and other measures for quality improvement and standardization.

Making the Most of the Family Garden

Farm families in all parts of Missouri, cooperating with the Extension Service in a campaign to make the most of the family garden and keeping accurate records on their returns, realized an average of $255 an acre on their gardens in 1939. One family with a garden one-third acre in size produced vegetables for sale, summer use, canning, and cellar storage worth $328.43, or a return at the rate of $985.29 per acre.

Taking the average of the garden records reported, the past year's experience revealed that these better gardeners who received an average return of $255 an acre did so with an average outlay of

$7.29 in cash and 130 hours of labor per garden for the entire year.

These results were obtained, of course, by careful management and by following the recommended practices. The gardens had been fall plowed; plantings had been early and late in recommended succession; a large variety of vegetables had been grown; and diligence had been exercised in using them fresh on the family table, selling surpluses to best advantage, and saving ample reserves by means of canning and storage.

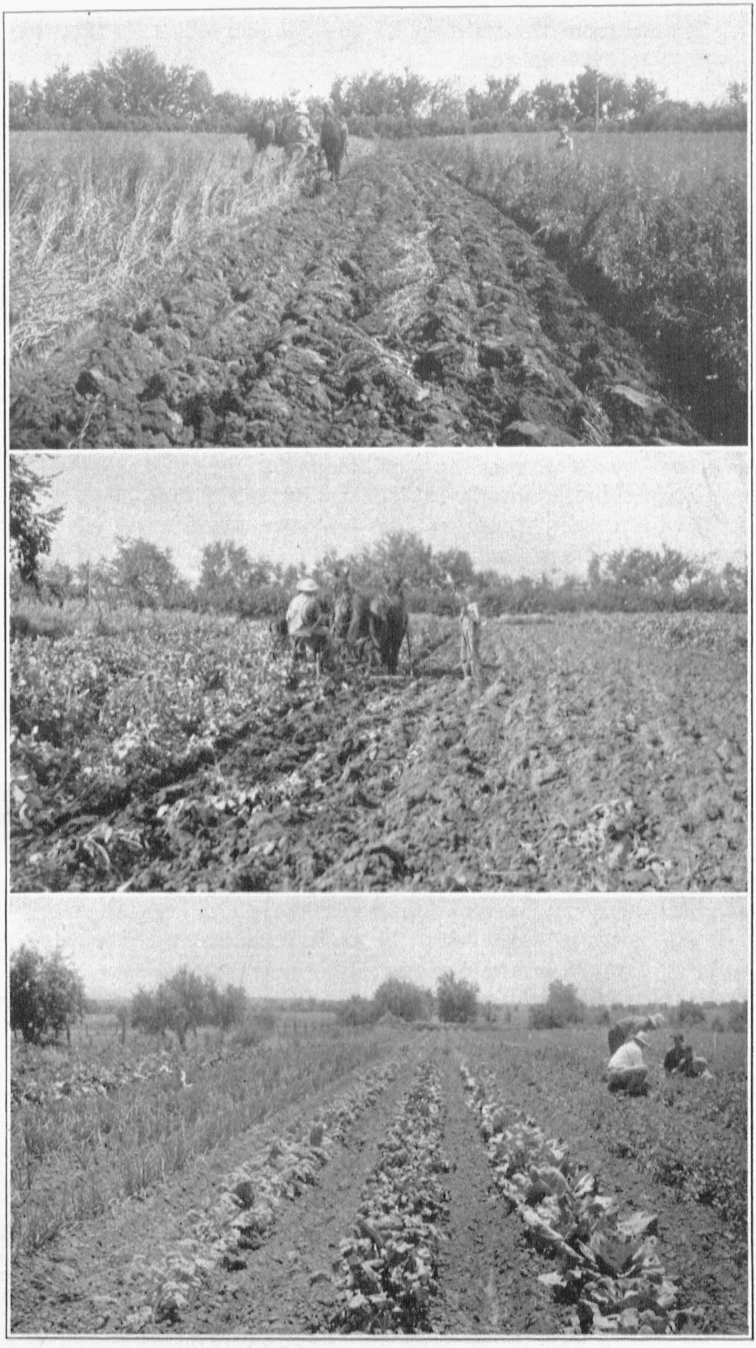
Advantages not measurable in dollars and cents were gained also in the improved health and satisfaction of families using vegetables in large quantity and variety while strictly fresh and at the most palatable stage. This increased use of home-grown foods greatly reduced family living expenses. Five hundred twenty-nine farm families in Howell county last year reported they had cut down their food costs and had improved their diet by growing and using a greater variety of garden products.

Interest in family garden work was again greatly stimulated in 1939 by the Plant to Prosper Competition sponsored by the Memphis (Tenn.) Commercial Appeal. There were 266 Missouri entrants in this competition representing 27 South Missouri counties. The average value of the home garden as reported by entrants who completed their year's record was $235 per family.

Farm people apparently felt little need of assistance on home garden problems until about 1930, when economic conditions had so reduced farm income that there was urgent necessity for reduction in the cost of family living. It was in 1931 that the present long-time program for the development of the family garden was set up, and the results have increased in value and interest every year since that date.

A summary of the family garden records turned in by families cooperating with the Extension Service in this campaign from 1931 to 1939, inclusive, shows the average size of the farm garden in that period to have been .48 of an acre, the average cash expense $7.13 per garden per year, and the returns $106.73 per garden per year. The average return per hour of labor spent on the home garden during this 9-year period has been $1.19.

An outstanding instance of group cooperation in the extension work with home gardens during the past four years has been that of the Pioneer Club, a rural youth organization in the Everett community of Cass county. From the beginning of their organization in 1933, this group of young married couples has made gardening a major project. Following the recommendations of the Extension Service, each family in this club maintains two alternating garden areas, one used for a garden while the other grows a legume crop to be turned under for soil enrichment for the next year's gar-



The home garden is cutting down farm living costs. The two upper pictures show Vern Gross of Cass county plowing under green manure crops—oats on June 2 and soybeans on August 15 on the same ground—to enrich the soil of next year's garden. The bottom picture shows the garden of A. R. Lasswell of Henry county, developed by the same method.

den. Profits from the gardens of the Pioneer Club in 1939 ranged from $248 to $325 an acre.

Potatoes and Other Truck Crops

Many of the practices long recommended by the Extension Service in connection with Irish potato production continued in 1939 to give increased yields and higher quality in the commercial potato growing areas of Ray, Jackson, St. Louis, Clay, and Chariton counties. More than 1,600 growers in these areas are following recommended use of fertilizer and control of diseases.

The earliest work of the Extension Service in truck growing was limited almost entirely to Irish potatoes. This work emphasized the value of northern grown seed and the treatment of seed for the control of disease. Under extension leadership in 1925 and the years immediately following, Missouri potato growers bought northern grown certified seed in trainload lots and established many cooperative dipping plants for the treatment of the seed. So successful were these demonstrations that the educational effects have been widespread and lasting.

For a number of years the sweet potato industry was of much importance in Southeast Missouri. During the first ten years of extension work in that region, much assistance was given growers in selection of varieties, production of disease-free plants, and storage and marketing of the product. Many cooperative curing and storage houses were built and successfully operated as a result of this work. Beginning in 1923, however, sweet potato acreage declined rapidly as the cotton acreage increased, and this shift has continued until only an occasional sweet potato storage house in the entire region now continues to be used for its original purpose.

INCREASING THE POULTRY EARNINGS

Savings and additions to Missouri's poultry income in 1939 due to the use of methods recommended by the Agricultural Extension Service exceeded one million dollars. These savings resulted from the reduction of losses in brooding, control of chicken pox, the use of better balanced rations including home-grown feeds, and better laying flocks built up with thriftier pullets.

Results on so large a scale could not have been obtained without the help of the 1,734 men and women who served as demonstrators, record keepers, and community leaders. Nearly two-thirds of this number were members of women's home economics extension clubs who attended leader-training meetings and later conducted meetings in their own communities.

The poultry improvement program was actively supported, also, by 114 hatcherymen, and many other businessmen in related fields. The Missouri Poultry Industry Council gave added impetus to the work during the year and sponsored state participation in the Seventh World's Poultry Congress, July 28 to August 7, at Cleveland, Ohio.

Growing Healthy Pullets

More than a million pullets were raised by some 42,000 producers who followed closely the "Grow Healthy Pullet Plan" recommended by the Extension Service. On the basis of farm flock records of previous years, pullets so handled produce an average of 24 more eggs and a return of 50 cents more a year than pullets raised by ordinary methods. On this basis the pullets raised last year by this plan are now returning their owners $427,000 more per year.

The essentials of the present plan for handling pullets for maximum returns are: (1) Yard the old hens. (2) Maintain three clean areas for pullet range on a three-year rotation plan. (3) Move the pullets after 10 to 12 weeks to range shelter if brooder house is not portable. (4) Raise pullets on range that has not been contaminated during the past three years. (5) Maintain ample supplies of feed and water in automatic feeders and fountains. (6) Thoroughly clean and disinfect brooder houses and equipment.

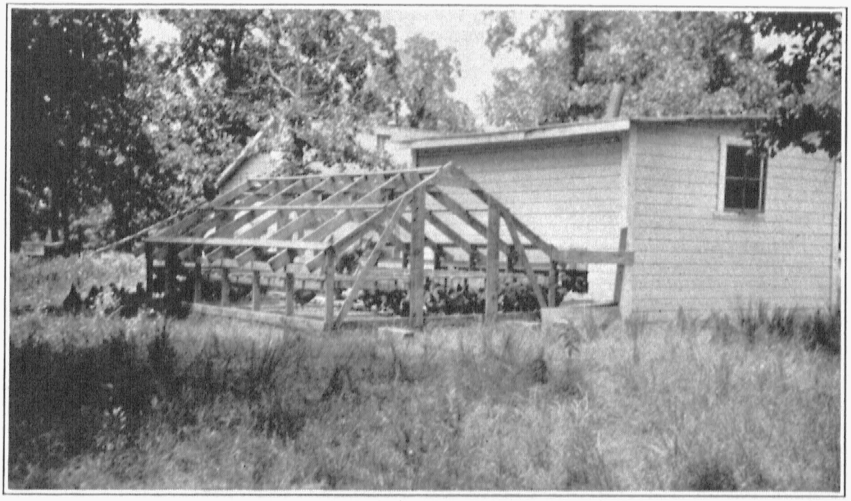
Successful pullet production by following this plan is reported from all parts of the State. Typical of such reports is that of Kermit Hickman of Cross Timbers in Hickory county. From 511 U. S. certified chicks he raised 470 to eight weeks of age. His pullets were placed in the laying house during October and one month later were in 30 per cent production.

In Henry county last fall, Ben Jurgensmeyer obtained 50 per cent egg production from his Barred Rock pullets during October, when

egg prices were favorable. It was his second year of close adherence to the healthy pullet plan.

In addition to the savings made by poultrymen who carried out the complete plan, there were the less easily measurable gains made by 39,330 families who used one or more of the methods recommended, even though they failed to follow all the steps recommended.

The Missouri Chick Starter.—The Missouri home-mixed starter has been devised and widely advocated as a means of supplying a correctly balanced ration by combining commercial meat scrap and dried milk with a maximum utilization of farm grown grains. Definite records were turned in this year showing that at least 26,168 tons of this starter, mixed on farms and in local feed stores, were used, making a saving of $261,680, when compared to the cost of an equally good commercial mixture.



Range shelter in Pulaski county, first used as sun porch, was later roofed and moved to clean range.

The Summer Range Shelter.—The handicap which many poultry raisers have experienced in the lack of portable brooder houses is being overcome by construction of the light, inexpensive summer range shelter in which pullets can be moved to clean range. In 97 counties this year, extension cooperators built 1,428 range shelters and 989 sun porches, in addition to 1,861 portable brooder houses.

The value of this practice is attested by J. E. Collier of Gasconade county, who says: "During the past few years we had so much trouble with worms and other poultry parasites that we were ready to quit raising chickens. However, after watching two of our neighbors raise their pullets on clean ground, we decided to do the same thing. This fall we have the best flock of 240 pullets that we have ever raised."

Reducing the Death Losses.—From 101 counties the agents this year reported that poultrymen who brooded their chicks in confinement or on clean ground held their losses of chicks in the first eight weeks 30 chicks per 100 lower than the state mortality average. Since these cooperators raised approximately two million chicks by these better methods, their savings at 7 cents a chick were $40,000. Furthermore, they produced from the same number of chicks bought or hatched 282,000 additional pullets, which were placed in laying houses with an inventory value of 60 cents each, or a total of $169,200.

Producers in 59 counties, largely in South Missouri, vaccinated 145,878 pullets against chicken pox infection, a malady that ordinarily, in the absence of preventive measures, cuts down the poultry income 25 per cent.

Farm Flock Records

Of some 500 Missouri poultry raisers who undertook in 1939 to make a business analysis of their farm flock enterprises, 193 completed their records for the 12 months from November 1, 1938, to October 31, 1939.

The average level of egg production per bird in these 193 flocks was as high as any year in the last 10 years, being equalled only by that of 1931. In both 1931 and 1939 the average number of eggs per hen was 154. The two best years in egg production per hen in commercial flocks were 1938 and 1939, with averages of 181 and 174 eggs respectively.

Poultry Management Schools

Sixteen poultry management schools in as many different counties were conducted in 1939, continuing the plan begun the preceding year with 22 schools of this type. Each school consists of three half-day meetings and one all-day meeting, occurring at 30-day intervals. The schools are organized on a formal enrollment basis for persons seriously interested in learning the general principles of flock management including a thorough understanding of feeds and feeding. On this basis the enrollment at the 16 schools reached a total of 725 persons.

Turkey Production and Marketing

Missouri's annual production of turkeys has increased from 245,000 ten years ago to 1,200,000 in 1939. Organized extension programs in turkey production were carried on in 12 counties during the past year, with special emphasis on reducing losses and cutting down the costs of production.

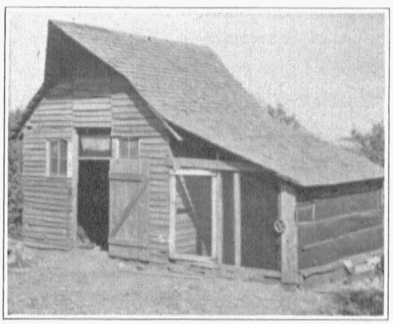
Formulas for home mixed rations have been widely accepted by turkey growers, one of whom, Leon Miller of Clay county, was able to save $20 a ton on his turkey feed by this method. Using the formula recommended by the Extension Service, Mr. Miller mixed his own starting and growing mashes throughout the entire season.

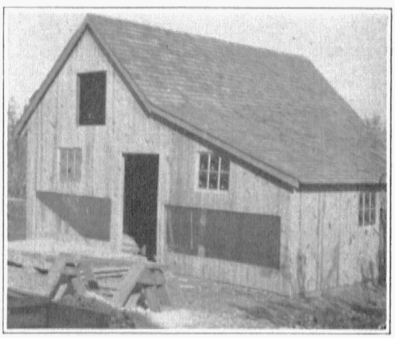
A cooperative turkey marketing association organized in Howard county three years ago continued its work successfully in 1939, marketing 88,353 pounds of dressed turkeys under federal grades and increasing the net returns of the producers $2,891.

Better Poultry Housing

The remodeling of old and unsatisfactory poultry houses to meet the demands for better lighting, ventilation, and other requirements made progress in 86 counties this past year, with completed structures reported on 1,632 farms. The cash outlay for this type of improvement is very small, since the work involves chiefly the rearrangement of the buildings and the use of old material; yet the changes result in better health and more economical use of feed, as well as greater convenience and satisfaction for the flock owners.

In addition, county agents reported 696 new Missouri type houses built during the year.





This old building (left) on the W. W. Hardin farm in Andrew county was next to useless as a poultry house until it was remodeled as shown at right.

Egg Improvement and Marketing

The quality egg marketing program was expanded in 1939, to cover five areas instead of only two as in the preceding year, continuing the work at Warrensburg and Higginsville and establishing new centers at Nevada, Eldorado Springs, and Union. (See Table 5 and additional details of this work and its results on page 93, in the section of this report entitled, "Cooperative Marketing".

Strengthening the Educational Program

Two recent developments greatly increased the effectiveness of poultry extension work in 1939, these being the cooperation given by the commercial hatchery industry and the active interest taken by the home economics extension clubs.

Hatcherymen joined with extension workers in holding flock owners meetings, at which information was given to large numbers

of the more advanced flock owners upon whom the local communities have come to depend as leaders.

The poultry leaders of home economics extension clubs held early spring meetings attended by approximately 6,000 persons and summer management meetings attended by 3,500. In preparation for these meetings 1,198 women attended leader-training meetings.

A Quarter Century of Poultry Improvement

Although the resident department of poultry husbandry at the University of Missouri College of Agriculture was established in 1912, the first extension specialist in this field was not employed until five years later. In the meantime the resident department had met requests of poultry raisers so far as possible through correspondence, articles in the farm journals and newspapers, one general bulletin on poultry raising, and one on the Missouri poultry house, which was designed by the department in 1915.

In 1917, poultry raising was widely practiced on the vast majority of farms in Missouri. Prices received by producers, in terms of feed costs, were very favorable, as compared to similar relationships existing in the late thirties and at the present time. However, net returns per bird were smaller for the average poultry keeper, because of low egg production per bird. Low levels of egg production were due to a common lack of information on feeding, management, and housing essentials and to an almost complete absence of production bred laying stock.

Commercialization of poultry raising was only beginning. The development of large commercial flocks, large commercial hatcheries, and feed manufacturing concerns occurred at a tremendously rapid rate during the 1920's and continued during the generally less satisfactory business years of the 1930's.

Early Teaching Programs.—Agricultural Extension Service poultry work beginning in 1917 was, therefore, concerned with the teaching of fundamental production practices that would provide the means of increasing the efficiency and the amount of production. This was necessary to increase profits from poultry raising and to provide larger food supplies for general consumption.

The particular problem of larger food supplies was rendered acute because of the World War. Beginning in 1917 and continuing in 1918, emergency food production was emphasized through meetings and various other publicity media, backyard poultry keeping was encouraged, and particular emphasis was placed upon protein feeding for egg production, early hatching, culling, proper housing, and improving the quality of summer eggs through infertile egg production.

Demonstration Farm Flocks.—These efforts of a more spectacular nature were effective, but the foundation of almost all future effort

was laid with the establishment of the first demonstration farm flocks in 1918. These demonstrations established proof of the value of poultry raising as a source of income, and as local examples provided readily available teaching material.

Twenty-four of these demonstrations were established in thirteen counties in 1918. These cooperators obtained an average of 101 eggs per hen and made an average return of $2.38 per hen, above feed costs.

Demonstration flocks continued as a prominent part of the program and by 1920 there were 138 such record keepers in the State, and this particular type of program was being widely copied in many sections of the United States. The average Missouri hen laid 56 eggs in 1920, as compared to 114 eggs per hen obtained by the extension cooperators. By 1939 the average production per hen reported by record keeping cooperators was 154.

Other educational activities conducted during these early years included attempts to improve egg quality through "Swat the Rooster" campaigns, and egg candling schools for dealers, both of which were only nominally successful.

Emphasis continued on proper feeding, housing, and other management phases, but the outstandingly successful effort was that of poultry culling. This work was done through demonstrations conducted by the extension workers themselves, but as interest increased it became necessary by 1924 to train local leaders to do this work in their respective communities.

By 1926 interest in culling work reached the saturation point. From that date to the present, interest in this activity has declined. This may be attributable in part to the results achieved in training poultry raisers. It is important to note, also, that much of this work has been taken over by hatchery operators and their employees.

Improvement of Breeding Stock.—Certified breeding work was begun in 1920. This work has had a profound influence on breeding improvements achieved by the entire industry in the State, as well as in more distant areas. Its basis lay in the demonstration record keeping, which represented the cooperators having the best flocks. Flocks became eligible for certification when a winter (November-February) average of 25 eggs per hen was obtained. Certification work led to the organization of the Missouri Poultry Improvement Association in 1923, and to rapid increase in the number of certified breeders.

The first organized cooperation with the hatcheries of the State occurred in 1923, with a three-day culling school. With growing interest, these schools have continued and the scope of subject matter has been greatly enlarged. These schools led to the development and formation of the accredited hatchery program in 1925.

Certified breeding work is continuing at the present time as a part of the National Poultry Improvement Plan, which is sponsored in Missouri by the Missouri Poultry Improvement Association.

Proof of the progress made in raising the average productive ability of all the chickens of the State through the utilization of this stock by hatcheries and the dissemination of these blood lines to chick buyers is found in the census figures. According to the 1920 census, the average production per hen was 56 eggs. By 1925 it had risen to 98 eggs, and in 1938 was 103 eggs per hen.

Control of Parasites and Diseases.—As poultry numbers increased, the need for a program of parasite and disease control became increasingly obvious, as a means of reducing losses in young birds and laying flocks.

The Grow Healthy Pullet Program was organized in 1927, with the establishment of seventy-seven demonstrations, having as their basis the application of six essentials in proper pullet development. These essentials were; (1) Hatch by mid-April; (2) Brood on clean ground; (3) Brood each hatch separately; (4) Feed a complete ration; (5) Separate cockerels and pullets at 8 weeks; and (6) Maintain roomy, sanitary summer quarters.

This program, from meager beginnings in 1927, grew rapidly and was very successful. It was eagerly received because it gave in one-two-three order the steps involved in a program to reduce losses of chicks and adult mortality, because poultry raising was at that time more than usually profitable, and because the rapid, whole-blood test for pullorum disease was being rapidly adopted by hatcheries, and the general level of chick livability to three weeks of age was greatly increased.

This program, with modifications, is still being followed. It has served as the basis for additional progress on improved housing, feeding, and management problems, which continued until 1932 and 1933, when low prices almost eliminated possibilities for making progress. These unfavorable years were followed by the drouth of 1934. Liquidation of flocks followed. Slight recovery was made in 1935, only to be followed by more drastic reductions during the 1936 drouth, and the most unfavorable feed-egg ratio ever known during the year of 1937.

The basis for a successful quality egg program was developed in 1935 in cooperation with the Producers Produce Company of Springfield. This program has resulted in notable gains for producers in 20 counties, as stated in an earlier section of this report.

Other poultry extension work has included the turkey production and marketing work that was begun in 1937 and the introduction of chicken pox vaccine in 1930.

RURAL SOCIOLOGY

The purpose of Extension work in rural sociology is to help farm people improve their local institutions and develop more useful programs of work for their local organizations.

All counties in the State have churches, schools, and other institutions that are essential to a good community life. All counties now have women's home economics extension clubs and 4-H clubs. Many have rural youth organizations. A few have effective community organizations. To increase the number of organizations in a community is not the purpose of the Extension Service, but rather to aid farm people in strengthening the existing agencies and in coordinating their activities for the common good.

During the past year assistance was given many rural church groups. In one county a year-round program of week-day religious education for children of school age was carried out. Town and rural ministers were assisted in discussion and organization programs.

Much time was given to the training of recreational leaders, who went back to their communities to train still others and to point the way to a happier social life. Community groups were assisted in producing home talent plays, pageants, and musical programs. Some 8,500 persons were given training or experience in group discussion leadership, an ideal educational activity for the small groups that assemble in school houses and other neighborhood centers to consider current problems.

Assistance was given in many counties in conducting programs at summer camps for children, for rural youth, and for farm women.

Community Organization

Viewing rural Missouri today, even the casual observer must be impressed by the community leadership furnished by the two thousand or more home economics extension clubs at work in all the counties of the State. Almost without exception, they are the rallying points in their communities for work in education, community recreation, the maintenance of rural libraries, sponsorship of 4-H clubs, and general community betterment.

Country life activities under this type of leadership, in the year just closed and as reported by the county agents and home demonstrations agents, included the following:

Assistance was given to 441 communities in making local country life surveys and in scoring the efficiency of their organizations, to 362 communities in developing recreational leadership and facilities, and to 877 communities in handling meetings, programs, and organization problems.

In 212 communities the hygienic and public welfare situations were improved, in 267 communities the school or community grounds

were made more attractive, in 125 communities library facilities were provided, and in 59 others community houses, club houses, community camps, or rest rooms were established.

A total of 74 country life conferences and training meetings were conducted, 452 community or county-wide pageants or dramatic programs were presented, and 1 community canning center was set up and operated.

The women's home economics extension club oftentimes is the nucleus of a more inclusive community organization in which the men and youth also have definite responsibilities; and this, in fact, is a phase of their work that the Extension Service has encouraged. In the progressive community, there may be in addition to the women's club a community 4-H club, a rural youth organization, and a more or less definite coordination of their work with that of some county or community organization of men who are assisting in extension work.

Building on the foregoing situation as a dependable foundation, the Extension Service has encouraged: (1) The formation of a community council including representatives from 4-H clubs, women's club, youth group, the schools, the churches, and some community organization of farmers; and (2) The more effective organization of the group last named.

Community Recreation

The training of recreation leaders was carried on during the year through two types of meetings; one a four-day regional institute for county leaders, the other a one-day county school for community leaders. In regional institutes 336 leaders were trained for service in 34 counties, and in county schools 736 community leaders were trained for 30 counties.

The training of recreation leaders and the resultant development of community recreation programs have been on the increase in Missouri during the last three years. This work received its first effective inspiration from the recreation program of Farmers' Week at the University of Missouri in October, 1937.

In that program and in the regional institutes of 1938 and 1939, the Extension Service had the assistance of trained directors supplied by the National Recreation Association.

Here are some typical statements from counties whose recreation leaders have returned home and put their training into use:

"The most outstanding assistance to community activities we have received this year," says the Lafayette county report, "came through 23 leaders who participated in regional recreation institutes. These leaders have since assisted in meetings not only in their own communities but in all county meetings."

"Our community leaders for several years have felt the need for recreational activities," writes the Taney county agent. "Nine of

these leaders attended the recreation leaders' institute at Stockton last March and as a result their clubs and related groups have enjoyed recreational programs throughout the remainder of the year."

Dramatics and Music.—Much assistance is given community groups, also, in dramatics and music. A play loan service set up last June was used by 129 community groups in six months. One-act plays loaned by another branch of the Extension Service were used by 63 communities.

The educational and recreational benefits received by community groups that take part in the production of home talent plays make this type of dramatics highly popular. In several counties in Missouri, plays, play festivals, and dramatics contests have proved an enlivening influence in community affairs.

In Pettis county six communities annually participate in a dramatic competition having three divisions; the men's quartet contest, a play writing contest, and a play presentation contest. Last year these events, occupying two nights, were attended by 1,700 persons. Ticket sales pay all expenses and leave a small balance to begin the ensuing year's work.

Rural music programs include chiefly community singing and county choruses. Counties which have progressed farthest in chorus work are Howard, Perry, St. Francois, Chariton, Nodaway, Atchison, and Gentry. In Howard county, a chorus organized in 1935 and composed of approximately 40 persons of all ages has continued to hold monthly meetings for the purpose of singing old and new songs.

Other Recreational Activities.—Picnics, play days, fairs, and festivals have been used widely as recreational activities by women's home economics extension clubs and other community groups in Missouri. Common variants are fish-frys, ice cream suppers, reading contests, corn husking contests, and afternoon play periods at school houses during the summer vacation.

More than 2,000 farm people take part in Greene county's Rural Play Day each year, under the joint sponsorship of the county extension office, the State Teachers' College, and the Springfield Chamber of Commerce. This is an all-day meeting with group singing, music by rural school bands, and talks in the forenoon, followed in the afternoon by a track meet and a baseball tournament.

Community Education

Farm people to the number of 8,500 this year participated in group discussions, under the leadership of local men and women trained in this educational method. A long-time objective of this work is frequently stated as follows: "To get the critical examination of public problems, by the method commonly called group discussion, to be the customary course of action in every Missouri community."

Results of this work in a large number of counties are very similar to those reported in Hickory county as follows: "Training in discussion has given our rural leaders workable plans for encouraging the people to talk, think, work, and play together. Discussion methods have been used in 78 meetings in the county during the year."

Work Done in Earlier Years

In the period from 1925 to 1929 so-called Standard community associations were set up in many Missouri counties. In these associations no one joined and no one paid dues, for every resident of a community was considered a member. The plans followed in this early work provided for a well rounded program of community work covering education, social activities, civic improvement, better roads, agriculture, and home economics.

Outstanding among the constructive features of these organizations were their committees and sub-committees for the various lines of work, bringing into action a large number of persons upon whom definite responsibilities were placed. These associations continued to grow in number for two or three years, reaching their maximum of 49 by the end of 1927.

SOILS AND CROPS

A quarter-century of extension work in soils and crops reached a high record of cumulative results in 1939, when more than 166,000 Missouri farmers grew legumes on 5½ million acres, or approximately 30 per cent of the crop land of the State. This great covering of legume crops, four-fifths of it being Korean lespedeza, has profoundly affected farm income, soil fertility, and erosion control.

The increased acreage of sweet clover, red clover, and alfalfa, as well as the greater yields and feeding value of lespedeza were made possible through the use of 1 2/3 million tons of lime during the last four years. This practice reached a new peak in 1939, when almost a half million tons were applied to Missouri farm lands.

A high percentage of the millions of acres of sod legumes has been pastured back on the land in the last few years, providing an abundance of high-protein feed for livestock, checking erosion with its dense cover, and restoring nitrogen and organic matter to the soil. During the past year, approximately 14,000 farmers plowed under legumes and associated crops as green manure.

Combinations of lespedeza with small grains in one-year rotations were used by more than 70,000 farmers, with resultant improvement of income along with better control of weeds and erosion.

The utilization of small grains for pasture shortened the feeding period on 20,000 farms, besides returning much of the crop residue directly to a well protected soil. About the same number of farmers

used winter barley as a substitute for corn. This practice provides cover for the land, is much less depleting than corn, and produces a grain crop ready for feeding early in the summer.

Pure seed supplies of corn, barley, wheat, rye, and legumes of adapted varieties were produced under the standards maintained by the Missouri Corn Growers Association and the College. From this source more than 18,000 farmers purchased seed to increase the yield, quality, and value of crops grown on their land.

About one-fifth of the 4,200,000 acres of corn grown in the State last year was grown from hybrid seed corn. To aid farmers in avoiding the varieties of hybrid corn not suited to their local soils and conditions, the Extension Service completed 92 hybrid corn test demonstrations in 72 counties.

More than three-fourths of the 15,000 cotton growers in the eight leading cotton counties planted only the approved long-staple varieties. Assisting cotton growers and the Extension Service in this campaign to increase the staple length and grades of Missouri cotton, the operators of 96 cotton gins have pushed the use of better varieties and have installed driers to improve the grade of lint placed on the market.

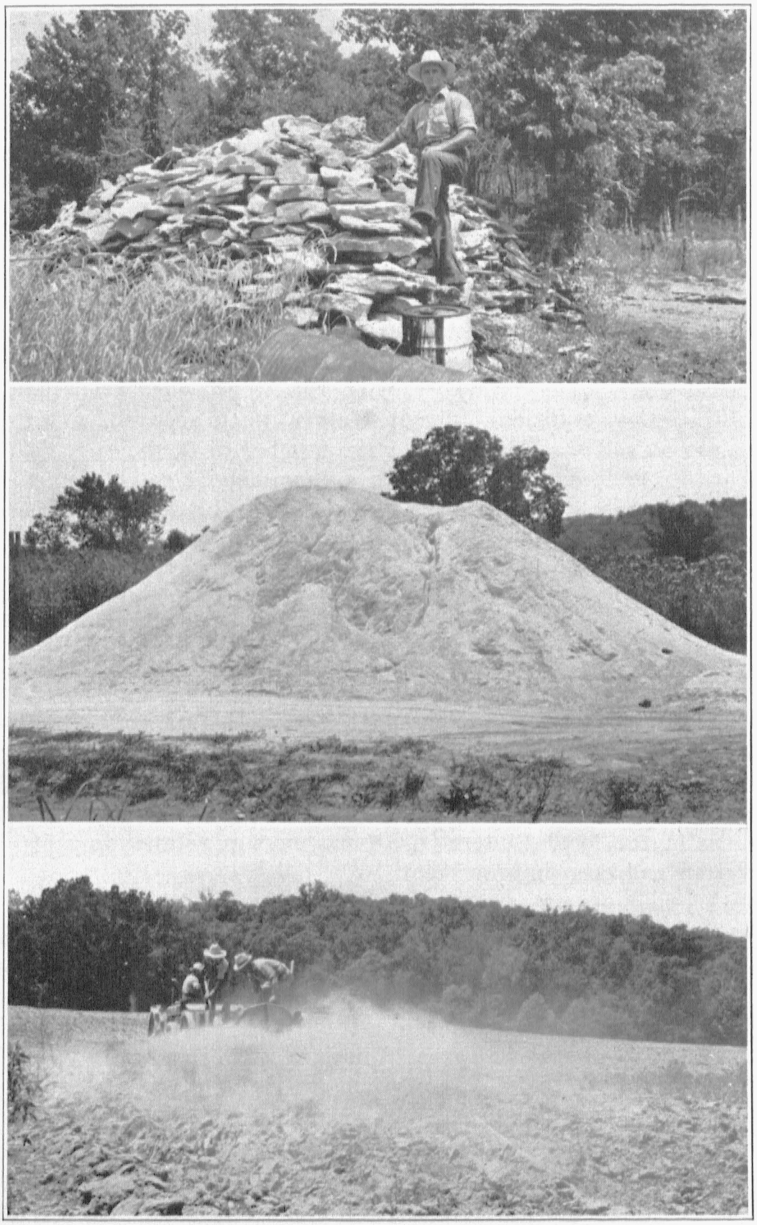
Efforts to control bindweed on 1,900 farms involved the use of some 220,000 pounds of sodium chlorate, in addition to the clean cultivation method employed on the more widely infested fields.

The combined efforts of 66 county soil improvement associations and a very large number of individuals, as well as many years of experience and training in local leadership, have gone into the building of these results. More than 11,000 men served as local leaders in this work, giving freely of their time and effort throughout the year. Soils and crops conferences in 114 counties were attended by 23,600 farmers, a new high record for the 16 consecutive years that such meetings have been held in many of these counties.

Soil Treatments

Use of Lime.—Missouri farmers applied 441,217 tons of ground limestone to their land in 1939, speeding up by about 8 per cent the pace maintained during the preceding three years and bringing the total of the last four years to 1,660,636 tons.

The long-time record of the University of Missouri in this phase of soil conservation is interesting. First, there was the work of the Experiment Station, which began tests in 1905 on the principal soil types and found that the addition of lime was essential to the establishment of legumes on lime-deficient soils. These results were published in bulletins, newspapers, and the farm press and were explained at Farmers' Institutes and other meetings.



Quarrying and crushing limestone on his own farm, C. O. Schoenberg of Moniteau county has limed all his crop and pasture land. The pictures show one of the piles in a total of 325 tons quarried last year, a pile after crushing, and the spreading crew at work.

The ten earliest farm advisers in Missouri in their first full year of work beginning in 1912 and 1913 advocated the use of lime, developed local sources of limestone, and induced farmers to spread a total of 4,478 tons.

By 1920 the amount used annually had increased to 18,000 tons, by 1925 it was 102,000 tons, and in 1930 it had reached 228,000 tons. Dropping with farm purchasing power, the lime tonnage sank to 60,000 tons in 1933, swung slowly upward again the following year, and reached 122,000 tons in 1935.

Liming campaigns on a statewide basis were first organized by the Extension Service in 1916, beginning with a survey of lime sources, chemical and sieve tests on samples of limestone, and the establishment of soil management demonstrations emphasizing the value of lime. The following year the work was intensified in eight counties, additional demonstrators were secured, and tests were run on soil samples from a large number of fields.

Work in 1920 was carried on in a lime-legume campaign, which put 48 limestone pulverizers to work and established 220 lime demonstrations. Continued the following year, this campaign resulted in the use of 41,000 tons and opened the way to even greater developments in the "Clover and Prosperity" campaign which began in 1923.

Under the banner of this new campaign the work in soils and crops moved forward under steadily gathering impetus from 1924 to 1929, involving not only summer demonstration tours but also county conferences of school district leaders as a winter follow-up. Eventually the winter conferences became annual events in 114 counties and have continued to the present time to serve as a rallying point for local leaders in all movements related to soil conservation and crop improvement.

Year after year, the Extension Service and farm leaders cooperating in these campaigns have used every available method to reduce the cost of liming. Storage bins were built at 170 railway stations in 1928 to encourage farmers to pool their orders, to save freight and demurrage, and to maintain supplies in reserve to be hauled to the farms at opportune times. Lime trains were run the following year, dumping 37 trainloads of lime on rights-of-way adjacent to farms and saving much of the cost of hauling.

The tonnage used in 1929 was 236,897 tons, the largest amount ever used up to that time, and even greater than the tonnage of any of the six years immediately following it. Beginning in 1935, the Soil Conservation Service and the CCC camps furnished limestone to their cooperators without any charge for the labor, and a new impetus was given to liming by the Agricultural Conservation Program.

Soil Testing.—Since 1916 the University has maintained a soil testing service for farmers to indicate the soils that are deficient in lime and the amounts of lime needed to correct these deficiencies. By far the greater number of these tests are now made in the field by county agents, many of whom hold regular soil testing community meetings with the assistance of trained local leaders. During 1939 the extension agents tested soil for 7,754 farmers, while the College tested 5,850 additional samples for some 2,000 farmers.

Soil testing trains, making half-day or one-day stops along the lines of the cooperating railway companies in recent years, gave extension specialists and county agents an opportunity to demonstrate soil testing methods and make specific recommendations to large numbers of farmers bringing samples from their farms.

Commercial Fertilizers.—The total amount of commercial fertilizer used by Missouri farmers in 1939 was 57,312 tons, practically all of which was high grade material. County agent reports indicate that approximately 28,000 farmers used fertilizer on wheat, 10,000 on oats, and 7,000 on barley. On corn or cotton fertilizer was used by 10,000, on lespedeza by 7,500, on red clover by 3,600, and on alfalfa by 2,800 farmers.

Fertilizer has been used in Missouri for many years, the total amount used annually varying with the price of farm products, especially that of wheat. From an average of about 64,000 tons a year in the period from 1918 to 1920, this annual tonnage fell gradually to a low of 20,000 tons in 1932. From that date it moved upward again to 40,000 tons in 1934 and thence to an average of 64,000 tons for each of the three years immediately preceding 1939.

The greatest change in the use of fertilizer in Missouri in the last 21 years has been the improvement in quality, as shown by the records of the Agricultural Experiment Station in the administration of the fertilizer inspection law. In 1918 slightly more than one-sixth of all fertilizers used by Missouri farmers contained 10 units or less of plant food, but in 1939 the total tonnage used contained less than one-hundredth of one per cent low grade fertilizer.

T. V. A. Phosphate Demonstrations.—During the last four years the Extension Service has conducted test-demonstrations of high-analysis phosphates in cooperation with the Tennessee Valley Authority. By the end of 1939 there were 148 of these demonstrations in progress in 16 counties. During the year nearly 6,000 acres were fertilized on demonstration farms with 40 per cent superphosphate and 60 per cent metaphosphate.

The first of these demonstrations were established in 1936 on 10 carefully selected farms in as many counties. The number of demonstrations was increased to 39 the second year, to 121 the third, and to 148 last year.

Increasing the Acreage of Legumes

Since decaying organic matter provides not only the nitrogen but most of the other plant nutrients used in plant growth in Missouri, it is essential that a turnover of highly mineralized organic matter be provided to replace that which is destroyed by cultivation and erosion. Cover must also be on the land to check erosion. Legumes can be used to provide cover, desirable organic matter, and also high quality hay and forage for a successful livestock farming system. Legumes, when well supplied with minerals, will furnish nitrogen at a profit. A permanently successful agriculture is impossible without them.

Korean Lespedeza.—In twelve years from the first distribution of small packets of seed to a few farmers, Korean lespedeza has come to occupy 4½ to 5 million acres, the largest acreage of any farm crop in Missouri.

This crop first came to Missouri in the winter of 1921-22, when a 2-ounce packet of seed was received by the Experiment Station from the Division of Forage Crops and Diseases, United States Department of Agriculture. For the next six years, at the Missouri Station, Korean lespedeza was the subject of carefully planned experiments covering the essential phases of its production and use.

In the winter of 1927 seed was sent in 5-pound lots to 30 Missouri farmers. During the next three years similar lots were distributed through county agents and teachers of vocational agriculture to farmers in all counties of the State. By 1930 farmers were also securing seed from commercial sources, and in 1932 nearly one-half million acres were devoted to this crop.

The history of Missouri agriculture contains no development more remarkable than the coming of Korean lespedeza from the other side of the world* to take a dominant place in the cropping systems of the entire State in a period of only 18 years. A scant handful of seed in 1921, multiplied through scientific breeding and distributed to every soil type and county, became Missouri's most widely grown crop in 1939.

The full significance of so vast an increase in the State's acreage of legumes in so short a time is difficult to grasp. Lespedeza's entrance upon the scene was the more dramatic because of the desperate problems of soil depletion, financial distress, and the frequency of summer drouths. Here, suddenly, was a legume easily and cheaply established, reseeding itself, resistant to drouth, pro-

*A small quantity of seed of this legume had been sent to the Department of Agriculture in 1919 by Dr. Ralph G. Mills, an American medical missionary in Korea. As director of the Severance Union Medical College and Hospital at Seoul, Dr. Mills was at that time making a study of the plants of Korea with special reference to their potential uses for medicinal and economic purposes. Besides Korean lespedeza, he discovered several other plants that have since become very helpful to humanity; among them ephedra, from which ephedrine is derived. After serving many years in the missionary field, Dr. Mills returned to his boyhood home at Decatur, Illinois, where he now is active and successful in his profession as a physician and surgeon.

ducing forage at the season of greatest need, tolerant of low fertility but responsive to fertilizer, a dense soil cover, a starter of soil improvement, and a key crop in quick turnover crop rotations.

This new crop has made and still is making a profound change in the whole system of land utilization in Missouri.

Other Legumes.—All the other legumes combined now cover an acreage only slightly more than one-fifth that of lespedeza, yet they too have made important gains in recent years. Table 7 shows the changes in acreage of sod legumes other than lespedeza, by 10-year and 5-year periods from 1909 to 1939, according to the U. S. Census.

TABLE 7.—ACREAGE OF SOD LEGUMES IN MISSOURI; 1909 TO 1939.

Year	Clover & Timothy	Clovers Alone	Alfalfa	Total Sod Legumes
1909	1,504,055	262,000	35,472	1,801,527
1919	850,000	173,400	151,000	1,124,400
1924	1,425,937	324,419	188,225	1,938,581
1929	245,600	335,000	169,000	749,600
1934	1,288,867	170,000	221,000	1,679,000
1939	1,210,000	170,000	210,000	1,590,000

It will be noted in this table that the greatest increase in the alfalfa acreage occurred between 1909 and 1919, a period which included the first six years of organized extension work in the State. Every county agent during those early years had alfalfa growing written large in his program of work. Since its establishment on well adapted soils in that period, alfalfa has maintained a remarkably constant acreage and has produced a crop worth several million dollars annually.

With recent expansion of the liming program, red clover also is coming back to many Missouri farms, making important additions to the income as well as to the organic matter and nitrogen content of the soil. During the past year the Extension Service completed 130 red clover demonstrations widely distributed throughout the State.

Sweet clover, formerly considered a weed, increased in acreage from practically none in 1916 to more than 126,000 acres in 1939. Though most of this acreage is used for pasture and green manure, 49,000 acres were cut for seed and 12,000 acres were cut for hay.

Soybeans in 1939 were grown on approximately 390,000 acres, which was about one-fifth less than that of five years ago. This crop is being replaced in many areas by lespedeza because the latter crop is less conducive to erosion. On the other hand, the newer use of soybeans for hay, followed closely by winter barley or wheat for pasture and further supplemented by contour tillage, is now reducing the threat of soil erosion, which formerly was the principal objection to soybeans grown alone.

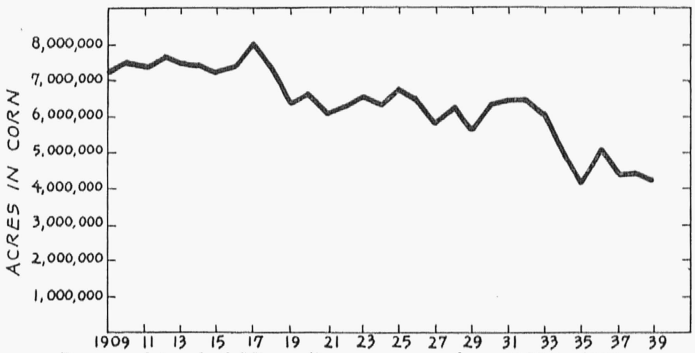
Cowpeas were grown on some 80,000 acres last year, chiefly in the truck gardening areas and in the Southeast Missouri Lowlands.

Winter legumes have not been successful on a wide scale in Missouri, although a few farmers have always shown an interest in them. With-

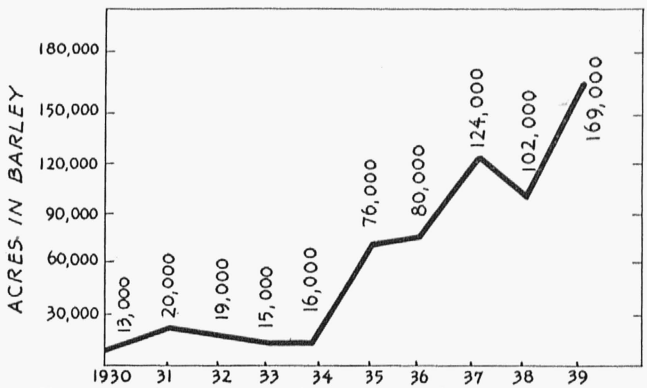
in recent years, however, this interest has become general in Southeast Missouri in reducing the cotton acreage and substituting soil building crops under the AAA programs. The Experiment Station at the Sikeston Field is making studies of burr clover, crimson clover, and winter vetch. These studies also include a new early strain of crotalaria.

Cereal Production

Extension work in cereal production is centered around good land use practices. This has meant the use of small grains to replace corn and to furnish supplementary pastures, especially in combination with lespedeza.



Downward trend of Missouri's corn acreage from 1909 to 1939.



Upward trend of Missouri's barley acreage from 1930 to 1939.

Corn.—The trend in Missouri corn acreage from 1909 to 1939 is shown in the accompanying graph. While corn continues to be the major cereal crop of the State, the acreage devoted to this crop has declined steadily during the last 20 years. This restriction of corn to adapted land still further increases the importance of using better

methods and high producing seed. For this reason the selection and demonstration of adapted hybrids has become a major project in the work of Experiment Station and Extension Service. Investigations completed thus far indicate that adapted hybrids can easily produce one-fifth more corn per acre than open-pollinated varieties. On this basis, if the shift to hybrids were made, the State could remove another million acres from corn production and in so doing reduce total production only one million bushels.

In an endeavor to promote the use of adapted hybrids under sound guidance, the Extension Service and the Experiment Station cooperated during the past year in 112 test-demonstrations, of which 92 were completed. This was the third year of testing hybrids for their adaptability to the soil and climatic conditions in the different regions of the State.

Wheat.—Wheat has been regarded by Missouri farmers as a marginal crop—good when prices are good and very poor when prices are low. Furthermore, wheat is widely used as an emergency crop to plant following a corn failure, as illustrated in the marked increase of wheat in the fall of 1934 and again in the fall of 1936.

In recent years the value of wheat grown in connection with Korean lespedeza has placed a new emphasis on the crop both as a pasture and as a grain crop. The number of farmers using this combination has grown rapidly during the past three or four years. About 6,000 farmers used the combination in 1937, nearly 12,000 in 1938, and over 22,000 are reported in 1939.

The fact that the wheat grown in connection with Korean lespedeza can be utilized as either a pasture or a grain crop, dependent upon the needs and prices of livestock products as compared to grain, should operate to stabilize wheat acreage to some degree.

Oats.—The extension work on the oats crop has been confined largely to seed treatment and the introduction of adapted varieties. In 1917 the variety Fulghum was introduced and in 1920 Columbia an earlier, high yielding variety was made available. Because of the outstanding qualities of these two varieties they have replaced practically all other varieties at the present time, constituting nearly 90 per cent of the total acreage of oats.

As the acreage of corn has been reduced there has been a tendency to increase slightly the acreage of oats, an increase which may be expected to continue for some time because of the increasing use of oats in a one-year rotation with Korean lespedeza.

Barley.—The acreage of barley in Missouri reached an all-time high of 169,000 acres during the past year, an increase of 36 per cent over the highest previous record made two years before. This increase has resulted largely from the development of a superior variety of beardless winter barley and the value of the crop as supplementary pasture and as a safer, early maturing substitute for corn.

During the early years of Missouri agriculture many farmers tried growing spring barley seeded both in the fall and in the spring. That these efforts were not very successful is attested to by the fact that the acreage of the crop was insignificant until 1930. In that year the Experiment Station released a new variety of barley known as Missouri Early Beardless. Seed of this variety was multiplied under certification and demonstrations were established by the Extension Service to show its adaptability and value. Since that time the acreage of winter barley has increased rapidly.

This increase is especially heavy in the south two-thirds of the State, where barley is a safer crop than corn so far as grain production is concerned. In all parts of the State, limited only by winter-killing and low fertility, this crop furnishes pasture, protects the soil from erosion, and serves as an excellent nurse crop.

Rye.—The production of rye, primarily for pasture, has been greatly stimulated by the recent introduction of the Balboa and Abruzzi varieties. Both of these varieties are classified as sweet ryes and have the further advantages of early and upright growth, increasing their value as pasture plants. Under the stimulus of extension campaigns for supplementary pastures, the demand for seed of these varieties has exceeded the available supply. Seed stocks are being multiplied, however, under registration methods, and will probably be adequate to permit mass adoption of these crops by 1941.

Sorghums.—Since 1930 the Extension Service has worked toward a greater use of Atlas sorghum for silage anywhere in the State, the use of pink kafir for grain on lands normally producing less than 25 bushels of corn per acre, and the use of Sunrise kafir for grain and as a substitute for fodder corn on soils of medium to lower fertility.

Results obtained by farmers using these crops have been highly satisfactory, confirming the selections made by the Experiment Station in ten years of experimental work immediately prior to the beginning of these extension campaigns.

Acceptance of these sorghums by farmers was so widespread that much attention had to be given by the College to sources of seed in order to protect Missouri buyers against inferior and mixed seed. The work of the Missouri Corn Growers Association became an important factor in the production of pure seed, supplemented by special work with 4-H clubs. From 2,000 pounds of Sunrise kafir seed distributed to 4-H club members in 1937, more than 480,000 pounds of seed was produced and certified. This was all planted in the State the following year, and as a result ample seed stocks have been available.

Cotton Improvement.—From an estimated 32,000 acres in 1879, cotton production in Missouri increased gradually to 125,000 acres in 1911. The total harvested in 1939 was 375,000 acres.

Cotton is now grown to some extent in 17 Missouri counties, but 90 per cent of the total acreage is concentrated in five counties, Pemiscot, Dunklin, New Madrid, Mississippi, and Scott. By adding three adjacent counties, Stoddard, Butler, and Ripley, 99 per cent of Missouri's cotton acreage is accounted for.

Even though grown almost entirely within these eight counties, cotton ranks third in gross farm value among Missouri's field crops, being exceeded by only corn and wheat. The crop's annual worth during the last three years has ranged from 15 to 18 million dollars.

The University of Missouri has maintained an extension program for cotton improvement since 1917, major attention having been given in that year to time and rate of planting, close spacing, and shallow and frequent cultivation. Three years later other important goals were set up, as indicated in County Agent M. D. Amburgey's report for Pemiscot county. He stated: "The procedure agreed upon with our local leaders may be summed up as follows: 'Plant pure seed, harvest carefully, and market in the lint'."

Very early in this development it became apparent to extension workers that attention must be given not only to the yield per acre but also to the grade and staple, since all three are controlling factors in the value of any cotton crop. While Missouri cotton yields always have been high, the staple length until recent years was the shortest grown in the Mississippi bottomlands and the grade was the poorest in the entire Cotton Belt.

These facts about the market quality of Missouri cotton were clearly demonstrated following the discontinuation of the practice of selling "in the seed" in 1933 under the pressure of extension campaigns and the steady increase in the number of well informed leaders.

The improvement program involved not only the work of the Experiment Station in the selection of the best adapted varieties—since variety affects yield, staple, and grade—but also the development of convenient sources from which growers can obtain good seed of the right varieties. It involved also the cooperation of ginners.

An accurate record of the ginnings in 65 gin communities in 1938 indicated that 78 per cent of the entire cotton crop in those communities had been planted that year with two approved varieties, Ambassador and Deltapine. In 59 gin communities in 1939 the percentage planted to these varieties was 77 per cent.

The general use of approved seed had the desired effect on the staple-length of Missouri's cotton crop, as shown by the fact that the portion of the crop stapling 1 inch or longer increased from 31½ per cent in 1935 to 77.9 per cent in 1938. Concurrently an improvement was made in the grade of Missouri cotton, 48 per cent of the crop selling as middling or better in 1938 as compared to only 37 per cent three years earlier.

Protection of cotton growers against losses due to seed-borne disease formed an important part of the work in the winter of 1938-39, when germination tests revealed a heavy infection in the available seed. Immediate institution of greenhouse tests by the Experiment Station enabled the Extension Service to reach growers before planting time with a warning that their seed was seriously infected and to recommend the testing of all seed, the increase of planting rates adjusted to the germination percentage, and the treating of infected seed. As a result hundreds of growers were saved the necessity of replanting and losses due to late stands.

Pasture Improvement

Although the pasture acreage on Missouri farms was the last to receive consideration by most farmers, and consequently by college men as well, recent years have seen a general awakening of interest in pasture improvement.

Extension work in this field was undertaken in the early 20's and had been crystallized into rather definite campaigns, especially in dairy sections of the State, by 1927 and 1928, but it was not until 1930 that this work began to show widespread effects. Great impetus was added to pasture improvement about this time by the Experiment Station through the introduction of Korean lespedeza and improved strains of winter barley, two crops on which the investigators had been quietly working for nine years or more.

These crops worked into existing cropping systems and supplemented permanent pastures, extending the pasture season to a period of nine or ten months. Resultant increases of income from pasture, aided by the trend away from inter-tilled crops, aroused a determined interest in all adapted pasture crops.

A regional pasture contest, started in 1932 in cooperation with the Kansas City Chamber of Commerce, was made a statewide event two years later and has so continued to the present time with the added assistance of the St. Louis Chamber of Commerce. For eight years these contests have served to arouse interest in pasture improvement through public recognition of the most efficient demonstrators and the accumulation of records of the practical benefits gained.

During the first four years, attention was centered on the improvement of permanent pastures and the returns from the livestock produced. In 1936 supplementary pastures were added and contestants were judged on the basis of their type-of-farming areas. The latest development, in 1939, was a change in the score card to include the effect of the whole farming system, including pastures, on soil fertility and erosion, as well as the total returns through livestock from both pasture and supplementary feeds produced on the farm.

Interest has increased rather steadily from the beginning of these contests to the present, reaching a new high mark in 1939 when 44 counties were represented by 239 contestants.

The state winners in the 1939 contest, Andrew and Dorsey Bass of Boone county, utilized 333 acres of their 550-acre farm for pasture and obtained nearly 100 animal unit days of pasture from each acre so used. They also harvested 150 tons of legume hay and 115 tons of mixed hay, besides 405 tons of Atlas Sorgo silage. Averaging all the livestock on the farm, each animal unit was on pasture 303 days. Bass Brothers grew no corn, but by purchasing 135 additional tons of hay, 1,480 bushels of corn, 300 bushels of oats, and 8 tons of protein supplement—all fed on the farm—these young men produced 11,000 pounds of beef, 32,840 pounds of mutton, 1,500 pounds of wool, 133,679 pounds of milk, and 9,407 pounds of butterfat.

Control of Weeds

The activities of the Extension Service along the lines of weed control for many years consisted chiefly of work for crop rotations, fertilizer treatments, erosion control and similar good farming practices, with only occasional concentrated campaigns in areas infested with Johnson grass or Canada thistle.

In 1935 and 1936, county agents reported that a new invader, field bindweed, had established itself in so many widely scattered locations throughout the State that a campaign was instituted to teach identification and control of this pest. A survey was made each year for three years, indicating that the infestation had reached 10,000 farms in 1937, more than 16,000 in 1938, and 21,389 in 1939. It is likely that this speedy increase in number of farms reported was really indicative of greater accuracy in identification and survey methods, but at any rate the surveys revealed the necessity for prompt and concerted action.

Since that time the Extension Service has used demonstrations, meetings, newspaper publicity, radio broadcasts, exhibits, posters, letters, and printed circulars in campaigns for bindweed control.

Special efforts were made to enlist the cooperation of the State Department of Agriculture, the State Highway Department, the Soil Conservation Service, the Farm Security Administration, the schools, railway companies, insurance companies, and others.

Results in bindweed control during the past year are reported by county agents on 1,731 farms through the use of 220,000 pounds of sodium chlorate and on 270 farms through clean cultivation. A total of 419 public demonstrations were completed.

The Clover and Prosperity Campaign

The Clover and Prosperity campaign, to which reference has been made in an earlier section of this report, was inaugurated by the soils and crops projects of the Extension Service in the summer of 1922, when two speakers with a truck load of exhibit material toured 12

counties, making 20 one-day stops called "Clover and Prosperity Days". Attendance averaged about 500 persons per meeting.

In the summer of 1923 another tour was made with the truck in 26 additional counties, drawing a total attendance of 29,000 persons. This plan was continued each summer until all counties had been reached with this interest-arousing phase of the campaign.

The winter of 1924 witnessed the first "Clover and Prosperity Conference", an institution that has steadily increased in usefulness to the present time, though now known as the winter soils and crops conference. Starting in 12 counties in 1924, this phase of the work, to develop a county-wide body of community leaders in each county, soon became standard procedure in most counties of the State. In 1936, for the first time, winter conferences were held in all of the 114 counties with a total attendance of 15,500 persons.

In the meantime the truck tour has been discontinued, being succeeded by special speaker and exhibit trains and even later by soil testing trains, as a means of arousing interest on a wide scale.

A summary of the winter conferences in this long-time campaign shows a steady growth in attendance through 16 years—from 600 the first year to 20,103 in the year just ended.

Promoting the Use of Pure Seed

In the last five years the number of Missouri farmers planting certified or registered seed of field crops increased from 3,234 to 18,429. Extension of this practice has been hastened in recent years by the eager interest of farmers in new pasture crops, substitutes for corn, drouth-resistant crops, hybrid corn, and long-staple cotton.

Farmers have always faced the problem of finding reliable sources of seed that would prove true to name, free from adulteration, and of high germination. The Experiment Station from the date of its establishment has devoted much time and effort to the development and selection of adapted varieties. The Missouri Corn Growers Association also has worked for 30 years or more to maintain high standards in field seeds by honest and careful production methods and through official inspection.

With this organization the Extension Service cooperates closely, handling the educational phases of the pure seed program. During the last year the amounts of seed registered under this cooperative plan were as follows: Open-pollinated corn 3,500 bushels, hybrid corn 60,000 bushels, wheat 26,000 bushels, oats 10,000 bushels, barley 32,500 bushels, rye 12,000 bushels, cotton 1,631,760 pounds, sorghums 236,000 pounds, and other seeds 80,000 pounds.

One of the 1,412 grass waterways established by Missouri farmers in 1939. By seeding their draws and depressions to such grasses as timothy and redtop, these farmers have greatly reduced their soil losses.

Heavy growth of crotalaria, which is being turned under for green manure on the farm of S. C. Head near Broseley in Butler county.

SOIL CONSERVATION

Although soil conservation has been distinguished in title from closely related work in soils, crops, and engineering only since July 1, 1935, many of the practices essential in safeguarding our soil resources have been advocated by the Extension Service since its establishment. The first farm advisers in Missouri in 1912 and 1913 induced farmers to apply lime as a means of obtaining stands of clover, and every annual report of the Extension Service since that time has noted the adoption of this practice by an ever increasing number of Missouri farmers.

Lime, legumes, crop rotation, pasture improvement, and the utilization of crops through livestock have been recurrent figures in the pattern of extension teaching for 28 years. Terraces, which Missouri farmers were much slower in accepting, were first demonstrated by the Extension Service in 1918, and these demonstrations were supplemented by a circular on terraces issued by the Experiment Station in 1920.

Extension teaching in this field became more and more effective as actual measurements of soil losses under Missouri conditions were made on the erosion experimental plots established by the Missouri Experiment Station in 1916. National recognition of the menace of soil wastage resulted in a swift succession of Congressional enactments creating (1929) the Federal soil erosion experimental farms on various soil types throughout the country, (1933) the Civilian Conservation Corps with subsequent organization of the CCC erosion camps, and (1935) the consolidation of erosion control activities in the Soil Conservation Service as a bureau of the Department of Agriculture.

Since 1935, other Federal agencies such as the Agricultural Adjustment Administration, Farm Security Administration, and the Tennessee Valley Authority have given increased attention to conservation. Highly important, also, was the creation of the State Conservation Commission on July 1, 1937, as the result of the approval of Constitutional Amendment No. 4 by popular vote the preceding November.

Work Reported in 1939

The fundamental importance of fertility in conserving soil is becoming known to an increasing number of farmers, as seen in the fact that 5,758 more farmers used limestone in Missouri in 1939 than in any previous year, the total amount applied being approximately one-half million tons. The use of high-analysis fertilizer is also increasing, having reached a total of 83,499 tons, most of which was phosphate. Increased use of legumes and other pasture and meadow crops and the widespread utilization of sweet clover as green manure have added greatly to the organic matter in the soils.

County training schools for soil conservation leaders were continued during the year, giving intensive training to 500 young men in 29 counties and raising the total number thus trained to more than 1,000 in 37 counties. The work given in these schools is sufficiently thorough to qualify the leaders to lay out terrace and contour lines, to supervise the establishment of grassed outlets and the building of checks, and to assist their neighbors in all phases of soil conservation. In addition, a very much larger number of leaders have been trained in single phases of conservation.

A young farmer in Cooper county learning to use the farm level at a county extension school for soil conservation leaders.

Fifty-two county agents reported 1,558 leaders trained during the year to do contouring, terracing, and gully control work. That trained leaders are highly effective is indicated by the fact that 135,636 acres, or 80 per cent of the total acreage contoured in the State this year, were contoured in the 44 counties where leader training schools were held.

Increase in Legume Acreage.—The acreage of Korean lespedeza reached a new high mark of 4,438,489 acres, an increase of 128 per cent over that of the preceding year. Lime and phosphorus soil treatments have made more successful the growth and utilization of such legumes as sweet clover, red clover, and alfalfa, as well as that of permanent pastures and meadows. The acreage of intertilled crops has still further declined throughout most of Missouri during the year.

Contouring and Strip Cropping.—An idea of the rapidity with which contouring is being adopted by Missouri farmers is gained from the record made this year in Atchison county, where 580 farmers contoured 28,610 acres as compared to practically no contouring at all only three years ago. The total number of acres contoured in the entire State this year was 171,940 acres, a 25 per cent increase in one year.

Buffer strip cropping, on 11,243 acres, kept pace with contouring, making a 30 per cent increase in acreage as compared to the preceding year. An increase of 22 per cent was reported in the number of farmers using pasture furrows.

The simplicity of contouring appeals to Missouri farmers very strongly, as indicated in a statement by W. F. Dickman of Perry county. He says: "I have been contouring for the last four years,

and I have found that it is one of the easy, cheap, and effective ways to cut down soil losses."

Farm Ponds.—More and deeper farm ponds were constructed in Missouri in 1939 than in any previous year. A total of 6,358 ponds were reported from 89 counties. Of this number, 2,054 were at least 8 feet deep, and 902 were fenced, with water piped to tanks outside the enclosure. The value of ponds is attested by many farmers, among them Paul Phillips of Dallas county, who made a pond two years ago, fenced it, piped the water to a stock tank in the pasture below, and planted trees to protect the watershed above the pond. He says: "After using this pond two years I am sure it has saved me more labor than I put into it, and my cows start the winter 100 pounds heavier than they used to do after dry sersons."

Control of Gullies.—Although 5,467 farmers were reported as practicing gully control on 122,209 acres this past year, farm leaders today are generally agreed that the most effective control of gullies depends mainly on the type of farming followed on the watersheds draining into the gullies. Reports indicate that wherever farmers are encouraged to control their gullies by holding the rainfall on the watersheds or by good crop rotations, contouring, terraces, and diversion channels, the greatest progress is made toward long-time solution of this problem.

Leader training schools are helping to improve the quality of gully control structures where such must be used. Typical results of training are reported from Cooper county, where one such leader built nine concrete soil saving dams on the farms of five neighbors.

Terracing Systems.—Continued emphasis on terrace systems supplemented by grassed outlets and contour cultivation is resulting in much more satisfactory results from the terraces. During the past year, terrace systems complete in all these respects were in use on 1,165 farms in 94 Missouri counties.

The first standard terraces in Gasconade county were built in 1935 by H. W. Meyer, an outstanding farm leader of near Owensville. As a result of this highly successful demonstration, 61 farmers in the county have built terraces on more than 1,000 acres of rolling land. Mr. Meyer says: "I do not like to work over terraces as well as on unterraced fields, but I would rather do it than have my land wash away."

Soil Improvement Associations

In 66 Missouri counties, soil conservation practices have been greatly extended by the work of county soil improvement associations. These associations have been largely responsible for the year's enormous increase, 40 per cent, in the number of farmers using limestone. Through their nonprofit, cooperative activities they have also reduced the cost of fertilizers, legume seed, terracing machinery, and other essentials in the soil conservation program.

The Clark County Association, as an example, not only reduced the cost of 10 tons of lespedeza seed and 84 tons of fertilizer, but distributed 25,000 tons of lime at a flat price of $1.60 a ton to all parts of the county and bought 20 lime spreaders for sale and rental at cost.

In Knox county two and one-half times more lime, 17,777 tons, were used in the past two years than in the preceding eight-year period. In the earlier years commercial limestone cost $2.50 a ton, but now the County Soil Improvement Association delivers it at an average of $1.70.

This rubble-masonry soil saving dam on the R. W. Lacy farm in Cooper county was built by the members of the leaders' training school.

Cooperative purchase and maintenance of terracing machinery and equipment for constructing ponds is another important service rendered by the soil improvement associations. During the year, county agents reported 296 pieces of such equipment cooperatively owned and operated by farmers.

The Grundy county Soil Improvement Association, besides making all the materials of soil conservation work available at minimum cost, also rendered an outstanding service by sponsoring an eight-day extension training course in soil conservation, which was attended by 37 selected farm leaders representing all parts of the county. The association also awarded a hand level to each trainee with a perfect attendance record and a complete farm level to the leader who laid out the largest total acreage for contour planting.

Of the DeKalb County Soil Improvement Association, the following statement is made by County Agent F. P. Ward: "They purchased a farm level for each township, to be used by trained leaders in laying off contour and terrace lines. They provided a terracing machine to be used by farmers who desired to build their own terraces. Two lime spreaders were also furnished by the association."

Pasture Improvement Aids Conservation

The improvement of pastures and the extension of their acreage are important objectives in conservation farming. Even on farms of low fertility where these objectives have been realized in conjunction with other good management practices, increased yields of high quality feeds are being produced.

An illustration is found in the 140-acre farm of D. W. Scotten in Pettis county. When purchased four years ago, this farm was weedy and badly gullied, but by using lime and fertilizer in a pasture farming system Mr. Scotten now has both the weeds and gullies under control. Growing wheat and sweet clover, oats and lespedeza, alfalfa, and a permanent pasture mixture of bluegrass and lespedeza, he pastures out all small grain.

Improvement of pastures by controlled grazing and restoration of fertility was demonstrated in Cooper county by Morton Tuttle on a 10-acre pasture, which four years ago was completely worn out with only a little bluegrass scattered here and there among ragweed, dock, and foxtail. At that time Mr. Tuttle applied 3 tons of lime, 200 pounds of 20 per cent phosphate, and 10 loads of barnyard manure per acre. His records show that he is now maintaining eight times more livestock on this acreage than he did four years ago.

The CCC Erosion Camps

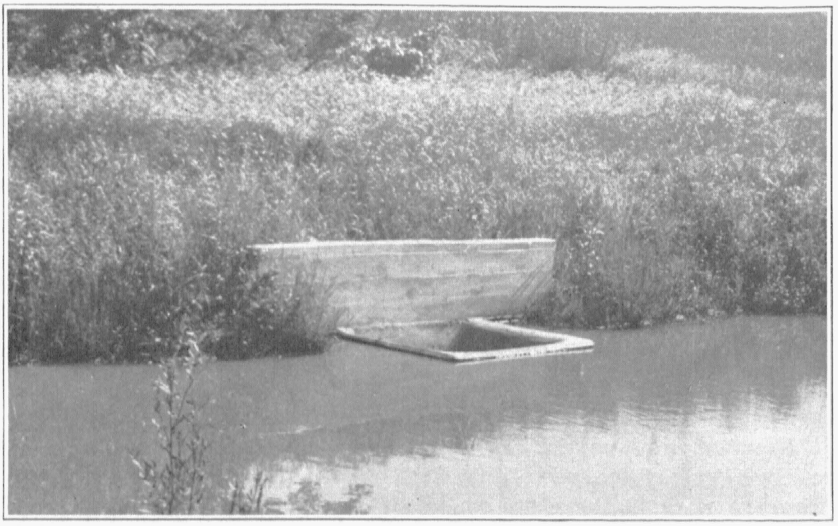
Soil conservation demonstrations have been established by Civilian Conservation Corps camps in 29 counties since this work was begun in 1933. At the end of 1939 there were 21 CCC camps in the State under the supervision of the Soil Conservation Service, 17 of them doing soil conservation work and 4 drainage work.

In 39 counties, 2,024 demonstrations established by the CCC camps in the last few years continue to demonstrate conservation methods and results and are therefore highly useful in extension teaching.

Soil Conservation Demonstrations

A total of 96 complete farm demonstrations of soil conservation measures, developed cooperatively by the Extension Service and the Soil Conservation Service, are now in effect in 65 counties. These demonstrations are planned to cover a five-year period and to bring into use all conservation measures that are needed and ap-

plicable. In addition to these cooperative demonstrations, the Extension Service has established 179 others of the same type in communities where needed to show the methods and results of a complete soil-saving system of farm operation.



This drop inlet on the James Busch farm in Franklin county is very effective in holding back run-off water until sediment is deposited for several hundred feet upstream.

THE INFORMATION SERVICES

The media through which the Extension Service made public the information considered most timely in meeting the problems of farm and home, day by day throughout the past year, included several series of formal publications, releases to newspapers and farm journals, circular letters, personal broadcasts by radio, a daily radio manuscript service, and exhibits.

Formal publications included circulars and leaflets for use by adults, manuals and leaders' guides, 4-H club circulars, and posters. In these series a total of 59 publications were issued during the year in editions totalling 447,500 copies.

Community newspapers representing all of Missouri's 114 counties published 44,819 different news stories and information releases prepared for local use by the county agents and home demonstration agents. From the state office all newspapers and farm journals in the state were supplied with a weekly information service, and the news syndicates and metropolitan dailies were given spot news day by day throughout the year.

County extension staffs prepared and mailed to special lists of cooperators a total of 7,500,000 circular letters, used extension exhibits at 1,053 events, and made 731 broadcasts from local or nearby radio stations. Directly from county extension offices farm people received in answer to their requests a total of 162,605 bulletins and circulars published by the Missouri College of Agriculture.

Visual aids, including black and white photographs, stereotype mats, filmstrips, and glass slides, were used to a much greater extent than in any previous year. Glass slides were used largely for showing recent local photographs in natural color, by the use of projectors that are now standard equipment in 80 per cent of the county extension offices.

Fourteen Missouri county extension offices are now equipped with modern 16-mm. projectors capable of showing motion pictures with sound.

Newspaper Cooperation

From the earliest days of cooperative extension work in Missouri, the newspapers and farm journals have joined with the College of Agriculture in striving to improve agriculture and home life. To all Missouri newspapers and farm journals, the College issues a weekly news service, now in its 29th year. Moreover, every county extension office in the State sends all county papers a weekly copy service of local news and information.

In addition to the facts already noted, it should be said that extremely valuable assistance has been given to extension workers and local leaders in publicizing farm and home improvement programs, not only by the individual newspaper men and women of the State, but also by their official organization, the Missouri Press Association.

The Stereotype Mat Service

For the past 12 years the Agricultural Extension Service has maintained a free service of stereotype mats to aid in the illustration of agricultural and home economics information. First established in 1928, this service has been popular with newspaper publishers and useful in extension teaching.

Cuts cast from these stereotype mats have been widely used by newspapers to illustrate special agricultural and home economics editions, as well as farm pages and departments. A total of 35,367 mats have been supplied in answer to requests during the 12 years.

Radio Information Service

A manuscript service, supplied daily to all radio stations in the State desiring to use it has been a part of the informational program of the Extension Service during the past three years. Con-

sisting of many short stories of success reported from the farms and homes of people who are following the recommendations of the College of Agriculture, this service is designed to fit into the established farm and home programs of the cooperating stations.

Seventeen stations made use of this service during the past year; 14 within Missouri, and 3 just outside the state boundaries, as follow: KMOX, St. Louis; KWK, St. Louis; KFUO, St. Louis; WDAF, Kansas City; KMBC, Kansas City; KITE, Kansas City; KFEQ, St. Joseph; KWTO, Springfield; KMBH, Joplin; KWOS, Jefferson City; KFRU, Columbia; KFVS, Cape Girardeau; KWOC, Poplar Bluff; KDRO, Sedalia; WTAD, Quincy (Ill.); KFNF, Shenandoah (Ia.); and KOAM, Pittsburg (Kans.).

The earliest date on which radio was used by the University of Missouri to disseminate farm and home information was March 7, 1922, when a 50-word message was telegraphed to the State Bureau of Markets at Jefferson City to be broadcast from Station WOS. The message was as follows:

> "Early sowing increases the yield of oats. The University of Missouri College of Agriculture reports that oats sown on March 17, last year, came safely through the April freeze and yielded 48 bushels per acre. Oats sown two weeks later yielded 37 bushels, and a month later only 25 bushels."

Daily, throughout the remainder of that spring and summer, these 50-word messages were continued as a public information service over the facilities of the State Bureau of Markets. The messages were transmitted to Jefferson City by courtesy of Major L. E. Jones, then in charge of the Signal Service of the Reserve Officers Training Corps at the University.

The following spring, 1923, the "Wednesday Night Farmers' Meetings by Radio" were established by the State Bureau of Markets as a regular feature on the broadcasting schedule of Station WOS, and the College of Agriculture sent one speaker to participate in each of these broadcasts. All travel expense was paid by the Extension Service. This plan continued in operation through 1925.

During the next three years, the College of Agriculture sent two or three speakers a week to the new station, KFRU, then owned and operated by Stephens College at Columbia. These talks were 20 minutes in length and were a part of an evening program beginning at 7:15 o'clock. In the earlier part of the same period speakers were sent also to Christian College at Columbia, transmitting their talks by leased telephone connections with Station WOS at Jefferson City, as part of a program sponsored jointly by Christian College and the State Bureau of Markets.

For a period of four years, 1929 to 1933, the use of radio by the Extension Service was limited to a manuscript service sent once a

week to four or five stations, including with some variation from year to year the following: KMBC, Kansas City, KMOX, St. Louis; KFRU, Columbia; WLS and WMAQ, Chicago (Ill.); and KMA, Shenandoah (Ia.).

From 1934 to 1936, inclusive, speakers from the College staff appeared daily at the local studios of KFRU to make 10-minute broadcasts of timely farm and home information at an early morning hour varying from 6:15 to 6:30 depending on the time of year. In 1937 the present daily manuscript service was established.

Photography and Other Visual Aids

Great advances have been made by the Extension Service in the last few years in the use of black and white photographs, color slides for screen projection, filmstrips, and motion pictures. By the end of 1939, four-fifths of the county extension offices were equipped with cameras, and 91 of the 114 counties had screens and projectors for showing pictures at extension meetings. Most of these projectors were adapted to the use of the newer type, 2-by-2, glass slides for showing natural color photographs.

A steadily growing number of extension workers are taking pictures of the actual results of better practices on the farms of the people with whom they work. Such pictures have an appeal possessed by no other type of visual aid and are most convincing when viewed by groups already familiar with the objects, persons, and places shown. This is true of local pictures, whether shown in black-and-white or full natural colors; though the latter, of course, are especially convincing.

Because of recent improvements in cameras, films, and projectors, the Extension Service in the last three years has put forth a special effort to encourage more skilful and extensive use of these facilities. As a result, several projects have prepared black-and-white film strips of Missouri pictures, while 34 members of the staff have successfully entered the field of color photography.

For some two years past, the state specialists in several extension projects have been making color pictures showing the methods and results of the better practices in their respective lines. As a result, some 2,000 slides in natural color are now available at state headquarters to aid the advocacy of better methods.

Extension Service Publications

The Extension Service issued its first official publication in January, 1915, and from that date to the present has prepared and put into print a total of 813 publications in editions totaling 8,436,000 copies. The number of publications issued in the past year was

59, including 33 circulars, 2 leaflets, 3 manuals, 20 circulars and guides for 4-H club work, and one poster. The list follows:

TABLE 8.—EXTENSION PUBLICATIONS; DECEMBER 1, 1938, TO NOVEMBER 30, 1939.

No.	Title	Pages	Edition
	NEW CIRCULARS		
395	Feeding Baby Chicks	4	15,000
396	Dry Cleaning at Home	8	10,000
397	Pruning Apple Trees	16	10,000
398	Building with Rock	15	10,000
399	Conserving Soil by Contour Farming	19	10,000
400	Annual Report of Director of Extension	42	7,500
401	Water and Sewage Disposal for Farm Homes	14	10,000
402	Spraying Apples, Peaches and Cherries	12	10,000
403	Care and Hitches for Work Horses	12	10,000
404	The Missouri Summer Range Shelter	4	10,000
405	Rations for Dairy Cows	11	15,000
406	Canning Fruits and Vegetables	7	20,000
407	Loading Livestock	4	10,000
408	Lamb and Mutton on the Farm	22	10,000
409	The Planting and Care of Forest Trees on Missouri Farms	11	10,000
410	Some Causes of Soft Pork	4	5,000
	CIRCULARS REPRINTED		
276	Sudan Grass Production in Missouri	2	5,000
277	Missouri Type Milk Houses	12	2,000
323	Farm Work Mares and Colts	15	10,000
331	Castrating and Docking Lambs	4	10,000
332	Good Use of Farm Land in Missouri	8	10,000
334	The Missouri Poultry House	8	10,000
337	Red Sorrel	3	5,000
355	Terrace Outlets for Missouri	27	4,000
370	New Farming Systems for S. E. Mo. Uplands	18	8,000
371	Cutting, Curing, and Canning Pork and Beef	8	10,000
373	If You Would Learn to Sew	47	12,000
375	Re-Planning Missouri Farms	32	15,000
384	Poultry House Remodeling	16	10,000
391	New Systems on Missouri Upland Farms	31	3,000
394	Canning Meat, Fish and Chicken	7	10,000
339	Testing Soils for Acidity	4	7,500
346	Temporary Silos	8	2,000
	LEAFLETS		
48	Using a Pressure Cooker	2	15,000
49	Soybeans and Winter Barley in One-Year Rotation	2	7,000
	MANUALS		
6	Soil Building Practices	11	5,000
7	Measuring Changes in Soil Productivity	12	3,000
5	Writing Extension News (Reprint)	24	1,000
	BOYS' AND GIRLS' CLUB CIRCULARS		
	New		
60	Food Preservation II	21	5,000
61	Beekeeping	20	4,000
62	Know Your Farm	39	5,000
63	Home Furnishings II	32	5,000
64	Posture	20	10,000
65	Dairy	43	10,000
66	Home Furnishings	18	10,000
	Reprints		
15	Health and First Aid	35	10,000
21	Clothing I	12	5,000
33	Food Preservation I	32	5,000
40	Food Preservation II	31	5,000
55	Farm Handicraft II—Woodworking	41	10,000
56	Poultry	43	10,000
	4-H CLUB LEADERS' GUIDES		
...	Entomology II—Beekeepers' Club	8	1,000
...	Poultry Clubs I, II, III	8	2,000
...	Home Garden Club	8	2,000
...	Soil Conservation II—Know Your Farm	8	1,000
...	Food and Nutrition I and II	16	5,000
...	Food and Nutrition III	8	5,000
...	Dairy Clubs I, II, III, IV	8	2,000
	POSTERS		
15	Soft Pork	..	'500