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Agricultural Experiment Station

OF THE

Alabama Polytechnic Institute

AUBURN

Annual Report of the Director of the Experiment Station on Work Done Under the Local Experiment Law in 1918

By
J. F. DUGGAR
Director

1919
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Opelika, Ala.

AGRICULTURAL EXPERIMENT STATION

OF THE

ALABAMA POLYTECHNIC INSTITUTE

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Auburn, Ala., Feb. 19, 1919.

HON. M. C. ALLGOOD,
Commissioner of Agriculture and Industries,
Montgomery, Ala.

Dear Sir:—In accordance with Section 5 of the Local Experiment Law, requiring me, as Director of the Experiment Station of the Alabama Polytechnic Institute, to make a full and complete annual report through the Commissioner of Agriculture to the Governor of Alabama, I herewith hand you my report of work done under the Local Experiment Law in the calendar year 1918, with the request that you transmit this report to his Excellency, Governor Thomas E. Kilby.

Yours very truly,
J. F. DUGGAR,
Director Experiment Station of
the Alabama Polytechnic Institute.

STAFF OF SPECIALISTS ENGAGED IN WORK UNDER THE LOCAL EXPERIMENT LAW

J. F. DUGGAR, *Director*

AGRICULTURE AND PLANT BREEDING

* J. F. Duggar, in charge.

* E. F. Cauthen ---------- Agriculturist
* M. J. Funchess ---------- Agronomist
J. T. Williamson ---------- Field Agent in Agriculture
**H. B. Tisdale ---------- Associate Plant Breeder
* O. H. Sellers ---------- Assistant in Agriculture

LIVESTOCK AND POULTRY INVESTIGATIONS

* Geo. S. Templeton, in charge.

E. Gibbens ---------- Assistant in Animal Husbandry
G. L. Burleson ---------- Assistant in Animal Husbandry

ENTOMOLOGY

* W. E. Hinds, in charge.

* F. L. Thomas ---------- Assistant in Entomology
* J. M. Robinson ---------- Assistant in Entomology

HORTICULTURAL INVESTIGATIONS

* G. C. Starcher, in charge

* C. L. Isbell ---------- Assistant Horticulturist

JUNIOR AND HOME ECONOMICS EXTENSION

**L. N. Duncan, in charge

**Miss Mary Feminear, State Agent Home Demonstration Work
**J. C. Ford ---------- in Charge Pig Clubs
**C. E. Newman ---------- Assistant in Boys' Crop Clubs
**P. O. Davis ---------- Assistant in Boys' Crop Clubs

PLANT DISEASES

* G. L. Peltier, in charge

DRAINAGE AND FARM MACHINERY

---------- Agricultural Engineer

* Devoting only part time to Local Experiment Work.
**In co-operation with United States Department of Agriculture.

REPORT OF WORK DONE DURING 1918 UNDER THE LOCAL EXPERIMENT LAW

PART I

DIRECTOR'S SUMMARIZED REPORT OF WORK IN ALL DEPARTMENTS

BY

J. F. DUGGAR, Director of Experiment Station

This report, for the calendar year 1918, deals with that part of the work of the Experiment Station conducted in accordance with the Local Experiment Law passed by the Legislature of Alabama in 1911 and approved February 9th of that year.

This Law provides the means for conducting in the various counties of Alabama experiments with staple field crops, clovers, grasses, and other pasture and hay plants; with fruits and vegetables; and for work in plant breeding of field and forage crops. It especially provides for experiments to determine the fertilizer requirements of the various soils of the state, and of the differing fertilizer needs of our principal field crops, such as cotton, corn, sweet potatoes and peanuts. This Law also makes provision for work in combatting the cotton boll weevil and other insects pests; for live stock and poultry investigations; for assistance in combatting plant diseases; for work with drainage and farm machinery; for publishing the results of experiments; and it also includes an item for extension work in this connection.

PUBLICATIONS

The publications of the Alabama Experiment Station for the calendar year 1918 published from the Local Experiment Fund are as follows:

Bulletin No. 199: Report on Freeze Injury to Citrus Trees for 1916 and 1917, with Notes on Orange Culture in South Alabama.

Bulletin No. 206: Grazing Peanuts with Hogs, versus Marketing a Crop of Peanuts.

Bulletin No. 207: Fertilizer Tests with Cotton in South Alabama.

Circular No. 37: Sweet Potato Root Borer.

Circular No. 38: Annual Report of the Director of the Experiment Station on Work Done Under the Local Experiment Law in 1917.
Circular No. 39: The Argentine Ant and How to Control It.
Press Bulletin No. 93: Corn Insect Control Through Seed Selection and Trap Planting.

Field Crops and Fertilizers

In 1918 there were conducted 388 field experiments on 274 farms located in every county in Alabama.

Fertilizer Needs of Principal Soils.—Possibly the most important of these were the experiments to determine the fertilizer requirements of cotton, corn, and other field crops when grown on each of the principal soil types found in Alabama. The experiments of this class number more than 50. Each of these experiment fields was divided into 12 equal measured areas or plots, one of which received acid phosphate alone, another only cotton seed meal, and another merely a potash salt. On other plots in each experiment several fertilizers were applied in varying combinations; still other plots were unfertilized, so as to give a measure for determining the extent of the increase in crop yield effected by each fertilizer or combination of chemicals.

The results in fertilizing cotton on the soils of the southern half of the state are embodied in a Bulletin of this Station now being printed, and those for the northern half are included in a manuscript now being prepared for the printer.

Cyanamid Versus Other Nitrogenous Fertilizers.—The fertilizer now being made from the air, calcium cyanamid, has been tested on several soils in comparison with nitrate of soda, cotton seed meal, and sulphate of ammonia. Such experiments need to be repeated through a series of years before giving results of maximum value.

Time to Apply Nitrate of Soda.—Of special timeliness now are the results of experiments made in recent years to determine the best time at which to apply nitrate of soda to both cotton and corn. These tests were made in various soils in different parts of Alabama. The results will be published in time to serve as a guide for farmers in using the large amounts of nitrate of soda now being ordered by them,—these amounts in some parts of the state ranging from 100 to 900 carloads per county.

Lime for Soil Improvement.—A number of tests were

continued in 1918 to determine the increase through a series of years in the crops of cotton and corn resulting from the use of lime, and to note its effects on more than a dozen clovers, grasses, and other forage plants.

Samples have been collected for examination in the laboratory to determine what types of soil in the Tennessee Valley region are acid and the amount of lime required to overcome the acidity of such soils. Similar studies of sour soils are planned for other parts of the State.

Plant Breeding and Local Variety Testing

Local Adaptability of Varieties and Strains.—Numerous tests are conducted each year, some in practically every county, to determine the suitability of standard and known varieties of cotton, corn, oats, wheat, peanuts, and other field crops, to the soil and climatic conditions of the various parts of the state. These tests are especially important in determining the adaptability of strains of cotton, corn, and oats systematically bred up on the Experiment Station farm at Auburn to the local conditions of other parts of the state.

Multiplication of Bred-Up Seeds.—Such improved seeds, necessarily produced at first in small amounts, are thus placed for purposes of test and multiplication in the hands of selected farmers who have proved by their experimental work in cooperation with this Station that they are well fitted to be entrusted with the increase and dissemination of such valuable seeds among their neighbors. As a rule, such seeds are accompanied by an agreement for the farmer's signature requiring of him the observance of the details necessary to insure maintaining the purity of these seed, and binding him to dispose of a certain part of the seed from the resulting crop to his neighbors on reasonable stated terms. This method of disseminating the seeds of varieties evolved in the plant breeding work of the main Station has proved effective and free from the abuses that inhere in any method of free or promiscuous distribution of seeds.

Breeding Wilt-Resistant Cotton.—One line of this local experiment work in plant breeding is concerned with determining by tests made on wilt-infested land in various counties the varieties and strains of cotton most resistant to wilt. These tests are a part of the various activities intended to help farmers to increase

as rapidly as possible the amount of seed available to the general public of such wilt-resistant varieties of cotton.

This serious disease, cotton wilt or black root, heretofore destructive chiefly in the southern half of the state, seems to be spreading into a number of counties further north, so that this line of work becomes one of increasing importance.

Live Stock and Poultry Investigations

Feeding Velvet Beans to Steers.—In a feeding experiment with 60 steers at Allenville, Alabama, velvet bean meal was compared with soaked velvet beans, with velvet beans fed dry, and with cotton seed meal.

Soaking the beans increased the net profit per steer by $7.05, while grinding increased the profit by $15.65 over dry beans. A fuller statement of the results of this experiment is contained in the report of the Animal Husbandman (pages 24-27).

Hogging Off Versus Selling Peanuts.—An experiment extending over two years was conducted at Union Springs, Alabama. The results, published in Bulletin No. 206 of the Alabama Experiment Station, show an average profit higher by $24.90 per acre when the peanuts were grazed or hogged off than resulted from the direct sale of the crop. This was on the basis of $120.00 per ton for peanuts and of fifteen cents per pound for hogs. An acre of peanuts alone made an average production of 542 pounds of live pork.

Finishing Peanut-Fed Hogs.—On the same farm another experiment with 70 hogs shows that the difference in the selling price between those fed continuously on peanuts and those fed on corn and tankage for a finishing period of six weeks was only ½ cent per pound. The results will be reported in a later bulletin which will detail the effects of both systems of feeding on the quality of the pork and lard, and will report the financial outcome of the two methods of management.

Velvet Beans for Brood Sows.—In another test 14 brood sows, running on a pasture of Bermuda grass and carpet grass, were successfully maintained on soaked velvet beans as a sole concentrate, which feed was continued without injurious results up to about a month of farrowing time.

Stimulated by the reports of some unfavorable re-

sults in feeding velvet beans to pregnant sows in an adjacent state, the second experiment along this line is this winter in progress at Union Springs, Alabama, to throw further light on this most important subject of the effect of velvet beans as the principal feed of pregnant sows.

Poultry Experiments.—In 1918, as in several previous years, experiments in feeding and managing poultry were continued on a poultry farm near Citronelle, Mobile County, Alabama. Of the five lines of investigation carried on during 1918, the results of which are to be reported in a later publication, special interest centers in the test of peanut meal and velvet beans for supplying the protein in the ration for poultry.

Drainage and Farm Machinery

On account of the scarcity of labor and other conditions attending the period of the war, relatively little assistance was asked by farmers in 1918 in the laying of tile drains or in other drainage work. The formation of drainage districts for the reclaiming of thousands of acres of idle swamp land was arrested by the same causes. The time given to drainage work in Alabama by the U. S. Drainage Engineer, Mr. Guy A. Hart, in accordance with a cooperative agreement between this Station and the Government, is indicated in the attached report on drainage engineering.

War conditions resulted in inability to fill the vacant position of Agricultural Engineer, a small part of whose time has been devoted in previous years to the testing of tractors and other forms of farm machinery. It is expected that this line of work with farm machinery will be resumed at an early date, and that requests for assistance in planning, surveying, and installing systems of farm drainage will rapidly increase.

Plant Diseases

The expert in plant diseases has directed his attention largely towards indicating the treatments found effective in reducing the loss from oat smut, and from storage and other rots of the sweet potato. He has studied, with a view to devising preventive treatments, a widely prevalent disease of the corn plant, and various diseases of cotton, cowpeas, clovers, grasses, grains, and vegetables.

Horticulture

The horticultural work has consisted, in part, of the continuation of experiments in fertilizing apple trees and satsuma orange trees. There have been conducted spraying and thinning experiments with apples. Experimental observations have been made of various fruits, nuts, and other horticultural plants, including a number that are but little known in this state.

Insect Pests

Poisoning the Boll Weevil.—The control of the cotton boll weevil by poisons has generally proved impracticable. Publication about a year ago of apparently favorable results with the use of poisons applied as a dust against the boll weevil has led to renewed interest in this subject, and to the re-opening of the question of the possibility of controlling the weevil by poisons.

The Entomologist of the Alabama Experiment Station and his assistants conducted 16 tests in 1918 to determine the effects of dusting cotton with arsenical poisons. Under the climatic conditions prevailing last summer there was only 1 out of the 16 experimental fields in which there was sufficient increase in yield of cotton following dusting to afford a profit from this operation. Doubtless the poisoning was rendered superfluous by the hot dry weather of June and July. 1918, which in itself served to prevent serious injury from boll weevils. It does not necessarily follow that dusting with arsenicals would prove useless or impractical under different climatic conditions in other years.

Sweet Potato Weevil or Root Borer.—The entomologists were active in the location of the farms in Mobile County recently found to be infested by the dangerous sweet potato weevil. They gave much attention to the work of inspecting the premises and of formulating the control measures which have been successfully put into effect against this most dangerous enemy of one of our most important crops.

Miscellaneous Insect Pests.—Considerable attention was given to the red spider, which last fall was widely destructive to the cotton plant, to insects attacking citrus trees, and to a number of other insects preying on various plants of economic importance.

TREASURER'S REPORT, LOCAL EXPERIMENT FUND FOR THE YEAR 1918.

RECEIPTS

To cash balance from 1917	$ 4,308.39
To cash from State 1918	27,000.00
Total	$31,308.39

DISBURSEMENTS

By amount paid Agriculture	$ 7,804.81
By amount paid Animal Husbandry	4,052.15
By amount paid Extension (Junior and H. E.)	4,440.56
By amount paid Drainage and Farm Machinery	7.89
By amount paid Entomology	2,377.56
By amount paid Horticulture	2,207.05
By amount paid Plant Breeding	948.08
By amount paid Plant Pathology	1,101.77
By amount paid Poultry Husbandry	1,068.05
By amount paid Printing and Administration	2,584.78
By balance carried to 1919	4,715.69
Total	$31,308.39

Respectfully,

M. A. GLENN,

Treasurer, Alabama Polytechnic Institute.

Subscribed and sworn to before me, this 31st day of January, 1919.

B. L. SHI, Notary Public.

This is to certify that I have compared the account with the ledger account of the Treasurer, and this is a correct transcript of the same.

C. C. THACH,

President, Alabama Polytechnic Institute.

PART II
DETAILED REPORTS OF HEADS OF DEPARTMENTS

REPORT OF AGRICULTURAL DEPARTMENT

Auburn, Ala., Jan. 18, 1919.

Professor J. F. Duggar, Director,
Alabama Experiment Station,
Auburn, Ala.

Sir:

The following is submitted as a report on the work carried on under the Local Experiment Fund in 1918 by the Agricultural Department of the Alabama Experiment Station:

It has been the policy of the Local Experiment Division to have each experimenter conduct the same experiment, and in some cases, on the same plots, so long as it was satisfactory to both the cooperator and the Experiment Station. This plan was not varied in 1918, hence this report must, of necessity, be very similar to the report of the Field Agent in 1917, for during the season of 1918 practically every line of experimental work was conducted as in the previous year.

New lines of experimentation are begun from year to year, one of these being the testing of varieties of rice.

Two or more experiments with some field crop were conducted in every county in the state. However, due to the increased cost of traveling to visit these tests and to the high price of fertilizers and of some seeds, it was necesary to concentrate the experiments in certain counties and reduce the number as compared with previous years. The total number of experiments arranged for 1918 was 388, with 274 experimenters.

Below are listed the forty-two distinct lines of experiments which were conducted during the calendar year, 1918:

Barley, multiplication.
Corn, complete fertilizer experiments.
Corn, complete lime experiments.
Corn, time of applying nitrate of soda.
Corn, sources of nitrogen experiments.
Corn, extensive variety experiments.

Corn, short variety experiments.
Corn, ear-to-row breeding experiments.
Corn, multiplication.
Cotton, complete fertilizer experiments.
Cotton, complete lime experiments.
Cotton, time of applying nitrate of soda.
Cotton, sources of nitrogen experiments.
Cotton, extensive variety experiments.
Cotton, extensive wilt variety experiments.
Cotton, short variety experiments.
Cotton, short wilt variety experiments.
Cotton, wilt breeding experiments.
Cotton, multiplication.
Cowpeas, extensive variety experiments.
Fertilizer, Rotation experiments.
Forage crop experiments, extensive.
Forage crop experiments, miscellaneous, winter.
Forage crop experiments, miscellaneous, summer.
Kudzu, multiplication.
Lespedeza, complete fertilizer experiments.
Medicago, short variety experiments.
Oats, extensive variety experiments.
Oats, multiplication.
Peanuts, complete fertilizer experiments.
Peanuts, extensive variety experiments.
Plant-lime experiments.
Rice, short variety experiments.
Rye, extensive variety experiments.
Soy beans, short variety experiments.
Sudan grass experiments.
Sugar cane, complete fertilizer experiments.
Sweet potatoes, complete fertilizer experiments.
Velvet beans, extensive variety experiments.
Vetch, short variety experiments.
Wheat, extensive variety experiments.
Wheat, multiplication.

Fertilizer Requirements of Soils and Crops

The experimental work to which this Department continues to give most attention is to the securing of information as to fertilizer needs of the various soils of Alabama for the growing of cotton, corn, peanuts, sweet potatoes and sugar cane. More than fifty different experiments were conducted with this in view during the past season. The greater percentage of these tests which were carried to a conclusion gives valuable information as to the fertilizer needs of the soils on which they were conducted. It is interesting to note that on some soils the results are sometimes radically different from what might be expected, for example, potash fertilizers paying on a Decatur clay loam of average fertility, or above, in the Tennessee Valley; or acid phosphate producing a profit on Houston clay soil in Lowndes county.

Nitrogenous Fertilizers

A study is being made of the best source of nitrogen for corn and cotton. Cotton seed meal, nitrate of soda, sulphate of ammonia, and calcium cyanamid are being compared. Other fertilizers carrying nitrogen will be added from year to year in time to anticipate their use in the south.

Best Time to Apply Nitrate of Soda

Experiments to find the best time to apply nitrate of soda to cotton and to corn were conducted in 1918, as in previous years, under the name of Special Nitrate experiments. The number of tests with each crop was increased. All the information which this Division has collected on this subject since 1911 will probably be given to the public in time for use in 1919.

Variety experiments with nearly all of the more common farm crops were conducted in 1918. Twenty-one different varieties of corn were tested in five different counties; the same number of varieties of cotton were tested on five different soils. Peanuts, six varieties; velvet beans, six varieties; cowpeas, eight varieties; soy beans, three varieties; summer grass, etc., were also tested to see what varieties are best suited to the various sections of the state.

Variety Tests and Hardiness

Among the experiments conducted, wheat, nine varieties; oats, seven varieties and six strains; rye, four varieties; clover, many varieties; medics, (bur clover group) five species; vetch, three varieties; and winter grasses, three species, were included. The excessively cold weather which began about December 1, 1917, did much damage to these experiments. However, some of the varieties withstood this weather, hence these tests proved to be the source of valuable information as to which of the grains, clovers, etc., are hardy enough to live through temperature as low as 1 to 10 degrees Fahrenheit above zero.

Lime Experiments

Field experiments are being conducted on a number of different soil types to determine the value of ground limestone alone, and in combination with different fertilizers, when applied to cotton and to corn. Observations are being made on the growth of crimson, red,

white, alsike, ladino, southern bur and California bur clovers, hairy, Oregon, and Augusta vetches, and on grasses, alfalfa, etc., when grown on limed and unlimed areas.

Acid Soils

Supplementing the field work with lime, preliminary studies of the lime requirement for the correction of acidity in many of the soils of the state were made in 1916 and continued in 1917. It was found that the need for lime for this purpose was of such importance on the soils which were studied that it was deemed advisable to make an acidity survey of the entire state. As a beginning, in 1918, samples were taken from all of the important soil types in a number of counties in the northern part of the state. These samples were sent to Auburn where the Division of Soils, under the direction of Professor Marion J. Funchess has begun laboratory tests to determine the quantity of calcium carbonate necessary to correct the acidity. As rapidly as the very limited funds of this Division will permit, further sampling will be done in other counties and laboratory tests made, until this Division has this information for every soil of importance in every county in Alabama.

Local Testing of Bred-Up Seed

The value of the local experiments to the farmers is mentioned from time to time in the report of this Division, but one line of benefit which the farmers receive from this work has never been emphasized, namely, the benefit from the seed which are distributed. Each year small lots of seed of cotton, corn, wheat, oats, and sometimes other seeds which have been bred up systematically on the Experiment Station at Auburn, are sent to farmers who make experiments in co-operation with the Local Experiment Division, and who will agree to try to keep the seed pure and unmixed. The usual plan is to have each experimenter sign a further agreement to give to someone not on his own farm the same quantity of seed which he received. The farmer receiving the seed from our experimenter also passes the seed on under the same conditions. In this manner three men are supplied with seed from one lot from the Experiment Station without the well known evils that apply to any free distribution of seed. Many in-

stances could be cited showing the results of this work, but the few which follow will suffice:

EXAMPLE 1.—One bushel of seed of Cook No. 1015 was sent to a farmer in Fayette county. He planted them on an area of two acres. The land was of average fertility, or slightly above, and was fertilized with about 300 pounds of commercial fertilizers, the analysis of which is not given in his report. From the two acres, he harvested 2523 pounds of seed cotton which turned out approximately 40.3 per cent lint.

This is not an unusual yield, but note some remarks by the experimenter who grew it: "This is an early variety, easily picked, thrifty grower; above an average lint producer (40.3 per cent); makes a good yield to the soil and an extra 'turn out' at the gin." In comparing it with the varieties which are commonly grown in the community he says: "Everybody says it is the best cotton that has ever been grown in this locality. One farmer who raises 50 bales per year wants seed enough from me to plant his entire crop."

EXAMPLE II.—A farmer in Dallas county who received from this Division 28 pounds of Cook No. 1031 "rolled the seed" and dropped them on an area of approximately five acres. The land on which the seed were grown had been in oats, followed by peas, in 1917. Two hundred pounds of 16 per cent acid phosphate was used at planting time. The total yield was 4860 pounds of seed cotton, or 972 pounds per acre, which averaged 40.8 per cent lint.

Like the yield in Fayette county, this is not an extra large yield, but this farmer is evidently satisfied with the yield from the land on which the seed were planted. He says the good points of the variety are, "early maturity, heavy fruiter, produces good strong lint, and turns out high per cent lint." A further claim by the grower is that this variety makes "25 per cent better yield" than the varieties which are ordinarily grown in his locality, and that it is "ten days to two weeks earlier."

EXAMPLE III.—One-half bushel Alabama Blue Stem wheat was sent to a farmer in Elmore county. He harvested it and made at the rate of 7.5 bushels an acre. Although the yield was low, it was entirely satisfactory for the soil on which it grew. The experimenter says: "I prefer Blue Stem, first because it made double the yield of Stoner and more than double the yield of Fulcaster; and second it is smooth and easier to handle

than the bearded varieties." This man is raising Alabama Blue Stem and selling the seed.

EXAMPLE IV.—A farmer in Butler county planted approximately one acre to Cook No. 1015, and harvested 2450 pounds seed cotton. This remarkable yield was from a rich stiff red soil seven miles east of Greenville. The experimenter is well pleased with the variety and says: "It begins fruiting early and fruits rapidly."

OTHER EXAMPLES.—A farmer in Montgomery county uses Alabama Blue Stem wheat only, since this Department supplied him with a small quantity of seed for a multiplication test. The same is true of a farmer in Walker county, another in Calhoun, also of many others.

In Cherokee county, 1680 pounds of seed cotton an acre was made by planting Cook No. 1003 on May 14. When Cook No. 1046 was planted by an experimenter in Clay county a yield of 2084 pounds of seed cotton per acre was secured.

In Henry county, an experimenter made 35 bushels of Experiment Station Yellow corn per acre. He was well pleased with it because, "it makes medium small stalk," and "it seems to be weevil proof."

Respectfully submitted,

(Signed) J. T. WILLIAMSON,

Field Agent.

REPORT OF ASSOCIATE PLANT BREEDER

Auburn, Ala., Jan. 14, 1919.

Professor J. F. Duggar, Director,
Alabama Experiment Station,
Auburn, Ala.

Sir:

I submit the following report of the Cotton Wilt Work in Alabama, during the year 1918.

There were five plant-to-row breeding experiments with Wilt-resistant varieties of cotton conducted in Alabama in 1918 as follows:

Variety	*Co-operator*	*Place and County*
Dixie W. R.	A. L. McLean	Clio, Barbour
Dixie W. R.	W. G. Robertson	Wetumpka, Elmore
Cook 307-6 W. R.	W. J. Bridges	Notasulga, Macon
Cook 307-6 W. R.	J. D. Jenkins	Louisville, Barbour
Toole W. R.	C. F. Wilkinson	Headland, Henry

These tests were visited during the growing season and notes taken on stand, etc.

Mr. A. L. McLean, Clio, Alabama, took over the breeding of Dixie Cotton formerly carried on by Mr. J. E. Barr, who entered government service. Mr. McLean has saved one-hundred bushels of pure Dixie seed for sale above the amount for planting his own crop another year. Mr. McLean is well pleased with the Dixie cotton.

A plant-to-row test of Dixie Cotton and an increase plot of Dixie was planted with Mr. W. G. Robertson, Wetumpka, Alabama. Thirty individual plant selections were made from the row test and increase plot. The seed from the increase plot was saved separately for planting a larger area next year.

A plant to row test and three increase plots of Cook 307-6 Wilt resistant were planted with Mr. W. J. Bridges, Notasulga, Alabama. Fifty individual plants and eleven gross selections were made from the row test and increase plots. Mr. W. J. Bridges saved three hundred bushels of pure Cook 307-6 seed for sale.

Forty individual plant selections and five progeny row selections were made from the row test and increase plot of Cook 307-6 cotton on farm of Mr. J. D. Jenkins, Louisville, Alabama. Mr. Jenkins saved one hundred fifty bushels of pure Cook 307-6 seed for sale above what he saved for his own use.

Sixty individual plant selections and sixteen progeny

row selections were made from the row test of Toole Wilt resistant cotton planted with Mr. C. F. Wilkinson, Headland, Alabama. Mr. Wilkinson saved about four thousand bushels of good Toole Wilt resistant seed for sale.

A large number of Hybrid cotton plants were planted in Macon County and were entirely destroyed by the late cold weather.

The small selections from all co-operators are being ginned at Auburn.

Three extensive variety tests of Wilt resistant Varieties of cotton were conducted with farmers in 1918 in Macon, Henry and Crenshaw counties. In each of these experiments sixteen varieties of cotton were tested.

There were conducted eight short variety experiments consisting of Dixie, Cook 307-6 and Toole Wilt resistant cotton.

In order to introduce the best wilt resistant varieties of cotton, seed of the best known varieties were sent to different parts of the state to farmers for isolation and multiplication.

I have found that cotton wilt is spreading in North Alabama and it is my intention to do more work in that section the coming season.

Respectfully submitted,

H. B. TISDALE,
Associate Plant Breeder.

REPORT OF ENTOMOLOGIST

Auburn, Ala., Jan. 17, 1919.

Prof. J. F. Duggar, Director,
Alabama Experiment Station,
Auburn, Ala.

Sir:

Herewith I submit a brief report of the principal entomological activities under Local Experiment funds for the calendar year of 1918.

1. *Boll Weevil*—The Boll Weevil was very materially reduced in numbers in the northern part of Alabama by the extremely cold weather during the winter of 1917 and 1918. In some sections the temperatures ranged below zero, and wherever this occurred the boll weevil became a negligible factor in the production of the 1918 cotton crop. However, the weevil maintained itself in territory to or even north of the Tennessee Valley, and was found in considerable numbers in practically every county in the State during the fall of 1918. With an extremely late fall and rather mild winter conditions at the present time *it would appear that weevil damage for* 1919 *is likely to be more than during* 1918.

During the season of 1918 we conducted rather intensive cotton dusting tests for the control of the boll weevil, using various forms of arsenical poisons for these tests. Out of 16 tests only one showed a positive profit from the application of poisons. In the southeastern corner of the State, where most of the tests were located, the boll weevil was so fully controlled by unusually hot, dry weather during June and July that the poison tests had no opportunity to demonstrate their value for control. Further experimental work will be necessary along this line, and is planned for the season of 1919.

2. *Corn Insect Control*—The results from our investigational work during many years past have become definite enough to be put into general practice through extension methods. Not having an appropriation for such extension work in 1918, however, this part of our work was conducted under our Local Experiment fund. Two agents of this department made personal visits to large numbers of the principal corn raisers in the southern half of Alabama before the time for planting

in the spring of 1918, and explained to them the value of seed selection for thorough shuck covering, and of the planting of a trap plot for localizing the insects so that they can be controlled both economically and effectively, and their spread to later maturing corn could be most positively prevented. In this work over seven hundred and fifty growers were interviewed, some of whom were intending to plant from one thousand, and to even as high as two thousand acres in corn. The total acreage represented by these men was well over one hundrd thousand acres, and more than seventy-five per cent of this acreage was pledged to be planted under our recommendation. We believe that the results of this work in the protection of the crop of 1918 will be of immense practical value.

In addition to the prevention of weevil injury in corn, large growers and merchants who had corn in storage during the spring of 1918, were interviewed and the corn examined with the view of determining whether fumigation should be applied for the control of insects existing therein. Quite a large number of owners arranged to have fumigation applied and demonstrations in fumigation were given by men from this department.

3. *Red Spider*—While the red spider is a mite, and not an insect in the strict sense of the word, it is considered and treated by us as an entomological subject. This species occurred through a large area in the northern part of Alabama during the mid-summer season of 1918, causing severe damage to cotton by defoliation of heavily infested plants, and the weakening of plants which might not shed their leaves. Where the red spider occurred it is very certain that the yield was cut short somewhat, but in most cases the damage had already been done, and remedial measures could hardly be applied. Much good was done in the course of this work in restricting the further spread of this mite, and in educating the growers to meet future outbreaks more promptly and successfully.

4. *Grass Worm*—The grass worm, or fall army worm, occurred in extensive numbers in a number of widely separated localities in the State, beginning in the southern part of the State in Baldwin County, and extending as far northward as Etowah, or even further. The outbreak however, was not as extensive or serious as that which occurred in 1912. In no case we believe,

did succeeding generations appear, the control by parasites and predatory enemies being, fortunately, sufficient to handle the outbreak.

5. *Pecan Insects*—Some work was continued in this field in 1918, but no new projects were undertaken. No serious outbreak of pecan insects occurred to demand attention.

6. *Citrus Insects*—Fortunately, the occurrence of the White fly was largely controlled through the effect of winter cold in 1917-1918. This caused the defoliation of so large a proportion of the white fly infested trees that this insect ceased to be a problem during the season of 1918. However, the soft brown scale was quite abundant and demanded some control measures. During the winter of 1917-1918 the first fumigation experiments in the control of insects on satsuma trees by fumigation with hydrocyanic acid gas, were conducted in Mobile County. The results of this work were followed up and the fumigation was found to be successful in controlling scale insects, white fly, etc., however, the occurrence of citrus canker in some localities would prevent the widespread adoption of fumigation as a commercial undertaking at the present time, and the expense for tents and fumigation materials under war conditions has been such as to preclude further work that seems desirable.

7. *Sweet Potato Weevil*—The sweet potato weevil or root-borer was found in February 1918 in the vicinity of Grand Bay, Mobile County, Alabama. This was the first positive information as to its occurrence within this State. Following the discovery of this pest extensive inspection work was undertaken in co-operation with the United States Bureau of Entomology and the Alabama State Board of Horticulture. Five inspectors have been at work during a considerable part of the past season. In the course of this work some 3,660 premises and shipments of sweet potatoes have been inspected with the discovery of only eight cases of infestation. Fortunately, all of this infestation is localized in the vicinity of Grand Bay, and work is under way at the present time to accomplish the extermination of this dangerous pest within the limits of Alabama during the season of 1919.

8. *Pink Bollworm of Cotton*—While this insect does not occur within the State of Alabama, so far as is known at the present time, it was found in Texas

during the season of 1917, and serious consideration was given by the entomologists of the southern states to the matter of state quarantines to guard against the introduction of this pest from Texas. Fortunately the Federal Board of Horticulture and the Texas Commissioner of Agriculture were found to be enforcing such careful restrictions and quarantines throughout the infested area in Texas, that the establishment of state quarantines did not seem to be justified. The control work done has been so successful in Texas that the main area of infestation centering in the vicinity of Galveston and extending toward Houston and Beaumont, seems to have been completely eradicated. However, within the last few weeks infestations have been found at three points in the extreme southwestern part of the "big bend" in Texas. This insect must be watched closely, and every possible precaution be taken to prevent its introduction into the main cotton growing area of the South.

Respectfully submitted,

W. E. HINDS,
Entomologist.

REPORT OF ANIMAL HUSBANDMAN

Auburn, Ala., Jan. 14, 1919.

Prof. J. F. Duggar, Director,
Alabama Experiment Station,
Auburn, Ala.

Sir:

I respectfully submit the following report for the Local Experiment work conducted by the Animal Husbandry Department during the past fiscal year:

Beef Cattle

The co-operative steer feeding work at Allenville, Marengo County, Alabama, was continued throughout the year. Judge B. M. Allen furnished the steers and the feed for the experiment, and the Alabama Experiment Station furnished a trained man, Mr. Ernest Gibbens, to live on the farm and have personal supervision of the work.

A test was started on December 15th, 1917, and completed April 12th, 1918, 117 days, to test:

The various methods of preparing velvet beans as the concentrated part of the ration for fattening steers;

and

The relative feeding value of velvet beans and cotton seed meal as the concentrated part of the ration for fattening steers.

The general Summary Statements for this test are as follows:

1. The steers used in this test were mostly two year olds, with a few yearling steers. They were grade Hereford, Shorthorn, and Angus.
2. At the beginning of the test they averaged about 744 pounds.
3. Sixty head of steers were used in this test, divided into four lots of 15 head each, and fed as follows:
   - Lot 1. Velvet beans in the pod, soaked, and sorghum silage.
   - Lot 2. Velvet beans in the pod, dry, and sorghum silage.
   - Lot 3. Velvet beans in the pod ground into a meal, and sorghum silage.
   - Lot 4. Cotton seed meal and sorghum silage.
4. For the 117 day feeding period the average daily gains were:
   - Lot 1. 1.56
   - Lot 2. 1.35
   - Lot 3. 1.9
   - Lot 4. 1.8
5. The following amounts of feed were required to produce 100 pounds of gain:

Lot 1. 1943 sorghum silage; 652 velvet beans in the pod, soaked.
Lot 2. 2155 sorghum silage; 740 velvet beans in the pod, dry.
Lot 3. 1816 sorghum silage; 521 velvet beans in the pod ground.
Lot 4. 2534 sorghum silage; 241 cottonseed meal.

6. With cotton seed meal at $48.00 per ton; velvet beans in the pod at $27.50 per ton; velvet bean meal at $32.00 per ton; and sorghum silage at $3.00 per ton, the cost of putting on 100 pounds of gain was as follows:
   Lot 1. $11.85
   Lot 2. 13.30
   Lot 3. 11.05
   Lot 4. 9.82
7. The steers were valued at 8½c when placed in the feed lot. When sold on the market they brought:
   Lot 1. 12¾c
   Lot 2. 12c
   Lot 3. 13½c
   Lot 4. 12¾c
8. Each steer in Lot 1 returned a net profit of $25.20; Lot 2, $18.15; Lot 3, $33.80; and Lot 4, $26.69.
9. The returns on these steers would indicate that soaking the beans for twelve hours previous to feeding increased the net profit per steer in this lot $7.05 per head as compared with those fed dry beans.
10. With a charge of $4.50 for grinding the beans into a meal, it would seem that the profit per steer in the lot fed velvet bean and pod meal was increased $15.65 per head, as compared with beans fed in the pod dry; and $8.60 as compared with the steers fed the soaked beans.
11. In this experiment with sorghum silage as the roughage part of the ration one pound of high grade cotton seed meal was equal to 3.07 pounds of velvet beans in the pod, dry. One pound high grade cotton seed meal was equal to 2.70 pounds of velvet beans and pods soaked. One pound of high grade cotton seed meal was equal to 2.16 pounds of velvet bean and pod meal.

Hogs

The co-operative experimental work with hogs at Union Springs, Bullock County, Alabama, was continued throughout the year. The work with this class of animals was conducted on the farm of Mr. T. R. Martin. Mr. Martin furnished the hogs, feed, and equipment, and the Alabama Experiment Station furnished a trained man, Mr. G. L. Burleson, to live on the farm and have personal supervision of the work.

The second test was completed during the past year in the experiment comparing the grazing of peanut pasture with harvesting the crop and selling it on the market. The report for this test and the one for the previous year will be found in Bulletin No. 206 pub-

lished by this Station. The Summary Statements for the two years work are as follows:

1. An acre of peanuts in the first test (1917), yielding 39.5 bushels, returned a net profit of $36.19 in favor of grazing the area with hogs over selling the crop on the market, when pork was 15 cents per pound, peanuts 6 cents per pound, and peanut hay $15.00 per ton.
2. In the second test (1918) the hogs gathered an acre of peanuts yielding 30.2 bushels and paid their owner the market price for the nuts and hay, saved the labor of harvesting, and returned him a net profit of $13.62 above what the crop would have netted him if it had been sold on the market.
3. When the hogs grazed the entire crop of peanuts yielding 39.5 bushels to the acre, the acre produced 668.2 pounds of pork.
4. A crop of 30.2 bushels of peanuts to the acre produced 416 pounds of pork.
5. In the two tests reported in this bulletin 1.65 pounds of peanuts in the first test (1917) and 2.03 pounds of peanuts in the second test (1918) produced one pound of pork; or, an average of 1.84 pounds of peanuts, plus the forage furnished by the crop of peanuts and other vegetation, produced one pound of pork.
6. An acre of peanuts yielding 39.5 bushels furnished grazing for seven pigs weighing 63.5 pounds (average weight at beginning of test) for 57 days.
7. An acre of peanuts yielding 30.2 bushels furnished grazing for seven pigs weighing 72 pounds (average initial weight) for 37 days.

The second test of the experiment to determine whether or not a dry lot feeding period following peanut pasture would be profitable, and to determine effect of the dry lot feeding period on the quality of the carcass, was finished during the year.

In this experiment seventy head of hogs were grazed for eight weeks on peanut pasture. They were then divided into two lots, Lot 1 of 40 head continuing on peanut pasture for another period of six weeks, and Lot 2 of 30 head were fed in dry lot on corn and tankage in self feeder. At the close of the six weeks period the seventy head were marketed at the Birmingham Packing Company in Birmingham, Alabama. Lot 1, 40 head fed fourteen weeks on peanuts, were nicely finished, and were classified by the packer's expert as oily, selling for 15c; Lot 2, 30 head, given the six weeks finishing period in dry lot, classified medium soft. Consequently the finishing period increased the value of the hogs in Lot 2 one-half cent per pound over the straight peanut fed hogs (oily carcass) in Lot 1.

The result of this test, and one of a similar nature conducted during the past year, will be reported in

bulletin form in the near future.

The third experiment conducted during the year was for the purpose of determining the value of a velvet bean ration supplementing pasture, as the sole concentrate ration for brood sows. Fourteen bred sows and gilts averaging about 300 pounds were maintained on Bermuda and carpet-grass pasture satisfactorily for an average of 100 days, feeding an average of 8 pounds of beans in the pod, soaked twelve hours, per head per day. These sows were removed from this lot one month previous to farrowing and the ration changed.

Poultry

The co-operative experimental poultry work with Mr. Herman Schlueterbusch at Citronelle, Mobile County, Alabama, was continued throughout the year. The experiments conducted were as follows:

1. A study of several feeds to determine the relative efficiency and economy in egg production.
2. A study of several feeds, beef scrap, skim milk, peanut meal, and velvet bean meal, as a source of part of the protein in the ration, to determine the relative efficiency of each feed as influencing the egg yield and the cost of egg production.
3. A study to determine the best age to market poultry.
4. A study of the influence of selection on egg production.
5. A study of the relative profits to be derived from a farm flock of poultry as compared with a flock handled on a commercial basis.

Respectfully submitted,

Geo. S. Templeton,

Animal Husbandman.

REPORT OF HORTICULTURIST

Auburn, Ala., Jan. 13, 1919.

Prof. J. F. Duggar, Director,
Agricultural Experiment Station.
Auburn, Ala.

Sir:

I submit, herewith, a report on the work being done with Local Experiment Funds in this Department.

Variety tests of the following plants have been continued during the year, and notes have been taken on their condition and adaption:

Apricots	Loganberry
Butternuts	Nectarines
Calomindin	Olives
Caraca	Peaches
Papaya	Pistachio
Feijoa	Prunes
Figs—Smyrna, Capri	Quince
Grapes	Sapota
Guava	Walnuts
Almond	Chestnuts

The local experiment work with various kinds of spraying materials was continued in the orchard of Mr. W. E. McClendon, Opelika, Ala. The results were very encouraging, and it is planned to enlarge and make the work more complete the coming season, as Mr. McClendon has purchased a power sprayer.

The nitrate of soda experiment, using various amounts per tree, has been continued in the orchard of Kelly Bros., at Jeff, Ala. It is planned to make this work more comprehensive for the next year, in an effort to get some reliable data, both as to fertilizers and spraying.

Fertilizer experiments have been continued in the orchard of Dr. O. F. E. Winberg of Silverhill, Ala., to test the value of various fertilizers, applied at different seasons on Satsumas, which have been injured by freeze. This work has been considerably enlarged during the last year, and a new series of plats taken under observation, upon which have been applied various fertilizers, singly and in combination. It is believed that invaluable data will be obtained from this work.

A new experiment was started in the Satsuma orchard of Mr. R. L. Brown at Irvington, Ala., in which trees that had been neglected and injured by freeze, were treated with different amounts of fertilizers in an

effort to learn which would be most valuable. The first season's results are very satisfactory, and the work will be continued for another season at least.

An experiment has been started this year in thinning apples in the orchard of Mr. W. E. McClendon of Opelika, Ala. Three varieties were selected, and five trees of each chosen for the experiment. They were each thinned to different distances between the fruits and careful statistical growth measurements taken at intervals of two weeks during the growing season, on fifty representative apples on each tree. The results of this season's work are very satisfactory, and it is planned to continue the work on a large scale next year.

Changes in personnel of this Department, have somewhat hampered our local experiment work during the past year

Very respectfully yours,

G. C. STARCHER,
Horticulturist.

REPORT OF PLANT PATHOLOGIST

Auburn, Ala., Dec. 16, 1918.

Prof. J. F. Duggar, Director,
Agricultural Experiment Station,
Auburn, Ala.

Sir:

I am herewith submitting a brief statement relative to the Local Experiment work in the Department of Plant Pathology for the past year.

Observations and experiments have been started or continued on the Physoderma disease of corn, malnutrition of cotton, the leafspots and wilt of cowpeas, soy beans, and velvet beans, the anthracnose of bur and crimson clover, and the vetches, an unknown trouble of sweet clover, anthracnose of Johnson and Sudan grass, peanut "yellows," scab, black chaff and septoria spots of wheat, cabbage "yellows," mosiac disease of Irish potatoes, and tomato wilt.

Laboratory and greenhouse facilities have been given to Mr. H. D. Barker and Mr. John Barringer of the Office of Cereal Investigations, U. S. Department of Agriculture, for their study of the cereal rust situation in the South. Interesting results can be expected from their investigation.

Seed of a wilt resistant tomato (Norton) was obtained from Dr. F. J. Pritchard, Bureau of Plant Industry, U. S. Department of Agriculture, and was distributed to all parts of the State. The reports of the behavior of this variety have been very encouraging, as a whole, proving successful from its wilt resistant qualities and commercial standpoint.

A cereal smut survey was made last Spring in cooperation with the Office of Cereal Investigations U. S. Department of Agriculture of the entire State. The loss from smuts was found to be quite high, both on oats and wheat, due in great part to the laxness of the farmer in treating the seed, for only 9 per cent of the fields visited had been treated.

Respectfully submitted,

GEO. L. PELTIER,
Plant Pathologist.

REPORT OF DRAINAGE ENGINEERING

Washington, D. C., February 11, 1919.

Prof. J. F. Duggar, Director,
Alabama Experiment Station,
Auburn, Alabama.

Sir:

Complying with your request, I am sending you this brief resume of the work done during 1918 by this office under the co-operative agreement with the Alabama Experiment Station.

Due to war and the general slackness of drainage requests, it has been unnecessary to retain the services of any other engineer than Mr. Hart for the work in this field.

Farm Drainage

Surveys, with plans and recommendations for drainage have been made for the following tracts:

Mr. D. E. Barclay ----------Paint Rock, Jackson County
Dr. W. M. Booth ----------Hartselle, Morgan County
Mr. F. P. Hall ----------Florence, Lauderdale County
U. S. Army Remount Station at Montgomery, Ala.

Supervision and inspection of tile drainage installation was made on lands of H. C. Marks and Dr. J. G. Greil, both of Montgomery County, W. C. Harrison of Marengo County, and others.

Considerable assistance was given in various parts of the state in terracing, laying out the work in the field and frequently assisting in the building of a drag and giving instruction in the proper method of throwing up terraces.

The manufacture of tile in this state was stopped some fourteen months ago and has only just been resumed, so that there would have been no tile had the farmers wanted to do much drainage work. Moreover, the amount of labor called from the farms to the army has been another severe handicap in the laying of tile.

Drainage of Swamp and Overflow Lands

Only one proposed drainage district has requested assistance during the past year, this being the proposed Cedar Creek District in Dallas, Wilcox and Butler Counties. A preliminary investigation was made of this district with report and recommendations following. The area of this district will probably be about

15000 acres and it is one of the most favorable from a drainage standpoint that has come to the attention of this office. As soon as labor and material conditions become more settled, it is hoped that this district will complete its organization.

There is also the prospect of the formation of a drainage district along Cubahatchee Creek in Macon County, to the northwest of Fort Davis, although no definite developments have as yet been made along this line.

The preparation of the Alabama Drainage Bulletin, the taking of pictures showing drainage and terracing operations, together with the office work, have occupied the rest of the drainage engineer's time during the year.

Very truly yours,
P. St. J. Wilson,
Chief Engineer, U. S. Dep't. Agr.

REPORT OF JUNIOR AND HOME ECONOMICS EXTENSION DEPARTMENT

Auburn, Ala., Feb. 1, 1919.

Prof. J. F. Duggar, Director,
Alabama Experiment Station,
Auburn, Ala.

Sir:

I submit herewith reports on the work of this department for the calendar year 1918:

REPORT OF BOYS' CLUB WORK IN ALABAMA IN 1918

State Organization

L. N. DUNCAN, Superintendent Junior and Home Economics Extension Department.

J. C. FORD, State Pig Club Agent.

P. O. DAVIS, Assistant Boys' Club Agent.

C. E. NEWMAN, Assistant Boys' Club Agent.

J. L. HERRON, Assistant Boys' Club Agent.

C. R. BOWERS, Extension Animal Husbandman. (Assistant Pig Club Agent.)

ENROLLMENT AND ORGANIZATION OF MEMBERS

The work was organized in each of the 67 counties of the state and an effort made to reach every community in some way. The county agent was the leader of the work in each county, except in a few instances where for one reason or another the position was vacant, and usually had the hearty co-operation of the county home demonstration agent, the superintendent of education, and most of the teachers.

The lines of work stressed with the boys were corn growing, peanut growing and the raising of hogs and calves. Calf club work is a new feature and was practically restricted to the 21 counties in the eastern and southeastern part of the state that are touched by the Central of Georgia Railroad. In these counties the Calf Club was substituted for the Four-Crop Club, which had been carried on for some years, and the Central of Georgia Railroad gave a county prize of a registered Shorthorn bull in each county coming up to a certain reasonable standard.

The plan of organization was to enroll all of the boys in a community or school district who were interested in any phase of the work into one general Boys' Agricultural Club, having one set of officers. Each member was furnished a record book and instructions covering each phase of the work in which he was enrolled. A monthly program was furnished each organized club for a monthly meeting. The subjects chosen were timely and the material sent with them was concise and to the point. Much good is resulting from these monthly meetings with the discussions and exchange of ideas which accompany them. Owing to the fact that nearly all the club men were new in the work and the teachers were having many new and unusual demands made on their time and resources, only 244 community clubs were finally perfected.

The members enrolled in the different activities were as follows: pig club 6924, corn club 3315, peanut club 1482, calf club 689; total regular members 12,350; emergency members 10,979, grand total 23.329. The emergency members were boys, and a good sprinkling of girls who were not in position to enter the regular club work with regulation units of land and animals and keep the required records, but who enrolled as a war emergency measure to grow food of some kind on whatever scale they could, each indicating the kind of food he would try to produce. They kept no records and made no reports, but printed matter was furnished them for their instruction.

Co-operating Agencies

This department in its efforts to make the boys' club work effective, had the fullest and freest co-operation from many organizations and individuals. It is hardly proper to class the county agent as a co-operating agency, as he is the head of the work in his county, and everything is done through him, in his name or by his permission. It is but fair to the agents, however, to say that they have been decidedly the greatest force in making the work a success, notwithstanding the multiplicity of duties which have limited the time they could devote to the boys. The home demonstration agents rendered most valuable assistance. In some counties, especially where there were no men agents, they were the chief factors in making the work go.

The educators of the State, from the State Superint-

endent to the teachers of the one-room school, for the most part, have been whole-heartedly in sympathy with the work and have given it their active support. Of course, a few teachers and a few county superintendents have not seen the importance and the great possibilities of the club work or have felt they did not have the time to give it their support. The State Superintendent and his assistants have written many letters and made many public statements in the interest of this work. Those in charge of the Teachers' Institutes have made the club work a part of their program, and a member of this department is expected to be present to explain the work to the teachers and instruct them as to how they can help. Usually when a successful community club is formed, there is also found a progressive, live-wire teacher who is closely associated with its activities.

The State Food Administration and the State Council for National Defense very effectively co-operated, as did other agencies, in putting on an enrollment campaign in December. This campaign will be discussed in detail later. This department was also able to co-operate in the organization of the Boys' Working Reserve.

Bankers, breeders and other business men extended to club members financial assistance to the extent of $8850.00 for the purchase of live stock, seed and equipment for their work. In nearly every section of the state unlimited assistance was available had it been needed.

Instruction of Members

A number of methods have been used for the instruction of club members. Circular letters bearing on their work are prepared by the Auburn office and mailed out from time to time. Many county agents also prepare and send out such material. Bulletins of the U. S. Department of Agriculture and cards to be used in the ordering of such bulletins are mailed to each member. During the year, 16 county short courses were held, the total attendance being 445, and intensive instruction was given in club work and co-operation. The monthly meetings of the organized clubs gave valuable instruction and training to those who attended. Many times these meetings carried the members to club acres and club animals for specific study and practice in judging. Countless visits to individual club

members, by county agents, in many cases accompanied by some of the field men from Auburn, contributed materially to the information of the members thus reached. Community and county fairs also afforded great opportunities for the instruction of members.

Reports and Production

The general confusion incident to the war and the fact that the county agents had so many calls made on their time that they could not give the needed supervision to the club work resulted in a rather low percentage of reports. Thousands of members neglected their records early in the year and were unable to make them out later. In one county more than 50 boys who were known to have registered pigs did not send in reports. There are several reasons why a small percentage of peanut reports was received. This is the first time this crop has been given any particular attention in club work, and it is not so well understood as others, nor was it pushed so much by agents and local dealers. In many counties it was ignored in arranging prize lists and consequently the members did not take the trouble to prepare and mail their books.

The reports received and the results secured are shown below.

Corn Club:	
Number members enrolled	3315
Number complete reports	383
Number incomplete reports	69
Number received too late for tabulation	13
Total number reports received	465
Percentage reports received	14.02
Total yield, bushels	16975.26
Total value at $1.50 per bushel	$25462.89
Average yield per acre, bushels	44.32
Average cost per bushel, cents	49.7
Average profit per acre	$45.93
Peanut Club:	
Number members enrolled	1482
Number complete reports	32
Number incomplete reports	17
Number received too late for tabulation	0
Total number reports received	49
Percentage reports received	3.31
Total yield, bushels	1362.78
Value at $1.50 per bushel	$2044.17
Average yield per acre, bushels	42.58
Average cost per bushel, cents	46.8
Average profit per acre	$52.83
Pig Club:	
Number members enrolled	6924

Number complete reports	511
Number incomplete reports	218
Number received too late for tabulation	15
Number books sent in blank	117
Total reports received	861
Percentage reports received	12.43

Meat Pigs

Number pigs reported	550
Average initial weight, pounds	50.9
Average final weight	222.4
Average daily gain, pounds	1.16
Average cost per pound gain, cents	8.92
Average profit per pig	$13.01
Average profit, labor not charged	$16.68

Pigs Raised for Breeding Purposes

(Mostly pure breds.)

Number reported	266
Average initial weight, pounds	63
Average final weight, pounds	205.1
Average daily gain, pounds	1.09
Average cost per pound gain, cents	11. 2
Average profit per pig	$25.53
Average profit, labor not charged	$29.11

Sows and Litters

Number sows reported	14
Number litters reported	12
Number pigs per litter farrowed	7.42
Number pigs per litter raised	6.25
Value 40 pigs sold	$586.50
Average per pig	$14.66
Value 39 pigs, not sold	$535.00
Average per pig	$13.95
Average initial value of sows	$31.20
Average final value of sows	$65.33
Average cost of feed per sow and litter	$34.68
Average profit per sow and litter	$79.86
Total profit on all hogs reported	$11830.74

Calf Club:

Number members enrolled	689
Number complete reports	63
Number incomplete reports	5
Total reports received	68
Percentage reports received	9.87
Average initial weight, pounds	261.1
Average final weight, pounds	463.7
Average daily gain, pounds	1.58
Average initial value	$21.34
Average final value	$44.35
Average cost of calf at close of contest	$32.22
Average profit	$12.18

Summary of Reports and Production:

Total enrollment, regular members	12350
Total complete reports	989

Total incomplete reports	309
Total too late to classify, etc.	145
Grand total of all reports	1443
Percentage of regular members reporting	11.69
Value of products reported	$57932.29
Profit on products reported	$31878.32

A fair estimate of production for the emergency members and for the regulars who did not report adds an important sum to the total reported by regular members.

If 2500 corn club members not reporting, made an average yield of 25 bushels, the total is	62,500
Value at $1.50 per bushel	$93,750.00
Peanut club, 1300 members, 25 bushels each	32,500
Value at $1.50 per bushel	$48,750.00
Pig club, 4000 members raising 3000 meat hogs, 200 pounds, each at 17 cents	$102,000.00
2000 members raising 1500 breeding hogs, 200 pounds each at 30 cents	$90,000.00
Calf club, 500 members raising 100 calves, 400 pounds each each at 7 cents	$2,800.00
Emergency members, 10979 each raising food to the value of $10.00	$109,790.00
Total thus estimated	$462,290.00

There is absolutely no way of knowing how nearly accurate the above estimates are, but the figures are sufficiently low to have been easily obtainable. It is positively known that the total production by the above members amounted to an enormous total.

In the enrollment of members, Barbour County led the state with 1016 regular members, followed by Walker, Elmore and Tallapoosa in the order named. These were the only counties showing enrollments above 500 members.

In the corn club, the final returns as shown by the reports turned in place Cleburne County first with 62 reports out of 91 enrolled, with a total production of 2200 bushels worth $3300. Talladega is a close second followed by Walker, Tallapoosa, Baldwin and Barbour.

Four boys in the state reported yields above 100 bushels per acre. In 1917 there were 11 in this class.

Many counties deserve mention in connection with the pig club work. Pig club members in Franklin County are known to have around 102 registered pigs bought from outside the county, but unfortunately most of the boys neglected their records. Jefferson also produced a large number, the boys having more than 80 registered animals on exhibit at the fair, but most of their records, too failed to get into the tabulation.

The results as shown by the reports put Morgan

County to the front. Twenty-four raised 24 registered animals worth $1952 and showing a net profit of $1018. Many others also raised valuable meat pigs as shown by their records. Every record received from Morgan County was complete. Two years ago the club pigs of Morgan presented a scrawny appearance which showed poor breeding and worse feeding. The good work of Morgan is followed closely by Limestone with Tallapoosa, Geneva, Jackson, Marion, Choctaw, Baldwin and Barbour bidding for high rank. Some of these had only moderate enrollments, but the substantial nature of the work done is to be highly commended. Another noteworthy point is that the best results are shown by the counties that have done most in the way of community organization.

Tallapoosa was easily first in calf club work, having two strong community clubs that contended fiercely for the prize bull. The Camp Hill Club won and sold the bull at auction and divided the proceeds among the members who completed their work. A club boy's father bought the bull and carried him to the winning community. Houston was second with good results.

School Pig Results

During the school year of 1917-18 the school pig was given much attention in Alabama. Hundreds of schools in all parts of the State raised pigs.

Franklin was the banner school pig county. Through the activities of Mr. J. D. Wood, the County Agent, and the interest of the teachers and the co-operation of the Tennessee Valley Bank, 41 registered Duroc pigs were placed in 41 schools. Ten other schools grew grade pigs, making a total of 51 schools out of 75 in the county that had school pigs.

The business men of Russellville raised a prize fund of $50.00 for the schools making the best records with their pigs. In the spring a County School Fair and School Pig Show was held at Russellville. After prizes were awarded a number of the pigs were sold at auction.

By means of the school pig and the pig club, Mr. Wood brought to his county from the outside 143 registered pigs. This is all the more significant in view of the fact that Franklin had never been a hog county and that cholera had just destroyed a large percentage of what were there.

Choctaw County also did well with the school pig. Mr. A. G. Harrell, the County Agent, placed 20 registered pigs in 20 schools. These pigs were fed and cared for by the students and teachers until the schools closed. At its close each school gave its pig to the boy (or in a few cases the girl) who had made the best all-round record in school and club work, with the condition that he should return to the school two pigs out of the first litter. With two exceptions these pigs have been kept growing 40 to 50 pounds each per month all the summer and fall. They are now magnificent sows.

Who can estimate the influence on a community of having highly bred animals placed in the hands of interested boys whose ambition has been stirred in this way?

The school pig idea appeals with great force to the modern, progressive teacher. Plans were on foot in several counties to place a registered pig in each school, the county superintendent leading the movement in one county which had no agent, but the influenza interferred by causing the suspension of nearly all the schools of the State.

Fairs, Shows, and Premiums

No State Shows of any of the club work were held, though the Jefferson County pig and corn club shows were put on at the State Fair. A good number of county exhibits were made at the county fairs, but most of the county fairs were called off because of the prevalence of influenza.

Jefferson County club boys exhibited more than 80 pigs, two of which took blue ribbons in competition with prominent breeders of Alabama and Tennessee. Most of these pigs were Durocs, though Polands, Berkshires and Hampshires were in evidence. Houston County put on the best Poland China pig club show that has ever been put on by any county of the state. Some of the pigs shown would have been worthy winners in the great Southeastern Fair at Atlanta. Jackson, Limestone and Butler had good shows also, as did several other counties.

Many counties settled their contests in Community Fairs. Morgan, Tallapoosa and Choctaw were strong on these and Limestone supplemented her County Fair

with them. The plans for community fairs were quite as badly shaken up by influenza as were those for county fairs. In all, probably 30 to 40 community fairs and Boys' and Girls' Club shows were held in the state.

It is interesting to note the close association between the well organized community clubs and the holding of these local fairs.

It is not possible to give an exact statement of the prizes awarded club members in the state in the contests of the year. It is safe to say that not less than $3200 were given in pig club prizes; $2400 in calf clubs, including registered bulls and smaller prizes; and $1500 in corn and peanut clubs. This gives a total of more than $7000.

Activities of Club Agents

During the year the agents traveling out of Auburn covered a total of 87,846 miles and addressed 873 audiences, speaking to 40,447 people. They attended 55 teachers' institutes and talked to 4931 teachers about club work. They held 16 county short courses, reaching therein 445 club members, most of whom were leaders in their respective communities.

These boys were given intensive teaching along the lines in which they were interested and special efforts were made in the way of training them for community leadership and organization. Permanent community building grows out of these short courses.

In company with County Agents, the men from Auburn visited hundreds of rural schools, many of them in the most remote sections, and paid personal visits to club members and their parents in their homes. Here record books were checked over and instructions given as to the best methods in agriculture and animal husbandry.

Plans and Prospects for 1919

Probably no effort will be made to enroll emergency members this year as the situation calling for that step last year is passing. The whole force of the Department will be thrown into the regular work. Special stress will be placed on local and county organizations. Community clubs are being organized as before but with an advisory committee of three adults to guide the efforts of the youngsters.

The week of December 14 to 19, was made special enrollment week for boys' club work. Director Duggar

wrote a strong letter to the County Agents, giving the movement his hearty approval and urging upon them the timeliness of the club work, the great opportunity which it offers and the absolute necessity for making it a success.

Mr. Spright Dowell, State Superintendent of Education, made a strong appeal to all County Superintendents, High School Principals and Boards of Education to lend their support.

State Commissioner of Agriculture, Mr. J. A. Wade, wrote a forceful and very effective letter from his early experience, which was published throughout the press of the State.

The State Food Administration and the State Council for National Defense addressed urgent letters to the county units of these organizations, and with good results.

The Auburn office supplied organization material to all the teachers of the state and distributed information for the guidance of voluntary speakers. The County Agents enlisted voluntary speakers to visit the schools and interest the pupils. The stage was all set and incalculable good resulted, though the suspension of more than half the schools of the state just about that time was very detrimental to the success of the movement.

The indications are that on account of the prevalence of influenza the enrollment will be smaller than last year. But unless all signs fail, the solid and permanent results will surpass even the substantial achievements of the year just closed.

REPORT OF HOME DEMONSTRATION WORK IN ALABAMA

MARY FEMINEAR

State Home Demonstration Agent

STATE ORGANIZATION

L. N. DUNCAN, Auburn Ala., Superintendent Junior and Home Economics Extension Department.

MARY FEMINEAR, Auburn, Ala., State Home Demonstration Agent.

SARAH LOUISE THOMAS, Auburn, Ala., Assistant State Home Demonstration Agent, Charge of Girls' Clubs.

HELEN JOHNSTON, Montevallo, Ala., Assistant State Home Demonstration Agent, Charge of Women's Home Demonstration Clubs.

AGNES HITT, Auburn, Ala., Assistant State Home Demonstration Agent, Home Economics Specialist.

GLADYS TAPPAN, Auburn, Ala., Assistant Home Demonstration Agent, Poultry Specialist.

CHANGES IN PERSONNEL OF STATE AGENTS

On April 1, 1918, Mrs. Marjorie P. Trafford, Assistant State Home Demonstration Agent, with headquarters at Montevallo, resigned her position with this department to join her husband, Capt. Harry L. Trafford, in Montgomery. Miss Helen Johnston, County Home Demonstration Agent in Escambia County was appointed as Mrs. Trafford's successor and put in charge of the Women's Home Demonstration Clubs. September 1, Miss Mary E. Keown, Assistant State Agent in charge of Women's Home Demonstration Clubs accepted a position with the Washington Office to assist in the supervision of Home Demonstration Work in the fifteen Southern States. Miss Agnes Hitt, Shelby County Home Demonstration Agent, was appointed as Miss Keown's successor, acting as Home Economics Specialist. Besides their experience in the field as County Agents both Miss Johnston and Miss Hitt have had training to especially fit them for their present positions. Miss Johnston received her B. S. and A. M. degrees from George Peabody College for Teachers, Nashville, Tenn.

Miss Hitt is a graduate of the A. G. T. I., Montevallo, Alabama, at which institution she taught Home Economics for three years. She also has her A. B. degree from the University of Illinois. At both schools she majored in Home Economics.

Plan of Work

Some phase of Home Demonstration Work has been carried on in the 67 counties of the State under the supervision of 5 State, 3 Urban, and 55 County Agents. Seven Assistant County Agents were employed for a short time during the busy canning season, making a total of 65 County Agents employed during the year. For the past two years it has been necessary for the Home Demonstration Department to co-operate with the various War Agencies throughout the State. The relations of this department with these agencies have been most pleasant. Similarity of work and of interest however, and the ability of the Home Demonstration Agents to serve best here, most closely connected the work of the Home Demonstration Department with that of the U. S. Food Administration and the State Council of National Defense. The State Agent served as State Director of Home Economics for the Food Administration, and as Chairman of Food Production and Conservation on the Women's Committee of the State Council of National Defense. The county agents represented these departments in their respective counties. By thus combining and unifying effort there was no confusion or overlapping of work. A great deal of the literature issued by the Food Administration Department was used and found most helpful.. In meetings held by the Home Demonstration Agents and in other special work undertaken to stimulate food production and conservation, active support was given by the representatives of the Food Administration, the Council of Defense, school authorities, churches, and Women's Federated Clubs. Grateful acknowledgement is hereby made for their encouragement and assistance; and expression is given to the satisfaction that lies in the fact that the forces of the State were united in aim and effort, and learned to do that team work which is so essential to community development.

Co-operation With County Boards of Education and Revenue

As in previous years County Boards of Education and

Revenue have given substantial financial assistance and hearty support to the Home Demonstration Work, thus making it possible to employ well trained and competent agents for ten or twelve months during the year, and to pay them salaries on a par with those paid in other states.

Four Years' Program for Club Girls

In order that the masses might be reached and taught how to produce and to save more food, it has been necessary during the period of the war for the work of the Home Demonstration Agents to be extensive rather than intensive. The policy for the coming year, however, will be more intensive. Heretofore the County Agents have had no set programs to follow, but have been more or less free to select that phase of the Home Demonstration Work which best filled the needs of the different communities. In the main this policy will continue in regard to the work with the women, but a definite four years' program of work for club girls has been prepared by the State Home Demonstration Agents and placed in the hands of the County Agents for trial before its final adoption at the Annual Meeting of the Alabama Home Demonstration Agents, now scheduled to be held in Auburn, February the seventeenth to the twenty-second inclusive. According to this program, club girls completing 75 per cent of each years' prescribed requirements will receive certificates. Those successfully completing the four years' work will be awarded diplomas. The plan of work is so arranged that while the girls are receiving that training which will fit them to become the future home-makers of Alabama, they are at the same time enabled to increase their incomes and thereby to improve their present home conditions, and to secure better educational advantages.

The Home Demonstration Agent will concentrate her efforts in a limited number of centers, and the value of her time and work will be multiplied by having the girls and women from near-by communities attend the meetings and demonstrations at the most centrally located clubs. Interested girls and women who cannot enroll in organized clubs and attend the club meetings may be enrolled as individual demonstrators. They will then receive instruction in the subjects in which they are interested, and the direct supervision of the

Home Demonstration Agent when time will permit. During the canning season the organized counties will be districted, and demonstrations in improved methods of food preservation given in each district.

Work of the State Agent

The State Agent's duties are largerly administrative and supervisory. In the performance of these duties during the past year, the State Agent and the four assistants have travelled 50,384 miles; attended 691 meetings; given 305 demonstrations and 535 lectures, with an approximate attendance of 75,763 persons.

Work of the Home Demonstration Agent

In order that science may be applied in the home as well as on the farm, it is necessary that the Home Demonstration Agent be trained for her work, and each year witnesses improvement in the type of agent employed. Home Demonstration Work is becoming a profession. Colleges are offering special courses in Agriculture, Home Economics, and related subjects, leading to the conferring of degrees in the Home Demonstration Department.

Alabama Agents appreciate the value of scientific training. Last January and February seventeen attended the six weeks' Short Course for Home Demonstration Agents, given at George Peabody College for Teachers, Nashville, Tennessee. Five attended other institutions which offered similar instructions.

The agents have proved themselves patriotic as well as wide awake and progressive. During the past two years some of them have continued in the Home Demonstration Work at a financial loss because they believed it their patriotic duty to do so. In the face of the ever increasing high cost of living and travel, they have stood the test and continued to take forward steps for the improvement of their work as is shown below:

Of the 65 agents employed during the past year, 18 were college graduates, 17 were normal school graduates, and 50 held teachers' certificates. All had received some training in Home Economics and Agriculture. The following statistics are of interest: Number of agents operating cars for travel 35. Number of cars purchased this year 14. Number using horses and buggies 2. Number using trains and hired conveyances 28. Number having offices equipped 29. The majority

of the others have offices with the County Superintendent of Education. Number of rest rooms established 10. Number of miles travelled 223,442, meetings held 6,147, attendance 234,403. Demonstrations given 2,617. Number of clubs organized for girls and women 570, meetings held 5,574, attendance 114,891. Enrollment 9,898. Total number of persons reached and influenced by Home Demonstration Work during 1918, 115,384. Combined economic value of all club products, $1,057,-266.68.

Poultry

Last year there were twelve counties organized for poultry work, with a total enrollment of 610 girls, women, and boys. This year there is a notable increase in the number of counties and enrollment, there being forty-five counties organized with a total enrollment of 2,462 girls, women, and boys. Of this number 608 fulfilled minium requirements as to number of eggs set and chickens raised.

The following figures indicate to some extent the results accomplished:

No. of chickens raised	58,383
No. birds raised for market	16,229
No. of pure bred fowls sold for breeding	678
No. of club members buying pure bred stock and eggs	860
No. of eggs sold cooperatively (dozen)	34,877
No. of eggs sold by individuals (dozen)	19.456
No. of home-brooders made	156
No. of incubators bought	10
Total value of all poultry products reported	$98.899.13

One of the outstanding features of this work was the Egg Campaign beginning April 15th and continuing about a month. The purpose of this campaign was to encourage and to stimulate the production and conservation of poultry products, and to familiarize the people with the provisions of the Pure Food Law which went into effect in Alabama, May 1, 1918.

Lectures and demonstrations were given in twenty-six counties of the state under the leadership of Miss Gladys Tappan, State Poultry Specialist, Auburn, and the County Home Demonstration Agent in each county, cooperating with Mr. R. I. Cochran from the U. S. Department of Agriculture, Food Research Laboratories, Field Station, Indianapolis, Indiana.

The following topics were discussed:

1. Alabama as a poultry producing state.
2. Why increase poultry in this state.

3. Care of adult birds.
4. Care of baby chicks.
5. Feeding.
6. Care of eggs from the dealer's standpoint.
7. Care of eggs from the producer's standpoint.
8. Production of infertile eggs.
9. Home preservation of eggs.
10. Why Alabama eggs are rated second class in the big markets.
11. How to make them first class.

The following demonstrations were given:

1. Making egg candlers.
2. Candling market eggs.
3. Grading market eggs.
4. Preservation of eggs in water glass for home use.
5. Judging poultry.

Two successful demonstrations in the killing and dry-picking of birds were given in Fayette County for women, who were desirous of sending week-end baskets of poultry products to the Birmingham markets; several of these women later establishing a profitable trade. As a result of the emphasis placed upon the preservation of eggs in water glass 3,318 dozen were reported saved for home use. Thus there will be a greater surplus of fall eggs for market when prices will be higher. Last year Chilton County led in almost all phases of this work. Again she heads the list with a total value of poultry products $10,300.47. Talladega County ranks second with total value, $8,672.10; and Mobile County third with a total value, $7,288.00.

Girls' Clubs

Five thousand one hundred girls in 67 counties have been enrolled as regular members of Girls' Canning Clubs. The enrollment of emergency club workers increased this number to 11,917. This has been the first year that clubs have been organized in all of the sixty-seven counties. The work has grown in interest as well as in numbers, and the girls have become anxious to study new subjects. To coordinate these interests to the end that the Home Demonstration Agent might give the best service, and the club members derive the greatest benefit, all activities have been included under the name of Girls' Clubs. Members of these clubs may specialize in one or more of the following projects: Canning and its related subjects, Poultry, Horticulture, and Bee-Keeping.

Two thousand two hundred ninety-two girls sent in reports of their tenth acre garden, from which the fol-

lowing report is compiled:

No. pounds of tomatoes harvested from one-tenth acre garden	1,117,930
No. pounds beans, peppers, and other vegetables from one-tenth acre gardens	114,950
No. containers of tomatoes canned from one-tenth acre gardens	197,777
No. containers of other products from one-tenth acre gardens	99,739
No. containers of fruit and vegetables canned from farm and orchard	306,695
Total number of containers canned	604,311
Total value of all club products from tenth acre gardens	$65,709.70
Average cost of production per tenth acre	5.37
Average cost of canning per tenth acre	6.12
Average profit per tenth acre	15.12
No. of pounds of dried fruits and vegetables stored	54,538
No. of pounds brined vegetables stored	8,857
Total value of all club products	$153,291.05

In the work with the girls as well as in the work with the women, emphasis was placed this year upon the growing and saving of food, and little time was left to devote to other club activities. The following figures are therefore comparatively low, but under the agents' instructions, the girls have made the following: Uniform aprons 1,577; caps 1,668; dresses 86; laundry bags 28; holders 527; rugs 22; number of pieces of basketry 132; sewing screens 4; towels 592; driers 108; fireless cookers 212; fly traps 316; miscellaneous articles 91. One thousand five hundred fifty girls carried on demonstrations in the cooking of club products and 928 in bread making; 1,045 girls have planted winter gardens, and 119 established perennial gardens. There are 136 girls who are paying all or a part of their expenses in schools with funds, earned through club activities. Many others have invested their earnings in Liberty Bonds, War Savings Stamps, pure bred chickens, pigs, dairy calves, and in other profitable ways. Three hundred fifteen clubs have held regular meetings throughout the year, and 3,379 meetings have been recorded with an attendance of 69,970.

The soil in Alabama has become so infected with wilt bacteria that it has become impossible to grow tomatoes successfully in certain sections of the State. Owing to this trouble and to the severe drought during the summer, many of the girls' gardens were complete failures. The Department of Agriculture at Washington has granted our request for Wilt Resistant Tomato Seed to supply club members for the coming year. Each

year there are many girls who do excellent work and follow instructions, but who do not keep records. Reports from the records sent in by club members are therefore only a part of the actual results accomplished. This year it has been necessary for many girls to take their brothers' places on the farms, and thus they were prevented from concentrating their efforts on the tenth acre gardens and other club activities. The influenza epidemic, that closed all the schools, also prevented the agents from holding meetings and collecting many of their records.

State and County Short Courses

The girls making the highest records in club work in each county are given trips to Montevallo to attend the Girls' Short Course for one week. The girls making the next highest records attend similar short courses held in their respective counties. This year there were 75 girls who attended the State Short Course, and 835 girls who attended County Short Courses where they received special instruction in Home Economics and Agriculture.

Women's Home Demonstration Clubs

Four thousand seven hundred ninety-eight women were enrolled in the Home Demonstration Work; 3,248 doing active work under the direction of the Home Demonstration Agent, and in organized clubs. Forty-six counties reported 255 organized clubs with an average enrollment of 17, an average attendance of 15, and a total attendance of 44,921; the club membership being drawn from within a radius of 4 miles. One hundred ninety-seven of these clubs held regular meetings. Fourteen counties reported 15 clubs in cities; twenty-one counties 84 clubs in small towns; and twenty-four counties, 212 clubs in the open country, the significance of the above figures lying in the fact, that it is the *country woman* who is being reached by the Home Demonstration Agent.

Club women report the following labor-saving devices made and installed in their homes or bought by the advice of the agent: Fireless Cookers 398; Iceless Refrigerators 90; Fly traps 404; Fly screens 35; Ironing boards 46; Wheel trays 7; Shower baths 23; Kitchen cabinets 58; Water systems 32; Fruit dryers 20; Hot Water Canners 288; Steam Pressure Canners 17; Food

Choppers 18; Sinks 6; Oil stoves 29; Washing machines 9; Hand Grist Mills 1; Measuring cups 36.

The above statistics reveal the effort of club women to better conditions in their homes. But even the foregoing figures give no conception of the widening of the rural woman's horizon, and of the eagerness with which she looks forward to the coming together with her neighbors, each meeting being a school of instruction in family betterment and community welfare, a clearing house of neighborhood knowledge, a public exchange where magazines, patterns, receipes, ideas, and joy are given and taken.

Cottage Cheese Making

Cooperating with the Dairy Division of the Bureau of Animal Industry, the members of the Home Demonstration clubs, under the leadership of the Home Demonstration Agents and of Miss Cureton, Dairy Specialist, responded enthusiastically to the Government's request that sour milk be turned into cottage cheese and used as a meat substitute. The cottage cheese campaign began April the first, and from that date to November the first, 277 demonstrations were given in 33 counties, attended by 2,525 persons, 1,084 of whom reported the making of 8,144 pounds of cottage cheese, the purchase of 76 dairy thermometers, 1 press and 10 paddles; and the making at home of 41 drain racks, 32 presses and 45 paddles.

Butter Making

While the work in butter making has been of normal development among club women of Alabama, it received stimulus through the influence of the Dairy Specialist and those agents who conducted the cottage cheese campaign. Fourteen counties reported 102,500 pounds of butter made by club women, who this year purchased 75 barrel churns, 112 shot-gun cans, 108 molds, and 224 dairy thermometers, and made at home 17 workers, 160 paddles, and 21 molds. Owing to a keener interest in improved methods in the making and selling of butter, club women reported an increase of 19.8 cents per pound in the sales price.

Food Preservation

In keeping with the spirit of the times, club women made an unusual effort in the preservation of food, putting up under demonstration methods 567,591 cans

and jars of fruit and vegetables, valued at $141,987.75; storing 57,648 pounds of dried vegetables, valued at $11,529.60; 67,299 pounds of dried fruits, valued at $13,459.80; and 16,641 gallons of vegetables, valued at $6,656.40. One thousand five hundred ninety-seven women planted winter gardens.

Emergency Work in Food Production and Conservation

Figures above quoted, under the caption "Food Preservation," do not include the results of the emergency work in food production and conservation, carried on by the agents and their demonstrators in their desire to leave nothing undone that would contribute to an increased food supply. It is estimated that 115,348 women and girls were influenced by the agents' instructors to pack 1,874,142 containers of fruits and vegetables, valued at $468,535,50; to store 158,372 pounds of dried fruits and vegetables, valued at $31,674.40; and to brine 19,431 gallons of vegetables, valued at $7,772.40. The emergency work resulted in the establishment of 31 war kitchens, elsewhere mentioned in this report; and 46 community canneries with an approximate output of 2,478,675 containers, valued at $619,668.75.

Wheat Conservation

Beginning January first 1918 and continuing throughout the year, a definite effort was made by County Home Demonstration Agents for the conservation of wheat. In 938 widely scattered communities, 1,922 demonstrations were given in the use of wheat substitutes, 409 of these demonstrations being in the making of yeast breads and 1,513 in quick breads. More than 100 public demonstrations and conferences were held at bakeries, hotels, restaurants, and public institutions for the benefit of managers and proprietors. It is estimated that 67,603 persons attended the bread demonstrations, and that 54,092 homes were reached in addition to those of club workers. So keen was the interest in these demonstrations that 12,751 women and 1,969 girls reported as actually following the County Agents' instructions, and 71 girls and 239 women volunteered to give demonstrations, thus enabling the agents to widen the field of their activities and to reach homes that otherwise would have been uninfluenced. In different sections of the state ten beautiful window displays of War Bread were made, and 30 War Bread exhibits of other types were held. Interest in wheat

conservation was the principal factor in the establishment of 31 War Kitchens. As a result of the unceasing labor of the County Home Demonstration Agents and the members of the Home Demonstration Clubs, it is estimated that there was a saving of 50 per cent in the use of wheat in the homes and public institutions that came under their influence.

Urban Work

Under the provisions of the Food Production Bill of August 1917, Home Demonstration Agents were employed in the three large cities of the state, Mobile Montgomery, and Birmingham, and fifteen Home Demonstration Kitchens were opened. The patriotic support of Business men's organizations and of Women's Clubs made possible the furnishing and the financing of these kitchens, which served as laboratories for the training of volunteer classes in War Time Cookery, and as schools of instruction for city housewives. The agents and their volunteer assistants held 1,918 meetings with an attendance of 41,853 persons, and gave 1,452 demonstrations with an attendance of 46,799. It is estimated that 73,866 persons were reached directly, and 152,910 indirectly, a total of 226,776 persons influenced.

Birmingham was the second city in the South and the first city in the State to establish a Home Demonstration Kitchen. So modern and complete is its equipment, so generously is it financed by civic organizations, so continuously is it used by housewives and by classes in training for volunteer work, so widespread is its influence throughout the city and its suburbs, that it stands an unusual example of community interest, a source of pride to the entire state.

Summary

Number of Counties organized 67. Number of Agents employed 65. Average term of Service 9 months. Average salary $101.90.

Activities Stressed

I. *Food Production.*

1. Gardening.
2. Home Orchards.
3. Poultry Raising.
4. Bee Keeping.
5. Dairying.

II. *Food Preservation.*

1. Use of wheat, meat, fat and sugar substitutes.
2. Canning, drying, brining, pickling, preserving and jelly making.

III. *General Thrift and Economy Encouraged.*

IV. *Combined Results.*

1.	No. of girls enrolled in organized clubs	5,100
2.	No of women enrolled in organized clubs	4,798
3.	No. of emergency workers enrolled	115,384
4.	Total enrollment of girls and women	125,282
5.	Total value of all club products	$1,057,266.68
6.	Total value of all emergency canned products	$ 468,535.50
	Grand total	$1,525,802.18

OUTSTANDING NEEDS FOR THE FUTURE DEVELOPMENT OF HOME DEMONSTRATION WORK

1. Continued coöperation of all forces in the State.
2. More adequate office room and equipment for the State Department.
3. More clerical help.
4. Enlarged supervisory staff.
5. Funds sufficient to develop the Home Demonstration Work in Alabama so that it may be second to none in the South.

Respectfullly submitted,
L. N. DUNCAN,
Supt. Junior and Home Economics Dept.