

# SIXTH ANNUAL REPORT

—OF THE—

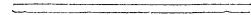
## Agricultural Experiment Station

—OF THE—

A. & M. COLLEGE,

AUBURN, ALABAMA,

JANUARY 15, 1894.



MONTGOMERY, ALA. :  
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1894.



AGRICULTURAL & MECHANICAL COLLEGE,

AUBURN, ALA., Jan. 15, 1894.

To Governor THOS. G. JONES,

*Executive Department,*

*Montgomery, Ala.*

SIR:—I have the honor herewith to transmit to you the Annual Report of the Agricultural Experiment Station of the Agricultural and Mechanical College of Alabama, for the year 1893.

This report is made in accordance with the provisions of an act of Congress establishing Experiment Stations in the different States, and contains the report of the Treasurer, the Botanist, the Agriculturist, the Biologist, the Chemist, and the Veterinarian.

Very respectfully,

WM. LEROY BROUN,  
President.



## TRUSTEES.

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*His Excellency*, THOMAS G. JONES, President..... Ex-Officio.  
J. G. HARRIS, Superintendent of Education..... Ex-Officio.

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I. F. CULVER..... Union Springs.  
J. C. RICH..... Mobile.  
H. CLAY ARMSTRONG..... Auburn.  
R. H. DUGGAR..... Gallion.  
J. G. GILCHRIST..... Hope Hull.  
WM. SMAW..... Boligee.  
C. C. HARRIS..... Decatur.  
JONATHAN HARALSON..... Selma.  
R. F. LIGON..... Tuskegee.  
J. A. BILBRO..... Gadsden.

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E. T. GLENN, Treasurer.

OFFICERS  
OF THE  
AGRICULTURAL EXPERIMENT STATION.

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— BOARD OF VISITORS. —

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COMMITTEE OF TRUSTEES ON EXPERIMENT STATION.

I. F. CULVER.....	Union Springs.
J. G. GILCHRIST.....	Hope Hull.
H. CLAY ARMSTRONG.....	Auburn.

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— BOARD OF DIRECTION. —

WM. LEROY BROUN.....	President.
A. J. BONDURANT.....	Agriculturist.
B. B. ROSS.....	Chemist.
P. H. MELL.....	Botanist.
J. M. STEDMAN.....	Biologist.
C. A. CARY, D. V. M.....	Veterinarian.

— ASSISTANTS. —

J. T. ANDERSON.....	First Assistant Chemist.
R. E. NOBLE.....	Second Assistant Chemist.
C. L. HARE.....	Third Assistant Chemist.
R. L. BIVINS.....	Clerk, and Assistant Botanist.
T. U. CULVER.....	Superintendent of Farm.

## TREASURER'S REPORT,

For the fiscal year ending July 1st, 1893.

THE AGRICULTURAL EXPERIMENT STATION OF THE

A. AND M. COLLEGE OF ALABAMA,

In account with U. S. Treasurer.

RECEIPTS.			
To amount from U. S. Treasurer.....			\$ 15,000 00
DISBURSEMENTS.			
By amount paid Salaries.....		\$ 8,550 34	
“ “ “ Library.....		510 71	
“ “ “ Printing.....		983 56	
“ “ “ Labor and current expenses of Experiment Station.....		2,000 59	
“ “ “ Soil Test.....		64 85	
“ “ “ Chemical Department.....		422 69	
“ “ “ Building.....		750 00	
“ “ “ Biology.....		1,070 38	
“ “ “ Botany.....		205 46	
“ “ “ Exhibits at World's Fair.....		199 27	
“ “ “ Incidentals.....		242 15	\$ 15,000 00

E. T. GLENN, Treasurer,  
A. & M. College.

THE STATE OF ALABAMA, }  
 Lee County. } Personally appeared before me W. S. J.  
 Lampkin, a Notary Public in and for said county and State, E. T.  
 Glenn, known to me as Treasurer of the Agricultural and Mechanical  
 College of Alabama, who, being duly sworn, deposes and saith that  
 the above and foregoing account is true and correct.

Witness my hand, this 6th day of January, 1894.

W. S. J. LAMPKIN, Notary Public.

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

WM. LEROY BROWN, President,  
A. & M. College.





## REPORT OF THE BOTANIST.

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DR. WM. LEROY BROUN, *President,*

*Alabama Agricultural and Mechanical College:*

SIR—I have the honor to present to you the following annual report of work performed in Botany during the year 1993:

During the spring, summer and autumn months many native plants were collected and added to the herbarium, and much of the material is in shape for a bulletin on the botany of Lee county. It is my intention to study each county in the State in this manner until a complete botanical survey is made.

Investigations are under way to determine the strength of the native timbers and the physiological effects produced on lumber under the different methods of seasoning practiced in the State.

The experiments on the improvement of cotton have been continued during the past year with marked success. This makes the third year of this work, and a bulletin is about completed giving the results of these investigations. The following so-called varieties have been under examination:

Allen's long staple,	T. J. King,
Bailey,	Okra leaf,
Barnett,	Peeler,
Cherry's cluster,	Peerless,
J. C. Cook,	Peterkin,
W. A. Cook,	Petit Gulf,
Dixon,	Rust Proof,
Gold Dust,	Rameses,
Hawkins,	"Scrub,"
Herlong,	Storm Proof,
Hunnicutt,	Southern Hope,
Jones' improved,	Truitt,
Jones' long staple,	Welborn's Pet,
Keith.	Wonderful,
	Zellner,

The following species have also been under examination to determine their value for this climate :

Bamieh (Egyptian cotton).

Mit-Affi (Egyptian cotton).

Nankeen.

Sea Island.

Several hundred cross-experiments were made during the season and a large number of well developed bolls were secured, giving decided evidence of the effects of the cross-breeding. The species of Egyptian cotton were received from the Department of Agriculture, and the results secured have been very gratifying. It will take, however, another year's planting to determine whether the plant will be of service to the farmers of this State. The fiber is very much like that grown on our sea coast and known as "Sea Island Cotton."

A botanical garden has been inaugurated during the year by the authority of the Board of Trustees and experiments have been planned to determine the value to this State of the following character of foreign plants : Those relating to forage, such as grasses, &c., bread producing plants, foreign fruits and vegetables. The native grasses of Alabama will receive special attention in this garden.

Respectfully submitted,

P. H. MELL,

*Botanist.*

## REPORT OF THE AGRICULTURIST.

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DR. WM. LEROY BROUN, *President* :

SIR :—I respectfully submit the following report of the work in the Department of Agriculture during the past year.

The following bulletins have been issued from the Agricultural Department of the Experiment Station :

[Bulletin No. 40.]

### EXPERIMENTS WITH COTTON.

Comparison of thirty varieties of cotton reporting results of different kinds of cotton experimented with as a variety test, tabulated statement of classification and valuation, and experiment with fertilizers.

[Bulletin No. 42.]

This bulletin contains the report of experiments of co-operative soil test experiments, made by thirty-six farmers in different parts of the State, with fertilizers sent to them from this department. The information gained from these co-operative soil test reports, as published in the bulletin, has excited much interest.

[Bulletin No. 44.]

### TOBACCO BULLETIN.

This bulletin discusses the experiments conducted in raising plants in the station the past year, and the comparison of several varieties of tobacco grown. It contains illustrations showing the method of covering the plant beds with canvass, and different methods of raising the plants, transplanting, field culture, suckering, topping and harvesting the plants, a modern barn, and methods of stripping, prizing and curing. It gives a detailed statement of the method of preparing the plant beds, the raising and transplanting the

plants, the preparation of the field, and the way tobacco should be worked, harvested, cured and prepared for market; the aim being to give the farmers of the State, in a brief and concise form, all the information that is needed for the successful cultivation of this plant.

[Bulletin No. 46.]

#### RYE VS. ENSILAGE.

This bulletin contains results of the effect of rye and ensilage in the yield of milk, in the experiment made with the object of comparing the effect of these two feeds.

[Bulletin No. 47.]

#### FRUITS.

This bulletin is a summary of eight years experiments in cultivating different fruits, and the conclusions reached from careful observation, of which the following is a brief synopsis: Of the 86 varieties of grapes tested, only eight are recommended for general use—the Concord, Ives, Delaware and Perkins of the Lebrusea type, and the Mish, Memory Scuppernong and Flowers of the Rotundifolia.

Forty-five varieties of apples have been tried and only seventeen have proven a success. A list in order of ripening, with a brief description is furnished.

Of the 40 varieties of pears, all have fallen victims to the blight, except six.

Thirty-seven varieties of budded peaches have all done well, and a test of sixteen is given as a choice selection.

Out of 14 varieties of plums, only four have been a success. Not one of the eight kinds of cherries have succeeded.

Among 25 varieties of raspberries, only two are recommended; and six of the 53 varieties of strawberries tested, are adapted to the general conditions of soil and climate, the most profitable being the Sharpless and Wilson.

Experiments in 28 varieties of water-melons and 30 of cantaloupes, result in six of each being recommended.

[Bulletin No. 49.]

## WHEAT AND GRASSES.

Contains experiments of wheat and grasses. These experiments in varieties of wheat were begun in 1890, the results of which were published in bulletins 32 and 39. This investigation was continued in 1892. Of the fifteen varieties experimented with, only six can be recommended for cultivation in this State. This bulletin contains an analysis of the Spurry plant, a forage plant which is little known in the South, but is exciting interest in other sections. Further trial is necessary before conclusions can be established as to the value of this plant; and the same is applicable to the different grasses tested on the Station the past year. Some of these, however, promise favorable results.

[Bulletin No. 51.]

## VEGETABLES.

This bulletin shows the results of experiments with a few leading varieties of vegetables grown on the Station.

In addition to the publications issued during the year from the Agricultural Department the bulletins containing the experiments in cotton and corn in 1893 are ready for publication.

The bulletin on experiments in tobacco for 1893, is being prepared and soon will be ready for publication.

## CO-OPERATIVE SOIL-TESTS..

The Co-operative Soil-Test bulletin for 1893 which was in charge of Mr. A. F. Cory, is being prepared by him for publication, and will give the results of the experiments made.

Fertilizers have been mixed at the station by Mr. A. F. Cory, and distributed to farmers engaged in the work in different parts of the State, for experimenting in corn and cotton in 1894.

The typical soils of the State were collected by the Department of Agriculture and sent to the Columbian Exposition as a part of the exhibit of the Alabama Experiment Station.

## DISTRIBUTION OF SEED, &amp;C.

The following shows the distribution to farmers in 1894 :

1,000 grape roots, 10,000 grape cuttings, 500 raspberry plants, 509 strawberry plants, 2,500 papers garden seed, 500 papers watermelon seed, 500 papers cantaloupe seed, 495 papers tobacco seed, 50 packages corn and cotton seed, 20 pecks wheat.

## EXPERIMENTS CONDUCTED AT THE STATION.

The following shows the experiments conducted at the station :

15 varieties wheat, 22 varieties tomatoes, 7 varieties cabbage, 7 varieties Irish potatoes, 2 varieties sweet potatoes, 7 fertilizer tests of sweet potatoes, 2 varieties cantaloupes, 3 varieties water-melons, 60 varieties grasses, 42 experiments of 14 varieties of tobacco, 20 experiments with fertilizers for chemist, 86 experiments of crosses of cotton for botanist.

The above experiments were entrusted for the details of management to Mr. James Cláyton, Ass't. Horticulturist, who in addition to his duties in experimental work, gave instruction to the students in practical work. In addition to the above the following experiments were conducted under the management of Mr. A. F. Cory, Ass't. Agriculturist :

16 acres fall seeded oats, 10 acres spring seeded oats, 3 acres fall seeded rye, 20 acres spring seeded rye, 10 acres wheat, 20 acres experiment station yellow corn, 5 acres Clayton white bread corn, 2 acres corn for soiling,  $1\frac{1}{2}$  acres variety test of corn,  $3\frac{1}{4}$  acres sorghum for soiling, 25 acres experiments in cotton, 3 acres corn for ensilage,  $2\frac{1}{2}$  acres experiment in Texas blue grass, duplicate of co-operative soil-test experiments with fertilizers on corn, experiment with 17 varieties of cotton, experiment in rotation, which is designed to be continued five years. An application interculturally of nitrogen fertilizers to cotton, experiment comparing floats and cotton seed meal with acid phosphate and cotton seed meal.

## IMPROVEMENTS.

Much of the fencing has been repaired. The unsightly fence in front of the residence of the agriculturist, has been removed, and a durable galvanized wire fence with iron posts and gates put in its place. The residence of the assistant horticulturist has been added to and improved. The old stable, pig pens and other unsightly buildings, have been removed from the front and rebuilt. A new barn conveniently arranged for securing the experimental crops, and as a laboratory for students at practical work, has been built. The water-power has been improved by the increase of a windmill with attachments of pipes conveying water to the new barn, cattle and hog lots. A modern tobacco barn, with curing apparatus, has been built to meet the requirements in this line of station work.

## RECEIPTS.

The receipts from the station farm amount to fourteen hundred and two dollars and fifty-five cents (\$1,402.55) for the year ending December 31st, 1893.

## FARMERS INSTITUTES.

In accordance with the request of Hon. Hector D. Lane, Commissioner of Agriculture, I spent one month of vacation in Farmers Institute work, delivering lectures on agricultural subjects to the farmers of the State at the following places: Evergreen, Conecuh county; Whitesburgh, Madison county; Albertsville, Marshall county; Gadsden, Etowah county; Collinsville, DeKalb county; Scottsboro, Jackson county; Huntsville, Madison county; Jeff, Madison county; Wooley Springs, Limestone county; Elkmont, Limestone county; Athens, Limestone county; Rogersville, Lauderdale county; Lexington, Lauderdale county; Florence, Lauderdale county; Leyton, Colbert county; Courtland, Lawrence county.

The farmers seemed much interested at these meetings, and the audiences were good at every place where we held institutes.

In the experiments conducted on the station during the past year, I was efficiently aided by Mr. James Clayton, Assistant Horticulturist, and by Mr. A. Cory, Assistant Agriculturist.

Respectfully,

ALEX. J. BONDURANT,  
Agriculturist.

January 10th, 1894.



## REPORT OF THE BIOLOGIST.

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DR. WM. LEROY BROUN, *President,*

*Alabama Agricultural & Mechanical College :*

SIR:—I have the honor to submit the following report of the work in the Department of Biology during the past year:

Two bulletins have been published as follows :

Bulletin No. 45, June, 1893, entitled "Injurious and Beneficial Insects. Some Insect Pests of the Farm and Garden." This bulletin, which is the first of a series to follow on the same subject, contains, first, some general remarks of value to all who wish to understand in a general way the life histories of insects, and the reasons why they are to be combatted in certain stages, and why an insecticide is to be used at a certain period, and why it is of no value at another period. In other words, the why and wherefore of the methods of combatting and destroying injurious insects is briefly stated. Then follows the different kinds of insecticides in use with directions for preparing and applying the same, and the nature of the insects to be destroyed by each. Some of the most useful machines for applying the various kinds of insecticides and fungicides are given with a view to enable the farmer to make a better choice. The following insects are discussed: Colorado Potato-Beetle, Cabbage Worms and Butterflies, Harlequin Cabbage Bug, Cabbage Cut-Worms, Cotton Leaf-Worm, Cotton Boll-Worm, Aphids or Lice on Cotton, Corn Cut-Worms, Corn-Worm or Boll-Worm.

Bulletin No. 50, November, 1893, entitled "Fruit-Tree Blight in General," covers a field but little understood by the agriculturist. The nature, cause, and remedies to be

used for this dreaded disease are discussed in a popular style so as to be readily understood by all.

A bulletin is in the course of preparation on a New Cotton Disease Affecting the Fibre and Seed. This is a very serious bacterial disease that is causing a loss of 30% in the affected districts. The pure cultures of the germ and successful inoculations have been made, and the bulletin is well under way.

The Phytopathological or Plant Laboratory has been put in working order, and several valuable experiments are being carried on in it that would otherwise be difficult to conduct. Work is progressing on the diseases of cotton with a view to obtain preventive or curative methods of general application.

Diseases of beans, corn, radishes, beets, melons, cucumbers, and tomatoes are being investigated, and experiments on the prevention and cure of the same are being conducted. Methods and experiments on the prevention and cure of *blight* by chemical means are receiving attention. The life histories, habits and work of injurious and beneficial insects are being investigated and the means to destroy them tested, while a collection of the same is in course of formation.

Work is also being conducted in the study of general bacteriology, mycology and entomology with a view to a better understanding of the injurious forms and of the relations existing between them.

During the summer, nineteen lectures were delivered before Farmers Institutes in various portions of the State, on the subject fungoid and bacterial diseases of plants and injurious and beneficial insects.

Respectfully submitted,

J. M. STEDMAN,  
Biologist.

## REPORT OF THE CHEMIST.

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DR. WM. LEROY BROUN, *President,*  
*Alabama Agricultural & Mechanical College:*

SIR:—The following report of the chemical department is herewith submitted :

Since the undersigned assumed charge of the chemical department, about the middle of September last, a considerable proportion of the work performed in the laboratory has been in connection with the analysis of commercial fertilizers for the commissioner of agriculture.

A bulletin embodying the results of analyses of about 180 samples of fertilizers and at the same time describing in detail, the sources, utility and modes of application of the chief classes of fertilizers upon the market, is now in press.

In addition to the analyses of fertilizers referred to, a number of samples of waters, marls, ores and miscellaneous minerals have been examined either qualitatively or quantitatively.

Several samples of insecticides have also been subjected to analysis, and it is intended to make a more comprehensive investigation of this subject during the coming spring.

Bulletin No. 48, issued in July of the past year, gives the result of analysis of several hundred samples, and also a report of experiments conducted under the supervision of Dr. N. T. Lupton, to test the comparative merits of crude natural phosphates and acid phosphates as a fertilizer for cotton.

There are also reported in this bulletin a large number of laboratory tests with regard to the influence of decomposing organic matter upon natural phosphates, with especial reference to the availability of the phosphoric acid after long contact of the phosphates with the organic matter.

The following work is reported by Dr. Anderson, assistant chemist, as having been performed in the laboratory of the experiment station during the past year.

(1.) Analysis of twelve typical soils for the Columbian Exposition.

(2.) Analysis of waters and other substances, reported to commissioner of agriculture.

(3.) Investigation of a method of estimating needs of soils, especially with reference to the growth of the cotton plant, with analysis of the plant at different stages of growth—to be published in next bulletin.

Respectfully,

B. B. Ross,  
Chemist,

## REPORT OF THE VETERINARIAN.

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MR. WM. LEROY BROUN,

*President Alabama Agricultural and Mechanical College.*

Sir:—The following is a synopsis of the work accomplished by the Veterinary Department during the year 1893:

Six lectures were delivered in Barbour county; three in Russell; four in Bullock; two in Crenshaw; one in Madison; one in Macon; two in Henry; two in Lee; one in Montgomery; one in Dale; and one in Elmore. The primary purpose of these lectures was to disseminate practical and rational methods of handling and treating the most common diseases of domestic animals, and to suggest methods and means by which many diseases may be prevented.

In May this department issued Bulletin No. 43.—“Eye Diseases of Domestic Animals.”

In this bulletin, the following subjects were explained in as simple and plain terms as possible:

- I. Anatomy of the horse's eye.
- II. Disease of the eye-lids
- III. Disease of the “Haw,” or “eye-washer.”
- IV. Diseases of the lachrymal, or tear, apparatus.
- V. Diseases of the tissues surrounding the eye-ball and in the orbital cavity.
- VI. Diseases of the conjunctiva.
- VII. Diseases of the cornea.
- VIII. Diseases of the iris.
- IX. Cataract—opacity of the lens.
- X. Amaurosis—paralysis of the retina and optic nerve.
- XI. Glaucoma—diseases of the vitreous humor.

- XII. Hydrophthalmus—excess of water in the aqueous humor.
- XIII. Exophthalmus—dislocation of the eye-ball.
- XIV. Strabismus—squinting—cross-eye.
- XV. Causes of indistinct vision and shying.
- XVI. Animal parasites of the eye.
- XVII. Periodic ophthalmia—moon-blindness.
- XVIII. Methods of examining eyes.
- XIX. Reports of diseases from various parts of the State.

The subject of moon-blindness, or periodic ophthalmia, received special attention; since it is the most frequent and common cause of blindness among horses and mules in the State.

During the time that college was in session, and when the weather permitted outdoor work, public, clinical lectures were given every Saturday. These lectures were always delivered in connection with surgical operations, or with the examination and treatment of cases having internal or constitutional diseases. This clinical work was given for the special instruction of the farmers and the students. The practical cases formed excellent object lessons for instructing the students and farmers in the most practical and scientific ways of treating sick or diseased animals.

During the year, 287 cases were handled at the Saturday free clinics and lectures.

The work of securing anatomical and pathological specimens, and collecting records of the animal diseases in the various parts of the State, has been continued.

#### BUILDING.

A building, for this department, has just been completed; it contains a two-story portion, in which is a section room, a museum room, an office and four upper rooms that are to be used for a bacteriological and pathological laboratory; the single story portion contains an operating room and six

hospital stalls. It is hoped that this building will be fully equipped in the near future, in order that infectious and contagious diseases may be properly studied and investigated.

Respectfully,

C. A. CARY.

Veterinarian.

