ANNUAL REPORT

OF

Agricultural Experiment Station,

OF

Agricultural and Mechanical College of Alabama,

FOR

1888

BOARD OF VISITORS.

COMMITTEE OF TRUSTEES ON EXPERIMENT STATION:

HON. J. G. GILCHRIST, .. HON. R. F. LIGON,.... HON. J. B. MITCHELL.

BOARD OF DIRECTION.

W. L. BROUN ..... President
J. S. NEWMAN..... Director and Agriculturist
N. T. LUPTON ..... Vice-Director and Chemist
†P. H. MELL ..... Botanist
‡——— ..... Biologist

ASSISTANTS.

ISAAC ROSS .. 1st Assistant Agriculturist, charge of Live Stock & Dairy
JAS. CLAYTON..... Second Assistant Agriculturist
J. T. ANDERSON, PH. D ..... First Assistant Chemist
L. W. WILKINSON, M. Sc..... Second Assistant Chemist
P. L. HUTCHISON..... Third Assistant Chemist
T. D. SAMFORD, B. Sc..... Assistant Botanist

†Prof. Mell has also charge of Meteorological Observations.
‡Dr. A. E. Thayer will take charge of this department next July.

ANNUAL REPORT.

This report contains a summary of the work done in the year 1888, as set forth in detail in the quarterly bulletins; including a report of the equipment supplied—of the field experiments made in agriculture and horticulture—of the analyses of soils, fertilizers, &c., and of the work done in the department of botany and meteorology.

Treasurer's Report for Year Ending July 1st, 1888.

The Agricultural Experiment Station
of the Agricultural and Mechanical College of Alabama,
In Account with United States Treasury

RECEIPTS.		
To amount of appropriation		$15,000 00
DISBURSEMENTS.		
By cash paid salaries	$ 612 50	
cash paid buildings	3,000 00	
cash paid Equipment Farm Department	2,582 20	
cash paid Equipment Chemical Department	4,400 00	
cash paid Equipment Botanical Department	500 08	
cash paid Library	1,499 02	
cash paid Printing	105 61	
cash paid Trustees	200 09	
cash paid Stationery	31 00	
cash paid Expenses officers (traveling)	15 65	
cash paid Advertising	4 15	
cash paid Furniture	49 70	
cash paid Uniontown Station	2,000 00	15,000 00

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

REPORT OF J. S. NEWMAN, DIRECTOR.

The Agricultural Department of the Experiment Station was organized under State law in July, 1883, and hence there was much work already in progress when it was merged into the Station organized under the Congressional act known as the "Hatch Bill," April 1st, 1888. Its equipment has been very much improved through the Congressional appropriation and its sphere of operation somewhat extended. The farm of 226 acres, occupied by the Station under State law, and owned by the State is used by the Station under the present organization. When purchased in 1883 it was in a very dilapidated condition; much of the land having been turned out in the commons, and a large portion corrugated with gullies.

With so unpromising a foundation upon which to build, much time, money and labor have been required, and much energy has been expended in bringing the property into a condition reasonably suited for the purpose to which it is devoted. Commencing with a "worn out" plantation, one of the most important lessons sought to be taught has been how to improve and utilize such property without forgetting, while doing so, the true mission of Experiment Station work.

THE PERMANENT IMPROVEMENTS

are a dwelling of seven rooms, occupied by the Director; a four room cottage, occupied by the Foreman; a neat, new cottage containing offices for the Director and his assistants, and a museum; a substantial two story barn; a two story gin house, with sides and top covered with corrugated iron; a silo, dairy and ice house; large cow stable; engine and boiler house; corn crib, tool rooms, &c.

The water supply for the green-house and horticultural grounds is furnished by two hydraulic rams which utilize the waste from two fish ponds.

THE EQUIPMENT

Consists of a twenty-horse power boiler and fifteen-horse power engine, the latter placed between the barn and gin-house

so as to drive with equal facility a line of shafting upon each building.

A forty-saw Pratt gin, with feeder and condenser attached, and a power press, are in position in the gin-house, and afford the means of accurate experimentation with cotton.

A feed mill and cotton-seed crusher has been provided for grinding food for stock, and crushing the green cotton seed for the purpose of more satisfactorily experimenting with them, both as stock food and as a fertilizer.

A Ross ensilage cutter serves the purpose of cutting ensilage for filling the silo during the summer, and dried hay in winter.

A complete grain separator is stationed by the gin-house and is operated by the same shafting that runs the gin and cotton press. A mower, horse-rake and cutaway harrow have been added to the outfit for field work.

Miss Clementine Snow of Oxford, Alabama, has presented the Station with a sulky plow and cultivator, a rotary-tooth harrow, feed-cutter, &c., thus supplementing with most useful implements the purchased outfit.

A complete dairy equipment has been purchased, including the Cooly creamery and the De Lavel separator, and the cow stable is filled with thoroughbred Jerseys ready to contribute to the demands of scientific investigation of the merits of our peculiarly Southern products as butter producers.

The pig sties are supplied with thoroughbred Essex and cross-bred Burkshire pigs, undergoing feeding experiments to test the comparative value and economy of different Southern field products as pork-producers.

The horticultural department has been rapidly developed. A large number of varieties of apples, pears, peaches, plums, figs, grapes, strawberries and raspberries are undergoing experimental test as to their comparative productiveness and adaptation to this soil and climate. These undergo the most critical observation as to habits of growth, healthfulness, productiveness, character and quality of fruit and liability of plants and fruit to attack of insects or disease.

IN THE FIELD.

A variety of inquiries have been made as to the fertilizers

best suited to supply the needs of the soil for the most profitable growth of our field crops, the choice of plants as to the sources of supply of nitrogen, potash and phosphoric acid, and especially as to the forms in which the latter is presented. Especial attention has been given to the underground growth of our cultivated plants and the effects of different methods of cultivation upon this development and consequent productiveness of the plant. By means of water under-pressure the soil has been removed from the roots of corn and cotton plants at different stages of growth and under different systems of cultivation, resulting in revelations which astonish the average farmer—the feeding roots showing more feet in length than they were supposed to have inches.

Experiments have been conducted with cotton, corn, forage plants, small grain, ground-peas, sweet and Irish potatoes.

The results of all experiments are published in bulletins from time to time, and these distributed for the benefit of farmers.

The interests of the amateur and the commercial gardener have not been overlooked, but a great variety of experiments has been made with melons and vegetables, involving the expenditure of much time in making the daily observations necessary to collect the facts of most interest to the grower of these perishable products. Especial attention has been given to inquiries as to earliness and productiveness of different varieties.

REPORT OF N. T. LUPTON, CHEMIST.

The Chemical Department of the Agricultural Experiment Station, in connection with the Agricultural and Mechanical College of Alabama, includes in its present organization, the Chemist and three assistants.

In addition to the work directly connected with the Station, the Chemist is Professor of General and Agricultural Chemistry in the Agricultural and Mechanical College and Official Chemist of the State Department of Agriculture. On the application of the Commissioner of Agriculture he is required by law to "analyze and certify the analysis of all fertilizers, samples of which are furnished him, and at the request of the Commissioner, if he can without conflict with his duties as Professor, must attend conventions of agricultural chemists, make reports of such matters as he may deem of interest to the Department, and render such other services in the line of his profession as the Commissioner may require."

The variety and extent of this work can be seen from the following tabular statement of the number and character of the quantitative analyses made during the year 1888. It is scarcely necessary to state that in the analyses of fertilizers only those constituents have been determined which are required under the State law, viz.: water soluble, citrate soluble, and acid soluble phosphoric acid, nitrogen and potash.

Number and character of quantitative analyses made in the State Chemical Laboratory during the year 1888, as required by the Commissioner of Agriculture and the director of the Experiment Station:

ANALYSES.

SUBSTANCES ANALYZED.	NUMBER.
Acid phosphates with Nitrogen and Potash	84
Acid Phosphates with Potash	8
Acid Phosphates	57
Raw bone meal	2
Natural Guanos	18
Phosphatic rocks and deposits	1
Marls and Calcareous rocks	5
Tankage	1
Cotton seed meal	3
Cotton seed hull ash	1
Cave earths	3
Kainite and potash salts	8
Feed stuffs	3
Nitrogenous materials	5
Carbonaceous matter, or muck	1
Potatoes	9
Soils and sub soils	20
Coal	5
Iron ores	2
Clays	4
Waters	1
Gold ores	2
Total	243

In addition to the above, a considerable number of mineralogical specimens, the character of which could be ascertained by simple qualitative tests, were examined and their value determined.

The details of the quantitative work done, are to be found in the quarterly bulletins issued during the year.

Department of Botany and Meterology.

P. H. MELL.

This department was not organized until the year was about half gone and little could be done towards collecting plants for study before the early frosts. The assistant, however, was placed in the field as soon as possible and many of the wild plants of the county, where the college is located, were collected and pressed for future examination. These plants represent species of grasses, weeds and woods.

In the last two quarterly bulletins partial lists of the woods of Alabama were published, with descriptions of some of the most valuable specimens. This work on the woods will be continued from time to time until the entire State is covered. The large number of specimens of grasses and weeds collected since the burning of the college museum have been assorted and manuscripts have been prepared for publication in future bulletins. Much work has been done towards classifying the noxious weeds of Eastern Alabama, and results of experiments are being collated to show the farmers how to eradicate them from the cultivated fields.

Many experiments under the microscope have been made on twelve varieties of the cotton plant to show the effect produced on the fibre by different methods of cultivation. A number of sections have been made of the plant during its different stages of growth and carefully photographed. Measurements have been made of the fibre and its strength determined. These experiments are almost completed and the results will be published in early bulletins

The work in meterology has been in successful operation in the State since 1884, but since the organization of the Experiment Station, under the Hatch Act the facilities for observations at the Auburn station have been considerably enlarged. The following instruments comprise the outfit at the station :

A mercurial barometer by Green, carefully corrected and compared with the standard at Washington.

Maximum and minimum thermometers by Green.

Hygrometer.

Solar radiator.

Terrestrial radiator.

Rain gauge—standard make.

Anemometer with electrical recorder by Gibbon.

Wind vane—signal service pattern.

Three sets of soil thermometers ranging in depth from one inch to ninety-six inches.

The barometer, maximum and minimum thermometers, hygrometer, rain gauge, and wind vane, belong to the United States signal service.

Besides the station at Auburn, reports are received from twenty-six observers in different sections of the State, who are supplied, through the liberality of the Chief Signal Officer, with maximum and minimum thermometers and rain gauges. From the data obtained from these observers regular monthly bulletins have been issued since 1884, and distributed among the farmers of the State.