

TWENTIETH ANNUAL REPORT
OF THE
Agricultural Experiment Station
OF THE
UNIVERSITY OF TENNESSEE
FOR 1907



EAST TENNESSEE FARMERS' CONVENTION DELEGATES IN AN ALFALFA
FIELD, EXPERIMENT STATION FARM

LIBRARY
Tennessee Agricultural Experiment Station

KNOXVILLE
UNIVERSITY OF TENNESSEE PRESS
1909

The Agricultural Experiment Station

OF THE UNIVERSITY OF TENNESSEE

BROWN AYRES, *President*

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S. E. BARNES, Field Expert in Dairying, in cooperation with the U. S. Dept. of Agr.
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G. M. BENTLEY, Assistant Zoologist and Entomologist; Assistant State Entomologist
W. E. GRAINGER, Fertilizer and Food Chemist
MAURICE MULVANIA, Assistant in Bacteriology
E. C. COTTON, Assistant Entomologist
H. H. HAMPTON, Soil Chemist
W. A. CAMPBELL, Farm Foreman
S. M. SPANGLER, Assistant in Plot Work
C. H. LANE, Assistant in Agronomy and Agricultural Chemistry
J. E. HITE, Assistant in Cooperative Experiments, Gallatin
J. E. CONVERSE, Assistant in Cooperative Experiments, Crossville
W. N. RUDD, Assistant in Cooperative Experiments, McMinnville
F. H. BROOME, Librarian and Secretary
MISS RUBY FRANKLIN, Office Assistant

The Station has facilities for analyzing fertilizers and cattle foods; for testing milk and dairy products; for examining seeds with reference to their purity or germinating power; for identifying insects, grasses and weeds; and for investigating insect enemies and diseases of fruit trees, grains and other useful plants.

Packages by express, to receive attention, should be prepaid.

All communications should be addressed to the

AGRICULTURAL EXPERIMENT STATION,

Knoxville, Tennessee.

²²⁷The Experiment Station building, containing the offices and laboratories, and the plant house and part of the Horticultural Department, are located on the University campus, 15 minutes walk from the Custom House in Knoxville. The experiment farm, the barns, stables, dairy building, etc., are located one mile west of the University, on the Kingston Pike. The fruit farm is adjacent to the Industrial School and is easily reached by the Lonsdale car line. Farmers are cordially invited to visit the buildings and experimental grounds.

Bulletins of this Station will be sent, upon application, free of charge, to any farmer in the State

LETTER OF TRANSMITTAL

KNOXVILLE, TENN., January 1, 1908.

To His Excellency, Malcom R. Patterson, Governor of Tennessee :

Sir:—

I have the honor to transmit herewith, on behalf of the Board of Trustees of the University of Tennessee, a report of the work and expenditures of the Agricultural Experiment Station for the year 1907. This report is submitted in pursuance of the law requiring that the Board having direction of the Experiment Station shall annually submit to the Governor of the State a report of its operations and expenses.

That the Experiment Station is making most gratifying progress and is steadily becoming more useful and influential in the advancement of agriculture in Tennessee, is shown by the reports of the director, Prof. H. A. Morgan, and the heads of the departments. The extension and cooperative work in Middle Tennessee, provided for by an appropriation of the last Legislature, is already in operation. The cooperation of the Station with the State Department of Agriculture, under the new Commissioner, Hon. John Thompson, has continued, and the opportunity afforded to the members of the agricultural staff of attending institutes and getting better acquainted with the farmers and the agricultural conditions throughout the State has been of the utmost value.

Attention is especially called to the appeal of the director, in the latter part of his report, for adequate appropriations from the State to enable the Station to meet the increasing demands for agricultural information.

Very respectfully,

BROWN AYRES,

President



VIEW OF THE EXPERIMENT STATION FARM FROM ACROSS THE TENNESSEE RIVER

TWENTIETH ANNUAL REPORT OF THE AGRICULTURAL EXPERIMENT STATION OF THE UNIVERSITY OF TENNESSEE FOR 1907

REPORT OF THE DIRECTOR

To President Brown Ayres:

Changes in the staff

The following changes have occurred in the Station staff during the year:

Mr. J. E. Converse, formerly Assistant in Plot Work; Mr. J. E. Hite, a graduate of the University of Tennessee; and Mr. W. N. Rudd, a practical farmer, were appointed in April as assistants in charge of cooperative work, and were assigned to different fields in the middle division of the State.

Mr. W. N. Garrett, Assistant in Plot Work, resigned April 30.

Mr. C. H. Lane, a graduate of Harvard University, was appointed Assistant in Agricultural Chemistry and Agronomy July 1.

On August 1 Mr. F. C. Quereau, a graduate of Louisiana State University, was appointed to the new position of Animal Husbandman.

The Office Assistant, Miss Nell Kellum, resigned August 31, and was succeeded, October 1, by Miss Ruby Franklin.

Mr. James Tyler, the Poultryman, resigned the last of November to engage in commercial work.

State appropriations

The appropriations of the last Legislature providing for a new Agricultural Building, for cooperative experimental work in Middle Tennessee, and for a branch Station in West Tennessee, will greatly increase the opportunities of the various departments of the Station and place their work in more direct touch with the general agricultural needs and problems of the State.

New building

The new Agricultural Building, now nearing completion, will provide Station laboratories of modern equipment and give opportunity for that type of investigation now urgently demanded by conditions which have grown out of certain methods of cropping, culture, and management of farm lands peculiar, in a measure, to the agriculture of the past.

Cooperative work

Extension and cooperative work in the middle division of the State has been arranged and is in actual operation in connection with varieties of crops, rotations, systems of culture, introduction of new crops, fertilizers, and lime, and in the more special lines of tobacco, truck, and fruit. The initial plans emphasize a study of the various soil types and their plant-food requirements; crops and varieties adapted to them; the most

suitable systems of rotation and culture; and insects and diseases, with possible preventives and remedies. Samples of soil will be analyzed and tested for acidity, and much attention given to the introduction of new crops and methods of farm management, which will induce a more liberal support of live stock upon the farms of this section of the State.

The cooperative work has been planned by the heads of the departments of the Station, and has been placed under the immediate charge of J. E. Hite, with headquarters at Gallatin; J. E. Converse, at Cookeville; and W. N. Rudd, at McMinnville. These men were selected because of their training and experience in experimental plot work.

Notwithstanding the fact that the season was far advanced when the appropriation became available, and the character of cooperative work unknown to the farmers on whose land the work was to be done, much progress has been made in the development of the plans outlined by the Station.

The lines of investigation as given in the last report have gone forward uninterrupted.

Lines of investigation

The study of problems in soil improvement; soil bacteria; crop rotation; seasonal variation of varieties of farm crops; fertilizers; lime (burnt lime and ground limestone rock); the control of insects, fungi, and weeds; alfalfa, alsike clover, vetch, and other legumes; the breeding and improvement of winter cereals; the selection and propagation of immune red clover; the breeding and selection of cotton; methods of eradicating the cattle tick; home-grown dairy and beef rations; feeds for economical pork production; and fruit and truck growing, has been continued, and the results in many instances have been prepared for publication.

Feeding experiments

The average yield of corn in Tennessee during the last sixteen years has been 22½ bushels per acre. This hardly justifies the enormous annual acreage devoted to this crop. In the interest of more live stock upon the farms of the State, the Station has begun a series of experiments looking to the comparison of the feeding values of available crops or combinations of crops suitable to the soils and climate of this State, and last year a comparison was made of the feeding value of the total yields of an acre of corn, an acre of cowpeas, and an acre of soy beans. These crops were grown upon land of equal fertility and of the same previous cropping. It is the purpose to test the feeding values of common farm crops in single and double cropping systems, and such combinations of crops as can be economically used under Tennessee conditions.

Cooperation with U. S. Dep't of Agr.

The Station has continued its work with the Bureau of Plant Industry in the testing and selection of varieties of winter and spring barley and oats and winter wheat, and in the breeding and selection of cotton; with the Bureau of Animal Industry, Dairy Division, in cooperative field dairy work; and with the Bureau of Entomology, in the study of tobacco insects.

State aid

There was never before a time in the history of the Station when so many demands were made upon it for information of all kinds. The various

departments have already more important investigations in hand than can well be conducted with the equipment or the present corps of workers without great delay in obtaining results. The correspondence has multiplied many times, and the funds at the disposal of the Station for circulars and bulletins are entirely inadequate to meet the present inquiry or publish available results. The restriction placed upon the expenditure of Federal funds presupposes State aid for the erection and care of buildings, general equipment, cooperative experiments, and the demonstration of results. To equip the departments of the Station, and put them where they can be of most service to the State, and to distribute the results of the experiments properly to the farmers, through circulars, press bulletins and regular bulletins, and institutes, will require an annual appropriation of \$10,000. Respectfully submitted,

HARCOURT A. MORGAN, *Director*.

REPORT OF THE BOTANIST**Soil bacteriology**

The investigations in soil bacteriology, in charge of Mr. Mulvania, have been directed during the year along two lines. First, studies in nitrogen assimilation by the soy bean, in which some progress of interest has been made. These experiments are to be repeated before publication will be warranted. Definite progress has also been made in designing apparatus for the culture of plants under controllable conditions. If this method, devised by Mr. Mulvania, proves a practical success it will open up a very promising field for further research in the biology of the soil.

Botanical and pathological investigations

The work of the botanist and the assistant botanist, Mr. Essary, has been directed along several lines the past year. Some headway has been made in the study of the life history of the fungus causing the anthracnose of red clover, which disease has been the chief subject of study by this Department for several years. This purely technical investigation may soon reach a stage ready for publication. The experiments with the resistant strain of clover have been even more encouraging the past season than they were the previous year. The resistance of these select plants has now been shown up to the fourth generation. A little over one-half peck of the seed of this strain was gathered this year. The seed will be again propagated as rapidly as possible in 1908. Some study is also to be devoted toward the physiological problem of resistance as exemplified in this strain of clover. Some progress has been made toward a general plant disease survey of Tennessee, as also of the weeds and weed seeds contained in commercial samples of agricultural seeds. Important tomato diseases occurring in Gibson and Maury Counties are being studied and some experiments planned for controlling them.

Cotton and clover breeding

In addition to the general work of the Botanical Department of the Experiment Station, the botanist has charge of some cotton breeding experiments, which, with the clover breeding experiments above outlined, are in cooperation with the Bureau of Plant Industry of the U. S. Department of Agriculture. Very satisfactory progress has been made in this work the past year. These experiments are for the most part located in Fayette County. Especial note may be made here of the fact that the Bureau this year appointed Mr. Albert T. Anders as special agent to assist in this investigation.

Use of funds

The greater part of the funds assigned to this Department during 1907 has been devoted to the propagation of seed of the anthracnose-resistant clover. Besides, an important addition has been made of a large number of microscopic reagents. Minor additions of other character have been made, such as botanical works for the library and special forms of apparatus.

Need of the Department

The Botanical Department will be very much better equipped for work when its quarters on the second floor of the new Morrill Hall are completed. This Department is in serious need of a special greenhouse for various lines of investigation under way and being planned. It is very much hoped that a thoroughly equipped structure along modern lines may be provided by legislative appropriation in the near future.

Respectfully submitted,

SAMUEL M. BAIN, *Botanist.*

REPORT OF THE CHEMIST AND AGRONOMIST

AGRONOMY

The work in Agronomy has to do with both farm crops and soils. The majority of the field experiments are continuations of the work of 1905 and 1906, and have now been pursued long enough in some cases to permit the drawing of valuable conclusions. A bulletin giving the data collected for the past four years in various experiments with corn is in course of preparation, and the results of work with soy beans, alfalfa, and miscellaneous forage crops will soon be ample for publication.

The following is an outline of the experimental work of 1907:

CORN—1. Tests of 25 varieties grown on two distinct types of soil, a rich alluvial and a moderately fertile upland.

2. Distance-in-planting experiments to determine the number of stalks per acre in order to get the highest yields. This test was made with each of the varieties on each of the two types of soil, and with both early and late plantings. Experiments to determine the effect on yield of the distribution of the plants were also made.

3. Experiments with fertilizers were continued on both upland and bottom land of good fertility, and also on a soil of low productive-

ness. The results indicated that corn does not respond as readily to fertilizers as some other crops, but that under some conditions, in particular where the soil is in special need of phosphoric acid, their use is highly profitable. Along with the fertilizer experiments, experiments in green manuring were carried out—cowpeas being used for the most part as the green-manure crop.

4. The vitality experiments to test the producing capacity of the weakest plants, compared with the strongest, as indicated by early growth, were continued. The results thus far have been only slightly in favor of the strongest plants.

5. The increasing of the yields of corn by selection and breeding has received some attention, and it is hoped that this will occupy a permanent place in our future experimental work.

WHEAT—As the Station has tested varieties of wheat for a number of years on upland it was thought best to transfer them to a rich alluvial soil to find, if possible, a variety adapted to such a condition. The varieties best suited to ordinary upland were found to lodge very badly on the rich land, but Economist wheat, from seed received from A. W. Warfield, of Columbia, Tenn., has proved to be the best able to stand up on the rich soil with the production of high yields of grain of good quality. This variety appears to be the same as Fultzo-Mediterranean.

In addition to the variety trials, the following experiments may be mentioned:

1. Rates of seeding—from 2 pecks to 2 bushels to the acre, with results favorable to $1\frac{1}{2}$ bushel.

2. Fertilizer and lining experiments in connection with the growing of cowpeas, both when turned under and when removed, were continued for the third season at the Experiment Station farm and for the second season in a cooperative series near Knoxville.

3. The work of improvement of varieties by selection has been continued.

4. About 90 selections of wheat from the Bureau of Plant Industry of the U. S. Department of Agriculture, at Washington, have been put out for trial in comparison with our best standard varieties.

OATS—1. Tests of 7 varieties of winter oats—4 winter and 3 spring—are being continued on different types of soil. The results indicate Virginia Gray and some of the Station's selections of Culberson to be about the most desirable for fall seeding. Burt and 60-day Russian, or Kherson, are the most promising of the spring varieties.

2. Dates-of-seeding experiments for both winter and spring varieties are being continued.

3. Selections for the improvement of winter oats are being continued.

BARLEY—1. Test of 9 varieties of winter barley.

2. Spring barley compared with spring oats.

Winter barley is one of our most promising crops for rich land.

The yields at the Station surpass those obtained from either wheat or oats. The Union variety has proved to do best when late sown. When early sown the Tennessee and Union yield about the same, but the latter matures a few days earlier than the former.

SOY BEANS—Considerable attention has been paid to the varieties of soy beans in comparison with our common varieties of cowpeas. The results have been favorable to the soy bean, especially as to seed production. The varieties show a much wider range in time of planting and in season than those of the cowpea. Experiments on dates and distance of planting have been carried out with numerous varieties, some of which mature as early as the middle of July, others not until October.

MISCELLANEOUS FORAGE CROPS—Numerous trials have been made with vetch and crimson clover for hay and as cover crops. These experiments are to be continued in order to determine the effects of these crops when turned under, especially on corn which follows. Mixtures of these legumes with cereals for hay have been grown with good results. Of the mixtures tested, Virginia Gray oats and hairy vetch is the most promising. Crimson clover, on account of early maturity, is the most promising winter cover and green-manure crop.

A comparison of Thousand-headed kale and Dwarf Essex rape has indicated that the kale is well adapted to our conditions of both soil and climate, and it is probably superior to rape as a forage plant. Rape, however, makes a somewhat quicker growth, so that it can be used for pasturage sooner than kale, which is in turn more drouth-resistant, and makes a heavier final yield.

The experiments with peanuts have consisted in the testing of four varieties, and also in the separation of strains, some of which are promising.

The experiments on five varieties of sorghum planted at various rates for both syrup and forage have been continued. The results have shown unmistakably that the variety known as Texas Ribbon Cane will out-yield any other saccharine sorghum tested at the Station. It is, however, more liable to lodge than some of the others, but otherwise may be heartily recommended for use throughout the State, except possibly on the Cumberland Plateau and at other places where the season is considerably shorter than at Knoxville.

Crop rotations, with special reference to soil fertility, are being continued as heretofore. Different rates of manuring, and also the questions of season and rate of application, are receiving special attention. Liming and fertilizer experiments are also being made in connection with the use of farmyard manure.

Numerous experiments, both at the Experiment Station farm and in cooperation with farmers in different parts of the State, are being carried out with fertilizers, including lime and green-manure crops. Certain soil areas are found to respond especially well to these treatments, but there are other large areas which have decidedly different

requirements, although the turning under of green crops seems to be followed with good results on very poor uplands everywhere. In some instances applications of lime have given marked increases in yields, not only for clover and alfalfa, but also for wheat and corn.

A series of fertilizer experiments on millet and cowpeas when grown separately and in mixtures year after year on the same land, have been continued.

Soil bulletin

Bulletin No. 78, on "The Soils of Tennessee: Their Chemical Composition and Fertilizer Requirements," published the latter part of the year,

gives the results of numerous chemical analyses of the different types of soil and also of some fertilizer experiments. Recommendations are made in regard to both crop rotations and the use of fertilizers.

CHEMISTRY

The chemical work of the Station has progressed in a very satisfactory manner. The soil work, with special reference to humus formation, has been continued. The following is a resumé of the analytical work:

Soils, complete analyses	32
Soils, analyses for available plant food	24
Soils, partial analyses	24
Soil acidity estimations	95
Humus estimations	142
Mechanical analyses	3
Ash analyses of cowpea hay	22
Manures	15
Miscellaneous feeding stuffs	45
Fertilizers for State Inspection	285
Limestone	1
Phosphate rock	1

In addition, numerous samples of minerals have been received for examination and reported on.

Respectfully submitted,

CHARLES A. MOOERS, *Chemist and Agronomist.*

REPORT OF THE FIELD EXPERT IN DAIRYING

General work

The field work in dairying has been principally along lines of instruction in herd records and feeding. During the year regular work has been done with as many as twenty dairy farmers, some of whom according to their own statements, have derived considerable benefit from the co-operation. Numerous other farmers were also visited and advised with reference to silo building, location of dairy buildings, rotation of crops, and other subjects relating to dairying.

Thirty-six farmers' institutes have been attended; and the Ten-

Tennessee Dairy Association has been organized, starting out with a membership of 40 good men, who will no doubt make it a success.

Herd records Ten herds, comprising a total of 252 cows, have been tested, and five other herds discarded on account of indifference on the part of the owners.

Out of the 252 cows completing the year's test only 111 produced the standard of 250 pounds of butter fat in one year, which leaves 141 cows that are not worth keeping.

Growth of dairying The opportunities for dairying in Tennessee are unsurpassed, and it is entirely impossible for one field man to give detailed instruction to all who wish it. The dairy interests are growing rapidly, and there is ample work for three men instead of one.

Respectfully submitted,

S. E. BARNES, *Field Expert in Dairying.*

REPORT OF THE HORTICULTURIST

Unfavorable growing season The growing season of 1907 was very unfavorable for orchard plants and grapes in all parts of Tennessee, owing to a freeze late in April which destroyed practically the entire fruit crop of the State, with the exception of orchards in peculiarly favorable sites; and in these there was a greatly reduced crop. In the Station grounds not a single orchard fruit matured, and the grape crop was less than one-fourth an average yield. Several varieties of apples have set a good stand of fruit buds, and peaches, pears, cherries, and plums give promise of a full crop for 1908.

Work of the year During the year one-half acre was planted to wine grapes, and a beginning was made with experiments in truck growing.

A bulletin on "The Fruiting Habit of the Grape" was issued, and a bulletin was written on "Orchard Management" and published by State Board of Entomology. Farmers' institutes were attended in all the counties of West Tennessee and in several counties of Middle Tennessee, and the months of November and December were spent in collecting data for a report on truck farming in Middle Tennessee for the Commissioner of Agriculture. Twenty-five demonstration lectures, each occupying a full day, were given in orchards during the progress of this work. Respectfully submitted,

CHARLES A. KEFFER, *Horticulturist.*

REPORT OF THE VETERINARIAN

Prevalent diseases The correspondence of this Department has increased considerably, and has brought to our knowledge the prevalence of some of the infectious and contagious diseases in this State, among the most important of

which are black-leg, hog cholera, anthrax, glanders, Southern cattle fever, necrotic stomatitis, so called "mad itch," chronic bacterial dysentery, and tuberculosis.

Tuberculosis

The danger of milk from tuberculous cattle has been strongly emphasized within recent years, and consequently the Station herd is subjected to the tuberculin test from time to time. During the last seven years the herd has been tested three times, but as yet not a single case of tuberculosis has developed. It is probably advisable for the Department to disseminate knowledge as to tuberculosis in lower animals and thereby encourage its eradication. At present there are practically no laws in the State of Tennessee for the control of tuberculosis, so that such measures must be voluntary on the part of the live stock owner.

Need of improved facilities

During the last two years the necessity for improved facilities for carrying on work in veterinary science has become strongly apparent. Many conditions have been brought to our notice from nearly every section of the State which should have been thoroughly investigated, but since the funds and facilities in this immediate Department are absolutely inadequate it was impossible for us to give them proper consideration.

Tennessee ranks near the top in her live stock interests, but there is absolutely no provision for the protection of these vast interests by definite laboratory and field investigations, as is the case in almost every other state in the Union. With these needs apparent it is to be hoped that some immediate relief can be given this Department in the way of laboratory facilities, equipment, and increased financial support.

Respectfully submitted, MOSES JACOB, *Veterinarian.*

REPORT OF THE LIBRARIAN

The number of volumes on the shelves of the library is 3,726, an increase of 306 for the year. 168 volumes were purchased, 101 were obtained by gift, and 37 are periodicals that were bound by the Station.

There have been several valuable acquisitions to the library during the year; among them The New International Encyclopædia; a complete set of The Zoological Record, consisting of 42 volumes and an index; 37 volumes of Jahrbücher für wissenschaftliche Botanik; and 10 volumes of Sylloge Fungorum. We now have complete sets of the two publications last named. By means of the Adams Fund it has been possible to increase the number of journals subscribed for to 22. The additions have been principally in the general subjects of agricultural chemistry and botany. Several agricultural papers have been added to the exchange list. Many bulletins, circulars, and reports from the U. S. Department of Agriculture and state experiment stations, and pamphlets from other sources, have been received and placed on file.

Mrs. Delia Lee Cawood was engaged for one month in the fall to finish the cataloguing of the library, which was nearly completed last year. All the bound volumes are now catalogued according to the Dewey System.

The bulletin mailing list shows a net gain of 664 names during the year. It now stands as follows:

MAILING LIST

U. S. Dept. of Agr., Agr'l Colleges, and Exp. Stations	1,642
Tennessee Newspapers	220
Exchanges	186
Individuals in Tennessee	9,218
Other States	606
Foreign, other than Exchanges	79
Total	11,954

Respectfully submitted,

F. H. BROOME, *Librarian.*

HATCH FUND

JULY 1, 1906 TO JUNE 30, 1907.

The Agricultural Experiment Station of the University of Tennessee

IN ACCOUNT WITH THE UNITED STATES

	Dr.	Cr.
To unexpended balance on hand July 1, 1906	\$ 18.34	
To United States Treasury Draft September 4, 1906	3,750.00	
" " " " October 10, 1906	3,750.00	
" " " " January 10, 1907	3,750.00	
" " " " April 11, 1907	3,750.00	
By Salaries		\$ 8,500.00
Labor		3,076.31
Publications		684.16
Postage and Stationery		296.00
Freight and Express		154.19
Heat, Light and Water		293.31
Chemical Supplies		212.04
Seeds, Plants, and Sundry Supplies		161.81
Fertilizers		149.21
Feeding Stuffs		139.52
Library		242.98
Tools, Implements and Machinery		58.50
Furniture and Fixtures		430.60
Scientific Apparatus		6.85
Live Stock		
Traveling Expenses		270.91
Contingent Expenses		15.00
Building and Repairs		308.01
Balance		18.34
Totals	\$15,018.34	\$15,018.34

This is to certify, that, as the authorized Auditing Committee of the Board of Trustees of the University of Tennessee, we have examined the accounts of the Treasurer of the Agricultural Experiment Station for the fiscal year ending June 30, 1907, and find them correct; that the above is a true balance sheet corresponding with said accounts; that the said accounts show no more than \$308.01 was expended for building and repairs, and that there is \$18.34 cash balance.

C. DEADERICK,
WM. RULE,
Auditing Committee.

We hereby certify that C. Deaderick and Wm. Rule are the authorized Auditing Committee of the Board of Trustees of the University of Tennessee.

BROWN AYRES, *President.*
WM. RULE, *Secretary.*

STATE OF TENNESSEE, COUNTY OF KNOX:

STATE OF TENNESSEE, COUNTY OF KNOX:
Before me, Thos. D. Morris, a Notary Public in and for said State and County, personally appeared the foregoing signers, personally known to me to be trustees and officers of the University of Tennessee, who made oath, in due form of law, that the above statements are true to the best of their knowledge, information and belief.

Witness my hand and official seal at office in Knoxville, Tennessee,
this 21st day of September, 1907. THOS. D. MORRIS.

THOS. D. MORRIS,
Notary Public.

JULY 1, 1906 TO JUNE 30, 1907.

IN ACCOUNT WITH THE UNITED STATES

This is to certify, that, as the authorized Auditing Committee of the Board of Trustees of the University of Tennessee, we have examined the accounts of the Treasurer of the Agricultural Experiment Station for the fiscal year ending June 30, 1907, and find them correct; that the above is a true balance sheet corresponding with said accounts; that the said accounts show no more than \$0.00 was expended for building and repairs, and that there is no cash balance.

Auditing Committee.

We hereby certify that C. Deaderick and Wm. Rule are the authorized Auditing Committee of the Board of Trustees of the University of Tennessee.

BROWN AYRES, *President.*
WM. RULE, *Secretary.*

STATE OF TENNESSEE, COUNTY OF KNOX:

Before me, Thos. D. Morris, a Notary Public in and for said State and County, personally appeared the foregoing signers, personally known to me to be trustees and officers of the University of Tennessee, who made oath, in due form of law, that the above statements are true to the best of their knowledge, information and belief.

Witness my hand and official seal at office in Knoxville, Tennessee,
this 21st day of September, 1907.

THOS. D. MORRIS,
Notary Public.