SEVENTH ANNUAL REPORT

OF THE

BOARD OF TRUSTEES,

PRESIDENT AND OFFICERS

OF

CLEMSON AGRICULTURAL COLLEGE,

INCLUDING THE

NINTH ANNUAL REPORT

OF THE

South Carolina Experiment Station.

1896.

COLUMBIA, S. C.
CHARLES A. CALVO, JR., STATE PRINTER.
1897.
Trustees' Report.

To the Honorable the Senate and the House
of Representatives of the State of South Carolina:

The seventh annual report of the Board of Trustees of the Clemson Agricultural and Mechanical College is herewith submitted to your honorable bodies.

R. W. SIMPSON,
President of the Board of Trustees.

The collegiate year ends on the third Thursday of December of each year. On Wednesday preceding, that is on the 16th day of December, 1896, the first class graduated and received their diplomas. The graduating class numbered thirty-seven. Of these, fifteen graduated in the Agricultural Department and twenty-two in the Mechanical Department.

These young men, or nearly all of them, have expressed their determination to devote themselves to the work for which they were trained.

During the last year the Board has devoted much time and thought to perfecting the organization of the College, and it affords much pleasure to be able to report that the College is now organized in all of its details, and is working satisfactorily. There is, however, some dissatisfaction among the authorities at Washington because we have found it necessary to employ the Experiment Station staff for a part of their time in teaching in the College. This dissatisfaction we hope to remove before another College year begins. To this end it is very necessary that the Legislature should have a correct understanding of the three acts of Congress making appropriations in aid of agriculture, &c., and how far these appropriations may be used in maintaining Clemson College proper. Many people object to the military feature of the College. By reference to the said three acts of Congress, hereinafter incorporated in this report, it will be found that it is a condition absolute that military science shall be taught, and the Inspector General this year recommended that the appropriations to two of the Colleges in the Southern States be discontinued because of
the fact that sufficient attention was not given to drill and the study of military science. Many people, too, think that the Federal appropriations are sufficient, and can be used to run the College, and that no State aid is required. Now, in order to remove this erroneous opinion, and that the Legislature may have a correct understanding of the objects sought to be accomplished by Congress in making these appropriations, it was thought proper to incorporate these acts of Congress in this report. The first is the act generally known as the Agricultural Land Scrip Fund, the second is the Experimental Station Appropriation, or the Hatch Fund, and the third is the Morrill Fund.

AN ACT DONATING PUBLIC LAND TO THE SEVERAL STATES AND TERRITORIES WHICH MAY PROVIDE COLLEGES FOR THE BENEFIT OF AGRICULTURE AND THE MECHANIC ARTS.

(Known as the Agricultural Land Scrip Fund.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there be granted to the several States, for the purpose hereinafter mentioned, an amount of public land, to be apportioned to each State in quantity equal to thirty thousand acres for each Senator and Representative in Congress to which the States are respectively entitled by the apportionment under the census of 1860: Provided, That no mineral lands shall be selected or purchased under the provisions of this Act.

SEC. 2. And be it further enacted, That the land aforesaid, after being surveyed, shall be apportioned to the several States in sections or subdivisions of sections not less than one quarter of a section; and whenever there are public lands in a State subject to sale at private entry at one dollar and twenty-five cents per acre, the quantity to which said State shall be entitled shall be selected from such lands within the limits of such State; and the Secretary of the Interior is hereby directed to issue to each of the States in which there is not the quantity of public land subject to sale at private entry at one dollar and twenty-five cents per acre, to which said State may be entitled under the provisions of this Act, land scrip to the amount of acres for the deficiency of its distributive share; and scrip to be sold by said State and the proceeds thereof applied to the uses and purposes prescribed in this Act, and for no other use or purpose whatever; Provided, That in no case shall any State to which land scrip may thus be issued be allowed to locate the same within the limits of any other State, or of any Territory in the United States, but their assignees may thus locate said lands scrip upon any of the unappro-
appropriated lands of the United States subject to sale at private entry, at one dollar and twenty-five cents or less per acre: And provided further, That not more than one million acres shall be located by such assignees in any one of the States; and provided further, that no such location shall be made before one year from the passage of this Act.

SEC. 3. And be it further enacted, That all the expenses of management, superintendence and taxes, from date of selection of said lands previous to their sales, and all expenses incurred in the management and disbursement of the moneys which may be received therefrom shall be paid by the States to which they may belong, out of the treasury of said States, so that the entire proceeds of the sale of said lands shall be applied without any diminution whatever to the purposes hereinafter mentioned.

SEC. 4. And be it further enacted, That all moneys derived from the sale of the lands aforesaid by the States to which the lands are apportioned, and from the sale of land scrip hereinbefore provided for, shall be invested in stocks of the United States, or of the States, or of some other safe stocks yielding not less than five per centum upon the par value of said stocks; and that the moneys so invested shall constitute a perpetual fund, the capital of which shall remain forever undiminished (except so far as may be provided in fifth section of this Act), and the interest of which shall be inviolably appropriated by each State which may take and claim the benefit of this Act to the endowment, support and maintenance of at least one College, where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, and in such manner as the Legislatures of the States may prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.

SEC. 5. And be it further enacted, That the grant of land and land scrip hereby authorized shall be made on the following conditions, to which, as well as to the provisions hereinbefore contained, the previous assent of the several States shall be signified by legislative Acts.

1. If any portion of the fund invested as provided by the foregoing section, or any portion of the interest thereon, shall by any act or contingency be diminished or lost, it shall be replaced by the State to which it belongs, so that the capital of the fund shall remain forever undiminished; and the annual interest shall be regularly applied without diminution to the purposes mentioned in the fourth section of this Act, except that a sum not exceeding ten per centum upon the
amount received by any State under the provisions of this Act may be
expended for the purchase of lands for sites of experiment farms
whenever authorized by the respective Legislatures of said States.

2. No portion of said fund, nor interest thereon, shall be applied
directly or indirectly, under any pretense whatever, to the purchase,
errection, preservation or repair of any building or buildings.

3. Any State which may take and claim the benefit of the pro-
visions of this Act shall provide within five years at least not less than
one College, as described in the fourth section of this Act, or the
grant to said State shall cease; and said State shall be bound to pay
the United States the amount received of any lands previously sold,
and the title to purchasers under the State shall be valid.

4. An annual report shall be made regarding the progress of each
College, recording any improvements and experiments made, with
their costs and results, and such other matters, including State and
industrial statistics, as may be supposed useful; one copy of which
shall be transmitted by mail free by each to all the other Colleges which
may be endowed under the provisions of this Act, and also one copy
to the Secretary of the Interior.

5. When lands shall be selected from those which have been raised
to double the minimum price, in consequence of railroad grants, they
shall be computed to the States at the maximum price, and the num-
er of acres proportionately diminished.

6. No State, while in a condition of rebellion or insurrection against
the government of the United States, shall be entitled to the benefit
of this Act.

7. No State shall be entitled to the benefit of this Act unless it shall
express the acceptance thereof by the Legislature within two years of
the date of its approval by the President.

SEC. 6. And be it further enacted, That land scrip issued under the
provisions of this Act shall not be subject to location until after the
first day of January, one thousand eight hundred and sixty-three.

SEC. 7. And be it further enacted, That the land officers shall re-
ceive the same fees for locating land scrip issued under the provisions
of this Act as are now allowed for the location of military bounty land
warrants under existing laws: Provided, That maximum compensa-
tion shall not be thereby increased.

SEC. 8. And be it further enacted, That the Governors of the seve-
ral States to which scrip shall be issued under this Act shall be re-
quired to report annually to Congress all sales made of such scrip until
the whole shall be disposed of, the amount received for the same, and
what appropriation has been made of the proceeds.

Approved July 2, 1862.
AN ACT TO ESTABLISH AGRICULTURAL EXPERIMENT STATIONS IN CONNECTION WITH THE COLLEGES ESTABLISHED IN THE SEVERAL STATES UNDER THE PROVISIONS OF AN ACT APPROVED JULY 2, 1862, AND OF THE ACTS SUPPLEMENTARY THERETO.

(Commonly known as the Hatch Act.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That in order to aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science, there shall be established, under direction of College or Colleges, or Agricultural Department of Colleges, in each State or Territory established, or which may hereafter be established, in accordance with the provisions of an Act approved July 2, 1862, entitled "An Act donating public lands to the several States and Territories which may provide Colleges for the benefit of agriculture and the mechanic arts," or any of the supplements to said Act, a department known and designated as an "Agricultural Experiment Station:"

Provided, That any State or Territory in which two such Colleges have been or may be so established, the appropriation hereinafter made to such State or Territory shall be equally divided between such Colleges, unless the Legislature of such State or Territory shall otherwise direct.

SEC. 2. That it shall be the object and duty of said Experiment Stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying condition and needs of the respective States and Territories.
SEC. 3. That in order to secure, as far as practicable, uniformity of methods and results in the work of said stations, it shall be the duty of the United States Commissioner of Agriculture to furnish forms, as far as practicable, for the tabulation of results of investigation or experiments; to indicate, from time to time, such lines of inquiry as to him shall seem most important; and, in general, to furnish such advice and assistance as will promote the purposes of this Act. It shall be the duty of each of said stations annually, on or before the first day of February, to make to the Governor of the State or Territory in which it is located a full and detailed report of its operations, including a statement of receipts and expenditures, a copy of which report shall be sent to each of said stations, to the said Commissioner of Agriculture, and to the Secretary of the Treasury of the United States.

SEC. 4. That bulletins or reports of progress shall be published at said stations at least once in three months, one copy of which shall be sent to each newspaper in the States or Territories in which they are respectively located, and to such individuals actually engaged in farming as may request the same, and as far as the means of the station will permit. Such bulletins or reports and the annual reports of said stations shall be transmitted in the mails of the United States free of charge for postage, under such regulations as the Postmaster General may from time to time prescribe.

SEC. 5. That for the purpose of paying the necessary expenses of conducting investigations and experiments and printing and distributing the results as hereinbefore prescribed, the sum of $15,000 per annum is hereby appropriated to each State, to be specially provided for by Congress in the appropriations from year to year, and to each Territory entitled under the provisions of section eight of this Act, out of any money in the Treasury proceeding from the sales of public lands, to be paid in equal quarterly payments, on the first day of January, April, July and October in each year, to the treasurer or other officer duly appointed by the governing boards of said Colleges to receive the same, the first payment to be made on the first day of October, 1887: Provided, however, That out of the first annual appropriation so received by any station an amount not exceeding one-fifth may be expended in the erection, enlargement, or repair of a building or buildings necessary for carrying on the work of such station; and thereafter an amount not exceeding five per centum of such annual appropriation may be so expended.

SEC. 6. That whenever it shall appear to the Secretary of the Treasury from the annual statement of receipts and expenditures of any of said stations that a portion of the preceding annual appropriation
remains unexpended, such amount shall be deducted from the suc­
ceeding annual appropriation to each station, in order that the
amount of money appropriated to any station shall not exceed the
amount actually and necessarily required for its maintenance and sup­
port.

SEC. 7. That nothing in this Act shall be construed to impair or
modify the legal relation existing between any of the said Colleges
and the government of the States or Territories in which they are
respectively located.

SEC. 8. That in States having Colleges entitled under this section to
the benefits of this Act, and having also Agricultural Experiment
Stations established by law separate from said Colleges, such States
shall be authorized to apply such benefits to experiments at stations so
established by such States; and in case any State shall have established
under the provisions of said Act of July 2d aforesaid an Agricultural
Department or Experimental Station, in connection with any Univer­
sity, College or institution not distinctively an Agricultural College
or School, and such State shall have established or shall hereafter es­
establish a separate Agricultural College or School, which shall have
connected therewith an Experimental Farm or Station, the Legislature
of such State may apply in whole or in part the appropriation by this
Act made to separate Agricultural College or School, and no Legisla­
ture shall by contract expressed or implied disable itself from so doing.

SEC. 9. That the grant of moneys authorized by this Act are made
subject to the legislative assent of the several States and Territories to
the purposes of said grants: Provided, That payment of such install­
ments of the appropriation herein made as shall become due to any
State before the adjournment of the regular session of its Legislature
meeting next after the passage of this Act shall be made upon the
assent of the Governor thereof, duly certified to by the Secretary of
the Treasury.

SEC. 10. Nothing in this Act shall be held or construed as binding
the United States to continue any payments from the Treasury to any
or all the States or institutions mentioned in this Act, but Congress
may at any time amend, suspend or repeal any or all the provisions of
this Act.

Approved March 2, 1887.
AN ACT TO SUPPLY A PORTION OF THE PUBLIC LANDS TO THE MORE COMPLETE ENDOWMENT AND SUPPORT OF COLLEGES FOR THE BENEFIT OF AGRICULTURE AND THE MECHANIC ARTS, ESTABLISHED UNDER THE PROVISIONS OF AN ACT OF CONGRESS, APPROVED JULY SECOND, EIGHTEEN HUNDRED AND SIXTY-TWO.

(Commonly known as the Morrill Act.)

Be enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be, and hereby is, annually appropriated, out of any money in the Treasury not otherwise appropriated, arising from the sales of public lands, to be paid as hereinafter provided, to each State and Territory for the more complete endowment and maintenance of colleges for the benefit of agriculture and the mechanic arts now established, or which may be hereafter established, in accordance with an Act of Congress, approved July second, eighteen hundred and sixty-two, the sum of fifteen thousand dollars for the year ending June thirtieth, eighteen hundred and ninety, and an annual increase of the amount of such appropriation thereafter for ten years by an additional sum of one thousand dollars over the preceding year, and the annual amount to be paid thereafter to each State and Territory shall be twenty-five thousand dollars, to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction: Provided, That no money shall be paid out under this Act to any State or Territory for the support and maintenance of a college where a distinction of race or color is made in admission of students, but the establishment and maintenance of such colleges separately for white and colored students shall be held to be a compliance with the provisions of this Act if the funds received in such State or Territory be equitably divided as hereinafter set forth: Provided, That in any State in which there has been one college established in pursuance of the Act of July second, eighteen hundred and sixty-two, and also in which an educational institution of like character has been established, or may be hereafter established, and is now aided by such State from its own revenue for the education of colored students in agriculture and the mechanic arts, however named or styled, or whether or not it has received money heretofore under the Act to which this Act is an amendment, the Legislature of such State may propose and report to the Secretary of the Interior a just and equitable division of the funds to be received under this Act between one
college for white students and one institution for colored students established as aforesaid, which shall be divided into two parts and paid accordingly, and thereupon such institution for colored students shall be entitled to the benefits of this Act and subject to its provisions as much as it would have been if it had been included under the Act of eighteen hundred and sixty-two, and the fulfillment of the foregoing provisions shall be taken as a compliance with the provision in reference to separate colleges for white and colored students.

SEC. 2. That the sums hereby appropriated to the States and Territories for the further endowment and support of colleges shall be annually paid on or before the thirty-first day of July of each year, by the Secretary of the Treasury, upon the warrant of the Secretary of the Interior, out of the Treasury of the United States, to the State or Territorial Treasurer, or to such officer as shall be designated by the laws of such State or Territory to receive same, who shall, upon the order of the trustees of the college, or the institution for colored students, immediately pay over said sums to the treasurers of the respective colleges or other institutions entitled to receive the same, and such treasurers shall be required to report to the Secretary of Agriculture and to the Secretary of the Interior on or before the first day of September of each year a detailed statement of the amount so received and of its disbursement. The grants of moneys authorized by this act are made subject to the legislative assent of the several States and Territories to the purpose of said grants:

Provided, That payments of such installments of the appropriation herein made as shall become due to any State before the adjournment of the regular session of Legislature meeting next after the passage of this Act shall be made upon the assent of the Governor thereof, duly certified to the Secretary of the Treasury.

SEC. 3. That if any portion of the moneys received by the designated officer of the State or Territory for the further and more complete endowment, support and maintenance of colleges, or of institutions for colored students, as provided in this Act, shall, by any action or contingency, be diminished or lost, or be misapplied, it shall be replaced by the State or Territory to which it belongs, and until so replaced no subsequent appropriation shall be apportioned or paid to such State or Territory; and no portion of said moneys shall be applied, directly or indirectly, under any pretense whatever, to the purchase, erection, preservation or repair of any building or buildings. An annual report by the president of each of said colleges shall be made to the Secretary of Agriculture, as well as to the Secretary of the Interior, regarding the condition and progress of each college,
including statistical information in relation to its receipts and expenditures, its library, the number of its students and professors, and also as to any improvements and experiments made under the direction of any Experiment Stations attached to said colleges, with their costs and results, and such other industrial and economical statistics as may be regarded as useful, one copy of which shall be transmitted by mail to all other colleges further endowed under this Act.

SEC. 4. That on or before the first day of July in each year, after the passage of this Act, the Secretary of the Interior shall ascertain and certify to the Secretary of the Treasury as to each State and Territory, whether it is entitled to receive its share of the annual appropriation for colleges, or of institutions for colored students, under this Act, and the amount which thereupon each is entitled respectively to receive. If the Secretary of the Interior shall withhold a certificate from any State or Territory of its appropriation, the facts and reasons therefor shall be reported to the President, and the amount involved shall be kept separate in the Treasury until the close of the next Congress, in order that the State or Territory may, if it should so desire, appeal to Congress from the determination of the Secretary of the Interior. If the next Congress shall not direct such sum to be paid it shall be covered into the Treasury. And the Secretary of the Interior is hereby charged with the proper administration of this law.

SEC. 5. That the Secretary of the Interior shall annually report to Congress the disbursements which have been made in all the States and Territories, and also whether the appropriation of any State or Territory has been withheld, and if so, the reasons therefor.

SEC. 6. Congress may at any time amend, suspend or repeal any or all of the provisions of this Act.

In reading these Acts it will be observed that the funds therein appropriated must be applied to the specific purposes for which they were given, and separate reports must be made to the Department at Washington of every expenditure. This is not all. The Department at Washington has been called upon to construe these Acts in many of their details, and these rulings are binding upon us, as much so as the laws themselves.

No part of the Hatch fund ($15,000) can be used for teaching. A part of it may be used for paying salaries, but only the salaries of men engaged in conducting experiments. And the Morrill fund must also be expended in the same manner and for the purposes expressed in the Act. Heretofore the Board has been employing a part of the
time of the staff of the Experimental Station in teaching their several branches in the Agricultural Department of the College, paying them for this work out of the State appropriation, the other part of their salaries being paid out of the Hatch fund. But the letter of Dr. True, the head of the Department at Washington, will show how unsatisfactory such an arrangement is to the Department at Washington. If this contention is insisted upon the Experimental Station will become entirely divorced from the College proper, and the expenses of the College will be considerably increased. As it is, the requirements for expending the fund are entirely separate from the College, and these funds cannot be used at all in paying the current expenses of the College. Congress has made these appropriations for purposes of the Federal Government, and placed their expenditure in the hands of the officers of the State's College. That is all of it. It should be added, however, that the boys are not only permitted, but encouraged, to watch and study the experiments conducted by the station staff, and such experiments as are deemed of sufficient importance are enlarged in the farm, and these thoroughly taught to the boys. As the Experimental Station is no part of the College proper, so also is the Fertilizer Department no part of the College; and the men employed in these departments constitute no part of the College force of teachers. The Experimental Station staff is paid out of the Hatch fund, and a part of the expenses of the Fertilizer Department are paid out of the privilege tax and a part out of the Hatch fund, which fact accounts for the small amount charged against the privilege tax for expenses.

It is the general rule among the Experimental Stations of the several States for the president of the College to be also the head or director of the Experimental Station, in order to maintain proper relations between the two, and to pay a part of the president's salary out of the Hatch fund. This is the case at Clemson. A part only of the president's salary is paid from the State appropriation.

In addition to the President, the College staff consists of the following teachers: Professor of Mathematics and an assistant, a Professor of English and an assistant, a Professor of History, a Professor of Chemistry and an assistant, a Professor of Geology and Mineralogy, a Professor of Mechanics and Electricity and an assistant, an Instructor in Physics, an Instructor in Machinery, Instructor in Forge and Foundry Work, Instructor in Wood Work, an Instructor in Drawing and Designing, a Professor of Agriculture and an assistant, and Instructors in Horticulture, Veterinary Science, Botany, Entomology and Dairying. In order to
give practical instruction to the boys in the Agricultural and Mechanical Departments, many machines, tools, stock and appliances are necessary, and a considerable fund for current expenses, also a fund with which to pay for student labor. These two departments are now very well equipped, but constant additions will be necessary from time to time if it is intended for Clemson College to be a real benefit to the young men of the State.

By reference to the report of J. P. Smith, Secretary of the Fertilizer Department, the total amount received from the Privilege Tax this year is $49,874.37. The expenses charged against this department is $4,533.82, leaving for the College from net proceeds of the Privilege Tax $45,340.55. (The salary of Professor of Chemistry and his assistant, the costs of bulletins and the analysis of waters are not included in the expenses charged against the Fertilizer Department.)

The income of the College for the year consists of:

- The net proceeds of Privilege Tax: $45,340.55
- Interest from Land Scrip Fund: $5,754.00
- Interest from Clemson Bequest: $3,512.36
- From incidentals: $554.95

Total income: $55,161.86

Should the Privilege Tax realize as much next year as this there will be a sufficient amount to meet the expenses of the College, and complete the development of the Agricultural Department of the College, which is very much needed. We therefore earnestly request that the College be left in undisturbed possession of the Privilege Tax. The advocates of Clemson College always contended that this Privilege Tax, if properly expended, would pay the expenses of a College which would be of great benefit to the people of the State. This claim has been fulfilled, and to-day Clemson College closed for the year 1896, graduating a class of thirty-seven young men; and that, too, without a dollar of appropriation from the State Treasury. The application of the Privilege Tax to Clemson College was decided by the people in the campaign of 1890, and we trust that this fund will not now be taken from the College, when it is just getting upon its feet and just getting ready for efficient work.

There were in attendance upon the College at the close of the collegiate year about 300 students. From the best information we have, this number will be largely increased at the reopening of the College in February next. The curriculum of the College has been thoroughly revised at the present meeting of the Board, and Clemson College is in reality and truth an Agricultural and Mechanical College, and is the largest institution of the kind in the Southern States. It has no
catch courses; the only two courses in the College are the Agricultural and Mechanical courses, and every boy is required to take one of these courses.

The death of W. L. McGee, Professor of Agriculture and Vice-Director of the Experimental Station, in October last, was a great loss to Clemson College and the State at large. Prof. McGee was a gentleman of fine attainments and thoroughly qualified for the duties imposed upon him, and was rapidly developing the Agricultural Department of the College. At the time of his death he was conducting a large number of interesting experiments, some of great value to the State, and it is feared that his untimely death will cause the loss of many of these experiments, his assistants having resigned some time ago, and there being therefore no one to take up and perfect the work begun.

The Board has elected Dr. —— Quick, a thoroughly competent gentleman, to the position made vacant by the death of Prof. McGee. As Dr. Quick has not yet entered upon the discharge of his duties, there can be no extended report from the Agricultural and Experimental Departments. Mr. Hart, Instructor in the Department of Dairying, has prepared a report taken from Prof. McGee's records, which report is hereto appended.

The reports of E. B. Craighead, as President of the College and Director of the Experimental Station, are appended to this report. Special attention is asked to the several reports of P. H. E. Sloan, Secretary and Treasurer. The first report has reference to the State appropriation, the second and third to the Hatch Fund and the Morrill Fund. The last two reports are copies of his reports to the Department at Washington, and made out in the manner and style required by the Department. Also, to the report of J. P. Smith, Secretary of the Fertilizer Department. The reports of the Professor of Chemistry, both in the College and Experiment Station, the Professor of Mechanics, and the Surgeon of the Hospital are all hereto appended.

In conclusion, this Board earnestly entreats each and every member of the General Assembly to remember the difficulties and backsets which have been encountered in bringing the College up to what it is to-day, and to lend to the Board their help and assistance. Furthermore, we urgently request, if possible, every member of your bodies to visit Clemson College during the session; and if you desire to accept this invitation an intimation to that effect will be sufficient, and some members of the Board will make the necessary arrangements, and look after the pleasure and comfort of the visitors.

R. W. SIMPSON,
President Board of Trustees Clemson Agricultural College.
Report of the President.

To the Board of Trustees:

GENTLEMEN: I have the honor herewith to submit my fourth annual report as President of the Clemson Agricultural College. The number of matriculates has been slightly less than that of last year. The following figures show the number by classes:

Seniors, Mechanical.............................................. 22
Seniors, Agricultural.............................................. 15
Juniors, Mechanical.............................................. 15
Juniors, Agricultural............................................. 15
Sophomores, Mechanical.......................................... 20
Sophomores, Agricultural....................................... 24
Freshmen............................................................. 63
Fitting School...................................................... 169
Special Students................................................... 5

Summary by Counties:

Abbeville............................................................ 25
Aiken................................................................. 5
Anderson............................................................. 32
Barnwell............................................................. 18
Berkeley.............................................................. 2
Beaufort.............................................................. 1
Charleston......................................................... 23
Chester............................................................... 5
Chesterfield........................................................ 4
Clarendon........................................................... 4
Colleton.............................................................. 7
Darlington........................................................... 9
Edgefield............................................................. 15
Fairfield............................................................. 7
Florence............................................................. 5
Greenville.......................................................... 13
Hampton............................................................. 1
Kershaw.............................................................. 6
Lancaster........................................................... 1
Laurens.............................................................. 13
Lexington............................................................ 11
Marion............................................................... 3
Marlboro............................................................. 12
Newberry............................................................ 7
Oconee............................................................... 16
Orangeburg........................................................ 18
Pickens.............................................................. 21
Richland............................................................. 6
Saluda............................................................... 8
Spartanburg......................................................... 16
Sumter............................................................... 5
Union............................................................... 10
Williamsburg...................................................... 4
York................................................................. 5

Total........................................................................ 345

By States:

Washington, D. C................................................ 1
Transylvania, N. C............................................... 2
Fulton, Ga........................................................ 1
Steuben, N. Y..................................................... 1
Colquitt, Ga...................................................... 1
Fayette, Mo........................................................ 1
Rome, Italy......................................................... 1

Total, counting no student twice................................ 350
FITTING SCHOOL.

About half of our students, as will be seen, are in the Fitting School. Experience shows that of the boys who come to us an average of only about one in twenty is prepared for College. It is true that our entrance requirements, owing to the excellent work done in the Fitting School, have been somewhat raised. I need not stress the importance of thorough elementary instruction, and, until the district schools fit boys for College, preparatory classes here will remain a necessity. Six years is rather a long time for a boy to remain at College, and it is to be regretted that boys cannot obtain at home good preparatory education. If this cannot be done, each County or each Congressional District should have at least one school where boys and girls could be fitted for College at a cost not exceeding that at Clemson.

Major Edgeworth Blythe, who, since February, 1894, has done faithful and efficient work in the Fitting School, will sever his connection with the College at the close of the year and begin the practice of law. Major Blythe carries with him the respect and esteem of both Faculty and students.

There are men in our Senior Class able to do his work well, and I, therefore, recommend that one of our own graduates be appointed to fill the vacancy. Professor Morrison, the Head Master of the School, has been from time to time assisted by Professors in the College Department.

I deem it unnecessary to make more than a brief summary of the work of the various departments during the year. The reports of the Professors hereto attached will give a correct idea of the work done, the text books used, the money expended, and such other information as the Board may care to know.

AGRICULTURAL DEPARTMENT.

The Agricultural Department has sustained a great loss in the death of Prof. W. L. McGee, who, on October 22, while instructing the Senior Class at the College barn, was caught in our corn shredding machine and fatally injured, dying after an illness of four hours. His untimely death cast a gloom over the whole College. He was a man of stainless character, an able and conscientious teacher, a loyal and devoted friend. His colleagues miss him more and more, it seems, as the days go by. His death has left a vacancy hard to fill. There are, however, a number of applicants for the position, and I recommend that his successor be appointed at an early date.
At your last meeting it was decided to elect, at this time, a Botanist and an Entymologist. Out of a large number of applicants for these positions I have selected two whom I feel justified in recommending to you.

Dr. Wyman, the Veterinarian of the College, has shown himself to be a tireless worker, a patient investigator and good instructor.

The Adjunct Agriculturist, Mr. J. W. Hart, who, since Prof. McGee’s death, has taught, in addition to his own, the classes in Agriculture, sets forth in his report the work both of the Dairyman and of the Agriculturist. The Foreman of the Farm, Mr. J. P. Lewis, has performed his duties to the entire satisfaction of Prof. McGee, who appointed him, and I, therefore, recommend that he be continued.

The Horticulturist, Mr. J. F. C. DuPre, asks for further appropriations for the green-house, which, I think, should be granted.

The work of constructing the dike seems nearly completed.

CHEMICAL DEPARTMENT.

The work of the Chemical Department, which from year to year has grown in importance, is fully set forth in Prof. Hardin’s report. The number of analyses of waters, made at the request of parties living in nearly every part of the State, shows that our people are at last realizing the necessity for good, pure drinking water. No State perhaps is doing more than South Carolina to protect the farmers, not only against fraudulent fertilizers and other impositions, but also against impure water, the fruitful source of many ills, both to man and beast.

Prof. Hardin recommends that the salary of Mr. McDonnell, a graduate of the Maryland Agricultural College, who has been employed in the Fertilizer Department since July 2, be raised to $600. Mr. McDonnell’s excellent work fully entitles him to this amount.

MECHANICAL DEPARTMENT.

The Mechanical Department is at last fairly well equipped. With the excellent instruction given here and the creditable equipments already had, I see no reason why students seeking courses in electrical engineering and mechanical engineering should go to other States for instruction. The exhibit recently made by this department at our State Fair was pronounced by many to be most creditable, and gave to the people of the State some knowledge of the work attempted here. All the instructors seem to be earnest and faithful, determined
to keep up with the rapid progress being made in the mechanic arts. Several of the instructors, including the Superintendent, Prof. Tompkins, wish to spend their vacations at Cornell, the Drexel Institute and other great polytechnic schools.

THE ACADEMIC DEPARTMENT.

The Mathematical Department, under the direction of Prof. Clinkscale, who, at the beginning of the year, was promoted to a full professorship, is, I think, meeting the need especially of mechanical students for thorough mathematical training. If, as was once contemplated by the Board, students desiring it are to have instruction in civil engineering, I recommend that this work be assigned to Assistant Professor Brodie.

Prof. Morrison, in addition to heavy work in the fitting school, still teaches the classes in history. His special hobby is South Carolina history, for the study of which he has awakened among the students great enthusiasm.

Prof. Furman is endeavoring, as his report indicates, to make the work in English as practical as possible. Students are required throughout the course to write essays, theses and orations, which, when corrected, are returned to the students.

Capt. Ezra B. Fuller, U. S. A., Professor of Military Tactics, is not only an excellent officer, as the report of the Inspector General indicates, but also a most efficient commandant, who while enforcing discipline, yet holds the respect and esteem of all good students. His report shows fully and clearly the condition of the Mess Hall.

In addition to his other work, Capt. Fuller is also Instructor in Physics. He has shown himself to be a most thorough and conscientious teacher, and I consider that we are most fortunate in retaining his services.

SURGEON'S REPORT.

The report of the Surgeon shows that the health of students has been fairly good, but not so good as our excellent sanitary conditions seem to warrant. The Surgeon, however, has been remarkably successful in the treatment of a number of critical cases. We have lost by death only one student during the year, W. H. Martin, of Orangeburg, who died of measles complicated with pneumonia. It is gratifying to report that the Matron of the Hospital, Mrs. Porcher, is also a most excellent nurse. Mr. Gordon is also a reliable and conscientious nurse. The management of the Hospital is entirely satisfactory.

The Laundry cannot be made self-sustaining unless the number of garments which students are now permitted to put out be cut down or the price be raised.
LIBRARY.

The Library now contains 2,105 volumes, 700 of which have been added during the year, and many pamphlets and Government reports. Nine hundred and ninety-eight dollars have been spent for books and cases during the year.

I earnestly recommend that not less than $2,000 be appropriated for Library, and I also call your attention to the following resolution of the Faculty, which I heartily endorse: On motion of Mr. Morrison (seconded by Mr. McLucas), it was

"Resolved, That the faculty petition the Board of Trustees through the President of the College to provide for a trained Librarian."

LITERARY SOCIETIES.

The three literary societies—the Calhoun, the Palmetto, and the Columbian—meet every Friday night in their handsomely furnished halls for exercise in oratory, declamation and debate. I recommend that every student join one of these societies, but those who prefer not to do so are required to declaim before the Faculty. In connection with the library is a reading room, supplied with the leading papers and periodicals, half the expense of maintaining which is defrayed by the Faculty.

The Young Men's Christian Association is a strong influence for good among the cadets. Six members of the association, whose expenses were partly defrayed by Faculty and students, attended the Knoxville Summer School.

FARMERS' INSTITUTES.

Seven Farmers' Institutes have been held at the following places: Orangeburg, Walhalla, Laurens, Fairview, Anderson, Manning and Darlington. Dr. Wyman and I attended all the institutes, and Professors Hardin, McGee, DuPre and Hart three or more. Nearly all the institutes were well attended, and I think both the farmers and the professors attending were benefited. In many States appropriations by the Legislatures of from five to fifteen thousand dollars are made for this work. Our experience this year will enable us to do better work next year, should the Board see fit to appropriate money for this purpose.
The Faculty recommends to you for the degree of B. S. the following cadets, each of whom has successfully completed the Agricultural Course:

Blain, J. M.          Moore, J. H.
Boulware, G. P.       Robertson, B. F.
Breazeale, J. F.      Sloan, B. F.
Folk, J. F.           Tillman, B. R., Jr.
Furman, C. M., Jr.    Tompkins, F. G.
Gooding, P. H.        Turnipseed, B. R.
Hamilton, R. G.        Werts, L. A.

And the following who have successfully completed the Mechanical Course:

Aull, B. M.           Earle, E. P.
Bowen, J. T.          Langley, P. G.
Bradley, J. T.        Lee, R. E.
Bryant, F. L.         Mauldin, I. M.
Calthoun, P. N.       Pegues, O. M.
Carpenter, W. H.      Sease, L. A.
Chreitzberg, A. M.    Simpson, J. G.
Cothran, T. W.        Tindal, A. J.
Dowling, D.           Tuten, T. H.

Wardlaw, W. W.

The Faculty is composed of able, energetic, conscientious gentlemen, nearly every one of whom is an expert in some line of work. The kindliest feeling exists among the members and all the Faculty, and all the employes of the College are, I believe, enthusiastically devoted to its interests. They are mostly young men, ambitious to win for themselves distinction in their several specialties, and, if left undisturbed by political combinations threatening frequent changes in the affairs of the institution, will make Clemson a college of which the State may be proud. The deportment of students has been excellent and their devotion to the College most commendable.

In conclusion, I desire to thank the Board for their support and for the interest which they have always taken in the success of the College.

Respectfully submitted.

E. B. CRAIGHEAD.
Mr. E. B. Craighead, President Clemson College:

Dear Sir: I have the honor to submit herewith the annual report of the Mechanical Department for the year 1896.

This department embraces the work in engineering, physics, electricity, designing and drawing, wood work, metal work, forging and foundry work. A detailed report of all these branches would be so long that it seems best to mention only the more important points and to refer you to the reports made to me by the various instructors, which reports are on file.

The past year has been the best in the history of this department of the College. The instructing force has received the addition of two valuable men. The loyal, earnest work of all the instructors, both old and new, has been very encouraging. The additions to the equipment have been considerable, and the interest and progress of the students in their work has been quite satisfactory.

Captain Fuller, the head of the Military Department, has given the instruction in physics; his work in this line has been in keeping with his established reputation for energy and thoroughness, and any commendation from me would be useless.

The instruction in drawing, both free-hand and mechanical, has been given by Mr. Yager, with some assistance from Mr. Riggs, which was necessary, as the work has been more than one could do. The progress of the drawing classes has been very satisfactory, indicating interested effort on the part of both instructor and students. A considerable number of new instruments, etc., were purchased during the year, and, excepting the need of some boards and cases, the outfit in drawing is now sufficient to carry on the instruction in a creditable manner. I trust, however, that we may be enabled to add a little year by year until all needed apparatus has been provided. All Mr. Riggs' time will be required for his laboratory and other electrical work after the opening of next session, hence he will have no time to assist Mr. Yager in drawing. I therefore recommend that some provision be made for teaching drawing to the Freshman Class for two hours a week in addition to the time which Mr. Yager will be able to teach them.

The instruction in wood work is given by Mr. Barnes, who has accomplished excellent results in systematizing the course of instruction and arranging the machinery and tools in a manner well adapted to educational purposes. He has, moreover, awakened in the students a great interest in their work. The results attained are evidence of interest and effort on the part of both instructor and students.
The equipment has been increased by the addition of twelve turning lathes, eighteen manual training benches, a hand planer, grinding stone, shafting, pulleys, belts, &c., and a steam dry kiln. With the exception of a number of small and inexpensive tools, the wood shop is well equipped.

The instruction in the machine shop is in charge of Mr. Wright, and the course given begins with simple exercises in chipping, filing, scraping, &c., continuing over a graded series of fundamental operations, such as drilling, turning, boring, threading, shaping, planing, milling, &c. Following this course of exercises comes the construction of a variety of machinery and appliances. The machines constructed during the past year include dynamos, motors, &c., which compare favorably with the machines of standard manufacturers. This work deserves to be highly commended.

The additions to the equipment of the machine shop have been as follows: six engine lathes, one speed lathe, one drill press, one power hack saw, shafting, pulleys, belts, &c.; also, a lot of small tools. The equipment is a good one, but several additional machines are much needed.

The facilities for instruction in foundry and forge work have been increased during the year by the addition of a foundry room 45x50 feet, and by six additional power blast forges and their accessories, a brass furnace with its complements of crucibles, tongs, &c., a ventilating fan and some small tools. The equipment in this line is now excellent, comparing favorably in most respects with that of the best schools of the country.

The most important need at present is a cement floor in the forge room. Mr. Bowman, the instructor in these branches, has accomplished excellent results.

The instruction in engineering, applied mechanics and electricity, is given by Mr. Riggs and myself. There are some serious drawbacks in this work: one is that we have had no laboratory facilities, and another is the insufficient mathematical training which the students have when beginning this work. So far as electrical laboratory work is concerned, the drawback will be removed after the beginning of next session; and the curriculum which was adopted by the Board at the last session will remove the difficulties along the line of mathematical preparation. The serious trouble for which no remedy has yet been provided is the lack of mechanical laboratory facilities.

We need a mechanical laboratory very badly. We have excellent space available for the purpose, and have, I think, a sufficient in-
structing force to give the instruction. All that is needed is suitable appliances. A complete outfit of this kind is quite expensive, but I find that we can make a good start with $1,200 worth of apparatus. The object of a mechanical laboratory course is to give the students instruction in measuring the strength, elasticity and other properties of materials, in measuring the power and efficiency of steam engines, boilers, etc., the power transmitted by shafting, pulleys, belts and the like. No engineering course is now considered complete without such work.

I am of the opinion that it would be well to institute advanced courses of study for graduate students, and if this be done I believe it would be a very good plan to establish a few scholarships, which would be of sufficient benefit to the holders to encourage them to push their studies further than the regular course.

It would certainly be a considerable saving to the College if students were required to make a deposit or pay a fee to cover damages done to tools, etc. As above stated, I think the College would save money, but the chief benefit would be gotten by the student in acquiring more careful habits, provided he had to pay in proportion to the damage done.

Estimate of Equipment.

ELECTRICAL LABORATORY.

With the appropriation of the past year we succeeded in getting a good collection of simple and lower priced electrical instruments.
It is, however, necessary to have a few standards of reference for the measuring instruments. There is great need of the four instruments named below, and I earnestly hope we may be able to get them:

1. Thomson's Standard Graded Voltmeter .................. $80 00
2. Kelvin's Dek-Ampere Balance ................................ 150 00
3. Kelvin's Electrostatic Voltmeter .......................... 135 00
4. Queen's Ballistic Galvanometer ............................ 125 00

Total .................................................. $490 00

We also need to ceil the Laboratory and partition the Lecture Room from the rest. This will cost ................................ 85 00

Total .................................................. $575 00

MACHINE SHOP.

The following tools, machines, etc., are much needed for the Machine Shop:

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small tool forge with tools and anvil.</td>
<td>$25 00</td>
</tr>
<tr>
<td>Set of involute gear cutters</td>
<td>87 00</td>
</tr>
<tr>
<td>Set of Morse taper reamers</td>
<td>25 00</td>
</tr>
<tr>
<td>Set of Morse pin reamers</td>
<td>12 00</td>
</tr>
<tr>
<td>One centre grinder</td>
<td>12 00</td>
</tr>
<tr>
<td>One planer chuck</td>
<td>20 00</td>
</tr>
<tr>
<td>One screw machine</td>
<td>195 00</td>
</tr>
<tr>
<td>Small hand tools</td>
<td>30 00</td>
</tr>
</tbody>
</table>

Total .................................................. $306 00

Respectfully submitted.

S. TOMPKINS,
Professor of Mechanical and Electrical Engineering.
DEPARTMENT OF CHEMISTRY.

Clemson College, S. C., December 3d, 1896.

President E. B. Craighead.

Sir: I respectfully submit the following report of the Department of Chemistry for the year 1896:

INSTRUCTION.

The Sophomore Class has been carried over a course of general chemistry, embracing the leading facts and principles of inorganic and organic chemistry. The instruction has been given by lectures, laboratory practice and recitations.

The agricultural sections of the Junior Class have received instruction in some of the more important applications of chemistry to the arts and manufactures, and in the laboratory have been carried over quite a thorough course of qualitative analysis and of the quantitative analysis of substances of known composition.

The agricultural sections of the Senior Class have studied the subject of agricultural chemistry, and in the laboratory have made analysis of fertilizers, waters, soils, feeding stuffs and milk. The students in all of the classes under my charge have, as a rule, been industrious and interested in their work.

I have given the instruction in the class room to all the students, Sophomores, Juniors and Seniors.

Dr. R. N. Brackett has had immediate charge of the laboratory instruction of the Sophomores and Juniors, and I have given usually from one to two hours a day to this work. Dr. Brackett has also materially aided me by making the necessary preparations for lecture experiments. Mr. F. S. Shiver has had charge of the laboratory work of the Senior Class in agricultural analysis, and the progress made by the students is evidence of the careful instruction they have received.

EXPENSES.

There has been expended in the equipment of the laboratory for the Senior Class and in the necessary additions to the laboratory of the Juniors and Sophomores the sum of $845.02 from January 1st to date. The charges against students for breakages and articles issued and not returned amounts to $52.41.
ESTIMATES.

Apparatus and chemicals ........................................ $ 450.00
General equipment, repairs and additions ..................... 70.00
Salaries of Professor and Assistant ............................ 2,000.00
Janitor ............................................................... 100.00

$2,700.00

An account of the Experimental Station and State analytical work will be given in a separate report.

Very respectfully,

M. B. HARDIN,
Professor Chemistry.

COLLEGE HOSPITAL.

Clemson College, S. C.

President E. B. Craighead.

Dear Sir: I have the honor to submit for the College Hospital the following report:

This report embraces the work since the 31st of October, 1895. Whole number of patients treated in Hospital, 216, classified by diseases as follows:

Abscess, 4; appendicitis, 1; amputation, 2; asthma, 3; abscess of the middle ear, 3; biliousness, 11; bronchitis, acute, 10; carbuncle, 2; cellulitis, 1; cholera morbus, 3; conjunctivitis, 1; cramp colic, 1; cystitis, 2; diarrhoea, 7; dysentery, 8; dislocation, 2; erythema, 1; fever (bilious), 7; fever (catarrhal), 5; fever (continued), 2; fever (intermittent), 4; fever (malarial), 17; fever (remittent), 8; fever (typhoid), 12; gastritis (acute), 1; gastro-enteritis, 6; heart disease, 1; hemorrhoids, 1; indigestion (acute), 10; malaria, 10; measles, 26; mumps, 4; neuralgia, 1; nephritic colic with passage of stone, 1; operation, 1; orchitis, 4; pneumonia (lobar), 6; pharyngitis, 7; rheumatism (acute articular), 2; rhus poisoning, 1; sprain, 1; tonsilitis, 12; ulcer, 1.

The enumeration of the above cases does not include cadets who have been office patients, embracing those with transient troubles, as well as a number of minor operations which were not of sufficient gravity to necessitate a transfer to the Hospital. The increased number of patients in this report over that of last year is accounted for by the fact that this report embraces November and December, 1895, as well as the entire school year of 1896; due in part, also, to the fact that
the latter part of last year and the first of this we had an epidemic of measles. Aside, however, from measles, we have had nothing of an epidemic nature.

I report the death of J. T. Medlock, of Edgefield county, who died December 12, 1895, with typhoid fever; also the death of W. H. Martin, of Orangeburg county, on March 13, 1896, who died of double pneumonia following measles.

The employees of the Hospital this year have been a matron, a nurse, one servant and one cook. At the beginning of this term Mrs. Porcher was employed as matron in place of Mrs. Levis, who gave up the position on account of ill health.

The rather large number of fever cases this year has been trying to the nurse and matron for the reason that, in the care of the patients, diligence and long continued vigilance are of the first importance. I desire to say that the work of both the matron and the nurse has given me entire satisfaction.

Respectfully submitted.

A. M. REDFEARN.

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PHYSIOLOGY AND HYGIENE.

President E. B. Craighead, Clemson College, S. C.

DEAR SIR: This is respectfully submitted as a report of the work in physiology and hygiene during the year now ending:

The agricultural sections only of the Junior Class received instruction in these subjects. They contain this year 15 men, all of whom did satisfactory work and passed creditable examinations. Martin's Human Body was used as a text book. I have supplemented the text as far as possible by lectures and by the exhibition of specimens and microscopic sections. Subjects of hygiene were discussed with the class throughout the term, special attention being paid to those phases of the subject which relate to personal hygiene, heating, lighting, ventilation and drainage.

Respectfully submitted.

A. M. REDFEARN,
Instructor.
# REPORT OF THE TREASURER.

P. H. E. SLOAN, Treasurer,

IN ACCOUNT WITH CLEMSON AGRICULTURAL COLLEGE.

For Fourteen Months, Beginning November 1st, 1895, and Ending December 31st, 1896.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>To balance on hand as per last Annual Report</td>
<td>$4,291 78</td>
</tr>
<tr>
<td>To Land Scrip Fund</td>
<td>5,754 00</td>
</tr>
<tr>
<td>To Clemson Request</td>
<td>3,512 36</td>
</tr>
<tr>
<td>To Privilege Tax</td>
<td>31,273 37</td>
</tr>
<tr>
<td>Less expenses of Fertilizer Department in collecting tax and analyzing fertilizers</td>
<td>$64,881 51</td>
</tr>
<tr>
<td>Total</td>
<td>$59,714 21</td>
</tr>
</tbody>
</table>

By paid on account of salaries ........................................ $17,512 39
By paid on account miscellaneous labor .................................. 1,035 46
By paid on account Mechanical Department ................................ 13,883 86
By paid on account equipment of other departments ...................... 2,761 03
By paid on account convicts ............................................. 1,134 00
By paid on account office, postage, printing, etc ....................... 593 12
By paid on account travel ................................................ 1,782 78
By paid on account Agricultural Department ............................ 4,493 71
By paid on account construction and repairs ............................ 2,512 33
By paid on account furniture ............................................. 1,565 11
By paid on account heat, light and water ............................... 1,613 16
By paid on account library ............................................... 999 62
By paid on account cadet labor ......................................... 4,465 88
By paid on account Military Department ................................ 264 68
By paid on account cadet exchange ..................................... 353 80
By paid on account dike .................................................. 1,344 07
By paid on account Calhoun relics ..................................... 249 81
By paid on account reading room ........................................ 68 00
By paid on account real estate (Lee land) ................................ 2,117 50
By paid on account insurance ............................................ 178 36
By paid on account unclassified bills .................................. 412 14
By paid on account unclassified bills .................................. 474 40

Total | $59,714 21

1897.

Jan. 1. To Balance ............................................ $474 40
Clemson College, December 31st, 1896.

We, the undersigned, duly appointed Auditors of Clemson Agricultural College, do hereby certify that we have examined the books and accounts of the Treasurer of the College for the year ending this day, and have found the same well kept and classified as above, and for all of which proper vouchers are on file, and have been examined and found correct by us.

J. E. Wannamaker,
J. E. Bradley,
Jesse H. Hardin.

Morrill Fund.

Report of P. H. E. Sloan, Treasurer of Clemson Agricultural College, to the Secretary of Agriculture and the Secretary of the Interior, of amount received under the Act of Congress of August 30, 1890, in the aid of Colleges of Agriculture and the Mechanic Arts, and of the disbursements thereof to and including June 30, 1896:

Balance on hand July 1, 1895.......................... $ 321 04
Date of receipt of installment for 1895-96, July...
5, amount.......................... 10,500 00
Total available for year ended June 30, 1896...... 10,821 04

Disbursements thereof for and during the year ended June 30, 1896:

Mechanic Arts, as per Schedule B.................. $ 3,085 81
English Language, as per Schedule C.............. 1,800 00
Mathematical Science, as per Schedule D........... 2,025 00
Natural or Physical Science, as per Schedule E... 3,026 48
Economic Science, as per Schedule F................. 850 00

Total expended during the year.................. $10,787 29
Balance remaining unexpended July 1, 1896. 33 75

I hereby certify that the above account is correct and true, and, together with the schedules hereunto attached, truly represents the details of expenditures for the period and by the institution named, and that the said expenditures were applied only to instruction in Agriculture, the Mechanic Arts, the English Language, and the various branches of Mathematical, Physical, Natural and Economic Science, with special reference to their applications in the industries of life and to the facilities for such instruction.

P. H. E. Sloan,
Treasurer.
FERILIZER DEPARTMENT.

Clemson College, S. C., October 31, 1896.

Hon. J. E. Tindal, Chairman Board of Fertilizer Control.

Sir: I respectfully submit the following statement of the work of the Fertilizer Department from November 1, 1895, to November 1, 1896; also, for comparison, the corresponding figures for last year are given:

<table>
<thead>
<tr>
<th></th>
<th>1896</th>
<th>1895</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of privilege tax.</td>
<td>$49,874 37</td>
<td>$30,077 93</td>
</tr>
<tr>
<td>Amount of fertilizers sold in the State (tons)</td>
<td>199,497</td>
<td>120,311</td>
</tr>
<tr>
<td>Number of samples collected by inspectors.</td>
<td>354</td>
<td>340</td>
</tr>
<tr>
<td>Number of samples analyzed.</td>
<td>237</td>
<td>206</td>
</tr>
<tr>
<td>Number of samples below guarantee.</td>
<td>6</td>
<td>23</td>
</tr>
<tr>
<td>Number of samples deficient.</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Per cent. of samples below guarantee (per cent.)</td>
<td>2.5</td>
<td>11</td>
</tr>
<tr>
<td>Number of farmers’ samples analyzed.</td>
<td>42</td>
<td>31</td>
</tr>
</tbody>
</table>

The following statement shows the expenses of the department for the year ending October 31, 1896:

*Salaries of Chemists and Secretary........................................ $ 1,995 78
Chemical supplies and fuel for laboratory................................. 481 01
Postage, stationery, &c.,.................................................. 93 88
Freight and express.......................................................... 44 96
Printing and delivering tax tags............................................. 1,083 75
Inspectors’ salaries and travel............................................ 834 44

Total ................................................. $ 4,533 82
Net proceeds of privilege tax for College................................ 45,340 55

Respectfully submitted,

J. P. Smith,
Secretary Board of Fertilizer Control.

*No part of salary of Chief Chemist is paid from this fund.
South Carolina Experiment Station.

To the Board of Trustees:

Gentlemen: Herewith I submit my fourth annual report as Director of the South Carolina Experiment Station. Our work has been greatly impeded because of much needed expert help, especially in the lines of botany and entomology. Recently, too, the work of the Agriculturist, Prof. W. L McGee, of whom I have elsewhere spoken, was forever ended by death. In spite of a multitude of duties imposed on him from many quarters, he was conducting a number of experiments, some nearing completion, others intended to extend over a period of years. None of the results of his experiments, however, have been embodied in bulletins, but the work he had in hand seems to have impressed experts most favorably—a fact which indicates that the success of station work is not to be judged solely by bulletins published from year to year. A detailed account of the experiments undertaken by Prof. McGee will be found in the report of the Adjunct Professor of Agriculture, Mr. J. W. Hart. Prof. McGee was systematic in everything he undertook, and, though cut off without warning, left notes on most of the experiments under his charge.

Eight acres of land on the Pendleton road cleaned and thoroughly prepared for cultivation without expense to the station have been added to the experiment lands.

The Horticulturist has nearly completed a vast number of variety tests, made during the past five years for the purpose of "testing the capacity of new plants and trees for acclimation." He has on hand material for several bulletins, some of which may be issued during the coming year. It is claimed by some that variety tests have little or no practical value and hardly deserve to be classed as experimenta tion. Certain it is that they are expressly provided for in the Hatch Act, and while they may be of no service in other States, where, possibly, the best variety of fruits and vegetables have already been secured, experience shows that in South Carolina the farmers do not as yet know what varieties are best adapted to the soil, nor even what fertilizers are best adapted to the varieties now grown. I do not, therefore, hesitate to express the opinion that this work of the Horticulturist, conducted with rare patience and constant personal supervision, promises to be of great value to all who grow fruits and veg-
etables. The Horticulturist intends during the coming year to take up some new work. The green house, now nearing completion, meets a long-felt need.

The Chief Chemist, too, has issued no bulletin during the year. He has, however, been conducting a number of interesting investigations which promise to be of practical value. The large number of analyses of waters for sanitary considerations made here from time to time may enable us in the future to indicate the depth at which in different sections of the State pure drinking water may be expected. It is readily seen that this will be of immense practical value to the people of the State.

The Chief Chemist and his assistants have conducted other interesting investigations as follows:

Analyses of varieties of sweet potatoes for the purpose of directing attention to the sweet potato as a starch producer; analyses of waters for sanitary considerations; of soils, of milks, of fertilizers; analysis of the different parts of the sea island cotton plant, an interesting piece of work.

Investigations conducted by the Chemist and Agriculturalist are now being made for the purpose of determining the availability of plant food in the soil.

The Veterinarian sets forth in his report a detailed account of the work done by him during the year. The Veterinary Division is now fairly well equipped for work. Dr. Wyman has written several bulletins during the year. He wishes shortly to undertake some experiments to ascertain the effects of the golden rod upon stock.

The following bulletins have been issued:

No. 22.—Colic in Horses and Mules.
No. 23.—Lameness.
No. 24.—I. Fertilizer Analyses.
No. 24.—II. Fertilizer Analyses.
No. 25.—Distemper in Horses and Mules.
No. 26.—Founder in Horses and Red Water in Cattle.
No. 27.—Wounds and Their Treatment.

Seven farmers’ institutes have been conducted during the year. Hundreds of letters were received from the farmers of the State asking for information on various subjects, all of which were answered by members of the Station staff. The Station is rapidly becoming a sort of farmers' correspondence school, and is destined in time to become a bureau of information to which our citizens may turn for help on all agricultural questions.

Respectfully submitted.

E. B. CRAIGHEAD,  
Director.
Department of Chemistry.

Clemson College, S. C., December 3, 1896.

President E. B. Craighead, Director:

Sir: I respectfully submit the following report of the Chemical Department of the Experiment Station from November 1st, 1895, to date. The report includes an account of the analysis of fertilizers, waters, ores, minerals, &c., made under the direction of the Board of Fertilizer Control. The short time allowed for the preparation of this report necessitates a much briefer and more condensed statement than I had hoped to be able to present. I have, as usual, supervised the several lines of work, and have attended to all the reports and correspondence of the department.

With regard to the work of the Experiment Station proper, Mr. F. S. Shiver has about completed the analyses of different varieties of the sweet potato, and his investigations of the different methods for determining starch will, I am sure, be interesting and valuable. This work will, it is hoped, be published in a bulletin, the practical value of which will consist in directing attention to the sweet potato as a starch producer.

Mr. Shiver is at present engaged in the analysis of the different parts of the sea island cotton plant.

Mr. John Thompson in the spring of the year commenced a set of rotation experiments, in conjunction with the Agriculturalist of the Station, the object of these experiments being to ascertain the effects of humus upon the availability of the plant food in the soil, and to find, if possible, a method of chemical analysis which will give with some degree of accuracy the available amounts of the different substances in the soil. The experiments were planned and undertaken under rather unfavorable circumstances, and it is yet too soon to comment upon the analytical results so far obtained.

The analyses of fertilizers under direction of the Board of Fertilizer Control have been made by Messrs. C. W. Sims, F. S. Shiver and John Thompson. The analyses of mineral and potable waters have been made chiefly by Mr. C. C. McDonald, who has also aided in the analysis of farmers' samples of fertilizers. Mr. McDonald, who was appointed after the resignation of Mr. Sims, has shown himself to be an industrious as well as a careful, conscientious and accurate worker.

The assays of ores have been made by Dr. Brackett, who has also done a good deal of work in the sanitary examination of waters.
It is gratifying to be able to say that we have now an adequate working force, and to express the hope and belief that results will be accomplished which will fully justify the addition made to the working staff of this department. In the following account of what has been done in the Station Laboratory I shall distinguish between the work of the Experiment Station proper and the State analytical work.

I.—EXPERIMENT STATION WORK.

ANALYSIS OF SWEET POTATOES.

Seven analyses of different varieties of the sweet potato grown on the Station farm. Following is a summary of results:

<table>
<thead>
<tr>
<th></th>
<th>Per</th>
<th>Cent.</th>
<th>Per</th>
<th>Cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starch, maximum</td>
<td>28.00</td>
<td>Minimum</td>
<td>23.74</td>
<td></td>
</tr>
<tr>
<td>Glucose, &quot;</td>
<td>0.78</td>
<td>&quot;</td>
<td>0.47</td>
<td></td>
</tr>
<tr>
<td>Sucrose, &quot;</td>
<td>2.80</td>
<td>&quot;</td>
<td>1.81</td>
<td></td>
</tr>
<tr>
<td>Water, &quot;</td>
<td>67.55</td>
<td>&quot;</td>
<td>63.04</td>
<td></td>
</tr>
</tbody>
</table>

Feeding stuff, analyses of same, referring to samples as received:

<table>
<thead>
<tr>
<th></th>
<th>Per</th>
<th>Cent.</th>
<th>Per</th>
<th>Cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude ash, maximum</td>
<td>1.08</td>
<td>Minimum</td>
<td>0.88</td>
<td></td>
</tr>
<tr>
<td>Crude fat, &quot;</td>
<td>0.73</td>
<td>&quot;</td>
<td>0.38</td>
<td></td>
</tr>
<tr>
<td>Crude fibre, &quot;</td>
<td>0.94</td>
<td>&quot;</td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>Crude protein &quot;</td>
<td>2.41</td>
<td>&quot;</td>
<td>1.08</td>
<td></td>
</tr>
<tr>
<td>Nitrogen, free ex't &quot;</td>
<td>33.30</td>
<td>&quot;</td>
<td>29.04</td>
<td></td>
</tr>
</tbody>
</table>

The season was unusually dry and starch content high.

Three samples of different varieties sent from Clarendon County, S. C.:

<table>
<thead>
<tr>
<th></th>
<th>Per</th>
<th>Cent.</th>
<th>Per</th>
<th>Cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starch, maximum</td>
<td>23.64</td>
<td>Minimum</td>
<td>21.74</td>
<td></td>
</tr>
<tr>
<td>Water, &quot;</td>
<td>67.29</td>
<td>&quot;</td>
<td>66.19</td>
<td></td>
</tr>
</tbody>
</table>

These analyses were made in connection with the work already referred to in this report.

ANALYSIS OF CANAIGRE ROOTS.

Sent from Camden, S. C.

In air-dried roots:

Tannin, in terms of oak-bark tannin | 15.38 per cent.
Five samples from Perry, S. C.
In addition to the foregoing there have been made two analyses of skim milk for the Dairy Department and one analysis of a fertilizer for the Agricultural Department.

II.—STATE ANALYTICAL WORK.

The following is a summary of this work, compared with that of last year:

<table>
<thead>
<tr>
<th>Category</th>
<th>1895</th>
<th>1896</th>
</tr>
</thead>
<tbody>
<tr>
<td>Official fertilizer samples</td>
<td>206</td>
<td>237</td>
</tr>
<tr>
<td>Farmers’ fertilizer samples</td>
<td>31</td>
<td>42</td>
</tr>
<tr>
<td>Mineral and potable waters</td>
<td>51</td>
<td>75</td>
</tr>
<tr>
<td>Phosphate rock</td>
<td>3</td>
<td>...</td>
</tr>
<tr>
<td>Ores and minerals</td>
<td>39</td>
<td>18</td>
</tr>
<tr>
<td>Marl</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ashes</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Clays</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>333</td>
<td>379</td>
</tr>
</tbody>
</table>

(1.) OFFICIAL SAMPLES OF FERTILIZERS.

A detailed statement of the analyses of these samples has been given in Bulletin No. 24 (parts 1 and 2) of this Station. Following is a comparison of the general results with those of last year:

<table>
<thead>
<tr>
<th>Category</th>
<th>1895</th>
<th>1896</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogenous superphosphates and fertilizers</td>
<td>87</td>
<td>115</td>
</tr>
<tr>
<td>Acid phosphates</td>
<td>46</td>
<td>42</td>
</tr>
<tr>
<td>Acid phosphates with potash</td>
<td>15</td>
<td>26</td>
</tr>
<tr>
<td>Kainit</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>Cotton seed meal</td>
<td>33</td>
<td>34</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>206</td>
<td>237</td>
</tr>
</tbody>
</table>

Of the number above reported for the season 1896, four (4) samples were deficient according to the present requirements of the law; of these, two (2) were ammoniated fertilizers, two (2) were acid phosphates.
AVERAGES OF ANALYSES.

<table>
<thead>
<tr>
<th>ACID PHOSPHATES.</th>
<th>1895.</th>
<th>1896.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soluble Phosphoric Acid</td>
<td>10.13</td>
<td>9.63</td>
</tr>
<tr>
<td>Reverted Phosphoric Acid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available Phosphoric Acid</td>
<td>13.55</td>
<td>11.99</td>
</tr>
<tr>
<td>Insoluble Phosphoric Acid</td>
<td>1.49</td>
<td>1.60</td>
</tr>
<tr>
<td>Total Phosphoric Acid</td>
<td>15.04</td>
<td>15.03</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACID PHOSPHATES WITH POTASH.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Soluble Phosphoric Acid</td>
<td>8.75</td>
</tr>
<tr>
<td>Reverted Phosphoric Acid</td>
<td>3.34</td>
</tr>
<tr>
<td>Available Phosphoric Acid</td>
<td>12.09</td>
</tr>
<tr>
<td>Insoluble Phosphoric Acid</td>
<td>1.12</td>
</tr>
<tr>
<td>Total Phosphoric Acid</td>
<td>13.21</td>
</tr>
<tr>
<td>Potash soluble in water</td>
<td>1.66</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NITROGENOUS SUPERPHOSPHATES.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Soluble Phosphoric Acid</td>
<td>6.67</td>
</tr>
<tr>
<td>Reverted Phosphoric Acid</td>
<td>2.75</td>
</tr>
<tr>
<td>Available Phosphoric Acid</td>
<td>9.42</td>
</tr>
<tr>
<td>Insoluble Phosphoric Acid</td>
<td>2.09</td>
</tr>
<tr>
<td>Total Phosphoric Acid</td>
<td>11.51</td>
</tr>
<tr>
<td>Ammonia</td>
<td>2.55</td>
</tr>
<tr>
<td>Potash</td>
<td>1.77</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COTTON SEED MEAL.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Available Phosphoric Acid</td>
<td>2.58</td>
</tr>
<tr>
<td>Ammonia</td>
<td>8.19</td>
</tr>
<tr>
<td>Potash soluble in water</td>
<td>1.66</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>KAINIT.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Potash soluble in water</td>
<td>12.30</td>
</tr>
</tbody>
</table>

(2.) FARMERS’ SAMPLES OF FERTILIZERS.

Forty-two samples of commercial fertilizers sent by farmers have been analyzed.

A few samples received were not examined further than to see that they were in bad condition, the rules of the Department of Fertilizers
with regard to the manner of collecting and forwarding samples having not been complied with.

Farmers wishing samples analyzed should make application to the Fertilizer Department for a copy of these rules.

(3.) WATERS.

Seventy-five samples of mineral and potable waters have been analyzed. The results have been in many cases very interesting and important, especially in regard to the deep and artesian wells which have been bored in the low country. Very evident relations between the depths of the wells and the character of the waters have so far revealed themselves, and if persons sending on samples will comply with our request for statements as to depth and surroundings of wells it will not be long before we will be able to draw conclusions which will be of great service to the people of our State.

(4.) ORES, MINERALS AND OTHER SUBSTANCES.

The short time allowed for this report will not permit any detailed reference to these analyses. The results, however, are in most cases not of general interest. The total number of analyses falling under this head is twenty-five. Very respectfully,

W. B. HARDIN,  
Chief Chemist.


To Director E. B. Craighead, South Carolina Experiment Station:

SIR: I hereby beg leave to submit the following report of the experimental work in agriculture for the past year:

On the Pendleton road nineteen one-tenth-acre plats were prepared and sown with wheat on the 11th of December, 1895. On eight of these plats different varieties of wheat were tested, and upon the remaining eleven different combinations of fertilizers were used. Similar experiments are at present in progress on the same plats, the wheat being sown November 9th.

About seven acres of new ground have been cleared for experimental work. Three-quarters of this area has been broken and was sown to cow peas the past season. If one-half of this field were thoroughly tile drained, and the remainder terraced after the usual manner, a fine opportunity would be afforded for the study of the effects of tile drainage upon uplands.
On account of the dry season the variety plats of grasses and clovers sown in the spring were a partial failure. This fall the land was ploughed and harrowed and fourteen plats, 2\(\frac{1}{4}\) acres in all, were sown to different mixtures of grasses and clovers on November 7th.

In the mound field different varieties of cotton and methods of fertilizing cotton were compared, twenty-one one-tenth-acre plats being planted.

In the "bottom" a number of rotation experiments without manure have been commenced, forty one-tenth-acre plats being devoted to this purpose. Mr. John Thompson, Assistant Chemist, is assisting in this work. It will be some years before any definite results may be expected from these experiments.

In the testing of varieties of corn and the use of fertilizers for corn, twenty-eight one-tenth-acre plats were planted.

In the stable some results have been recently obtained in the feeding of shredded corn stover to mules, which appear to justify the conclusion that it is an admirable bulky fodder for work stock.

A bulletin, giving the details of the completed experiments conducted by this department during the year just closing, will shortly be issued.

Yours respectfully,

J. W. HART,
Acting Agriculturist.

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Hon. E. B. Craighead, Director.

Dear Sir: The work of the Horticultural Department for the current year has been a continuation and completion of such tests and experiments as were not concluded the previous year and the beginning of several new ones. These tests, up to date, have, to a large extent, been the growing of many species and varieties of fruits and vegetables contiguous to each other, with the view of ascertaining their relative value and adaptability to our climate and soils. While the Department at Washington and some writers seem to think that these tests when made by an officer of a station is labor and time largely wasted, yet there is no denying the fact that this work done at this station has been largely beneficial to many citizens of our State. It is true that it should be confined within reasonable bounds, and this, we think, we have done. It is also true that to a large extent this
work could be conducted without the aid of a scientist. "Any one," says one writer, "can plant a dozen varieties of peas (beans) and keep a record of the dates on which they bloom and ripen." Very true, but will they also note their liability to disease, their adaptability to different kinds of soil and their responsiveness to different fertilizers and modes of cultivation? Even should he do this, will the knowledge thus gained be disseminated among the people? Will it not rather die with him or remain in his circumscribed neighborhood? This department has received an average of one letter per week for the past three years asking information upon every point covered by these tests. There lie before me now two letters, yet unanswered, asking information as to certain varieties of apples and peaches. Every intelligent man knows that there are certain species and varieties of fruits and vegetables that are invaluable in some sections of our country and worthless in others. What and which are they? Example: The now celebrated Crosby peach, the Catawba grape, et al. Of this peach, Mr. Hale says that in Connecticut it is of special value because of the hardness of its fruit buds, its late blooming and the large size of its fruit. On the other hand, Mr. Wright says that in Delaware it is not as hardy as many other varieties, and even when the fruit is thinned it is too small to be of any value. Both are good authorities and both, no doubt, speak the truth. Now, shall we let each individual farmer and orchardist spend his hard-earned dimes and dollars for these new fruits, and each "test" for himself, or shall the station officer grow them and give the result to the people? It is proper to say that these tests of vegetables and small fruits by this station are about concluded, and that hereafter only novelties and new introductions will be handled. The "tests" of such fruits as apples, pears, peaches, grapes and nut-bearing trees will be continued. In the new work many tests of fertilizers on various vegetables and fruits have been begun and will go on to completion; also, remedies and preventives for and of diseases and insects, notably scab and leaf blight on Irish potatoes, blight on pear and apple, leaf blight and mildew on grapes, et al. Some attention has been given to hybridizing, and this work will be enlarged the coming season. Seeds of apples, pears, peaches, quinces, strawberries, &c., have been planted, with the view of raising new varieties and stock for grafting, budding, &c.

SUGAR BEETS.

Our test of sugar beets closed with the crop of this year. Seven varieties have been grown for four years upon different soils and with different fertilizers. A tabulated statement of the results is on file in
my office. The aggregate result is a yield of from twelve to twenty-six tons per acre, with saccharine contents ranging from six to nine per cent. This test clearly shows that for sugar making it is a failure in this section, as less than twelve per cent. of sugar contents will not pay to manufacture.

GRAPES.

Our grapes have been troubled with no insect enemies, and by careful, continuous spraying they have been kept from disease and rot. Some of the vines died and much of the fruit was injured by reason of the drouth and heat, but there was no disease.

PEACHES.

The borers were hunted and killed from September, 1895, to May, 1896. In the fall (of 1895) all leaves, dead twigs, peach pits and litter of every description was cleared away from the trees and buried. In the spring, fruit stung by the curculio was gathered and destroyed. Result: All varieties ripening prior to 15th of July were sound and free (almost) from worms. Varieties ripening after that date rotted badly, but had few worms. The rot was no doubt caused, in part, by the excessive rains. In our small nursery of seedling peaches, the first and third sections of the Agricultural Seniors put out several hundred buds and grafts. Many of these are doing well, and they will be transferred to the orchard, and some of them given to the young men who did the work.

PEARS.

The Kieffer, Clapp's favorite, and Duchesse d'Angouleme bore a small crop of fruit; others set one or two, but the large majority bore none. Blight struck the Le Conte, Bartlett, Garber, Idaho and a few other varieties early in the season. All diseased portions were carefully taken off and destroyed, but the blight returned in August and killed many trees.

APPLES.

Our trees being young, only a few varieties set any fruit, and most of this was small and imperfect. This I account for in part on account of the poverty and condition of the land on which the trees are growing. It is very poor, and from lack of humus runs together and bakes very hard.
PLUMS.

The fruit of all plum trees, native and foreign, was killed by the frosts in March.

NUT-BEARING TREES.

Over four hundred nut-bearing trees, including pecans, walnuts, chestnuts, &c., have been planted on the place. As a rule, those planted in November have lived and made a good growth, and of those planted in the spring many died the first summer, and the ones that lived have barely kept alive. In my opinion, it would be better to plant the nuts of these fruits at the place they are wanted, and upon these seedling place buds or grafts from trees that are in bearing. In this way neither the roots nor the growth are disturbed and they come into bearing several years sooner. Again, there is no certainty that a seedling will bear the same character of fruit as the seed that was planted.

GREEN HOUSE.

An addition, 20 by 70 feet, has been added to the green house. This, when finished, will give us ample room for growing vegetable plants, cuttings, &c., and conducting experiments of a certain class, and also afford space for several thousand green house plants. This section of our work has been of great interest to the students and the public generally. It will require $100 or $200 to complete the building.

ORNAMENTAL GROUNDS.

The space around the green houses and the reservoir is now very bare and unsightly. A few evergreens, roses and such perennial plants as would require very little attention after setting, would not only greatly add to the looks of the place, but might, in the case of the evergreens, serve as a test of their hardiness and desirability. I ask for $100 for this purpose.

STUDENT LABOR.

An average of over sixty students have worked in the garden and orchard a few hours each week, for which they have been paid. Although working for wages, they have been given instruction or lessons in seed-sowing and cultivation, in preparing seed beds and many other lines of work.
The first and third sections of the Agricultural Seniors, who have been with me from two to four hours each week, were given practical lessons in almost every line of the work, notably: Budding, grafting, pruning, spraying, cultivating, &c., and in addition a series of lectures on various subjects connected with horticulture. It gives me pleasure to bear testimony to the intelligence, industry, morality and gentlemanly bearing of these young men.

METEOROLOGY.

An account of the readings of the barometer and thermometer at 7 a.m., 2 p.m. and 9 p.m. each day has been carefully kept, as well as the rainfall, force and direction of the wind, and per centum of sunshine and clouds—the original of which is on file in my office. In the absence of a proper instrument, the force of the wind has been estimated.

The seasons have been peculiar, and in our immediate section disastrous to all crops, but especially so to fruits and vegetables. The year opened with a deficiency of the rainfall from the previous September. This condition remained and was added to until July, when heavy floods of rain did much damage. The temperature during these droughts was very high, ranging, for weeks at a time, from 90 to 100. The following is the rainfall by months:

<table>
<thead>
<tr>
<th>Month</th>
<th>Rainfall (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>4.19</td>
</tr>
<tr>
<td>February</td>
<td>5.19</td>
</tr>
<tr>
<td>March</td>
<td>1.69</td>
</tr>
<tr>
<td>April</td>
<td>0.92</td>
</tr>
<tr>
<td>May</td>
<td>4.67</td>
</tr>
<tr>
<td>June</td>
<td>1.94</td>
</tr>
<tr>
<td>July</td>
<td>11.28</td>
</tr>
<tr>
<td>August</td>
<td>1.02</td>
</tr>
<tr>
<td>September</td>
<td>9.21</td>
</tr>
<tr>
<td>October</td>
<td>1.88</td>
</tr>
<tr>
<td>November</td>
<td>7.55</td>
</tr>
<tr>
<td>Total, 11 months</td>
<td>49.54</td>
</tr>
</tbody>
</table>

DONATIONS.

The following articles have been donated by the parties named and receipt thereof acknowledged:

- J. S. Linthicum—Strawberry plants.
- J. L. Normans—Cassabananna seed.
- Mississippi Agricultural College—Grape cuttings.
- W. A. Burpee & Co.—Vegetable and flower seeds.
- J. E. Anderson—Peach pits.
- McCully & Cathcart—Fruit-shrub, name unknown.
- Richard Nott—Nott’s peas.
- Captain James Reid—Peach pits.
- Hon. R. W. Simpson—Peach scions.
- S. P. Stribling—Apple and pear scions.
Jno. M. Gillison—Apple scions.
P. J. Berckmans—Roses and chrysanthemums.
R. C. Barclay, Esq.—Amyrillis and other bulbs.
Mrs. R. M. Haddon—Sugar beet seed.
Mrs. Creightsburg—Datura metel seed.
The Denning Company—Spraying fixtures.
C. H. Deitz, of New York—Imported sugar beet seed.
J. W. Shelor—Native bulbs.
H. H. Arrington—One bushel Irish potatoes.
United States Weather Bureau—Garden seeds.
Respectfully submitted.

J. F. C. DuPRE.

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Dairyman's Report.

Clemson College, S. C., December 5th, 1896.

President E. B. Craighead,
Director South Carolina Experiment Station.

Sir: I have the honor to submit the following report:

There has been added to the equipment of the dairy one DeLaval No. 3 separator, for hand or power, which is run by electric motor. A small cheese cellar has been excavated to test the practicability of curing cheese under ground. A bull shed for four stock bulls has been built, and an experimental piggery is being erected.

Major A. H. White, of Rock Hill, presented the station with a purebred Berkshire boar. Two registered Berkshire sows were bought from the same breeder. After considerable correspondence with different breeders, the Jersey bull "Clemson Torment," out of "St. Helier's Florence," by "King Koffee's Torment," and bred by W. Gettys, of Athens, Tenn., was added to the dairy herd. The weeding out of the dairy herd is being continued, and twenty-four (24) animals were sent to the butcher during the past year.

The herd now numbers:

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<tr>
<th>Category</th>
<th>Number</th>
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<tr>
<td>Bulls</td>
<td>4 head</td>
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<tr>
<td>Cows in milk</td>
<td>47 head</td>
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<tr>
<td>Dry cows</td>
<td>2 head</td>
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<tr>
<td>Heifers</td>
<td>38 head</td>
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<tr>
<td>Bull calves</td>
<td>2 head</td>
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<td><strong>Total</strong></td>
<td><strong>93 head</strong></td>
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Dairyman's Report.
It is desirable that a shorthorn bull and three (3) cows be added to the herd as representative beef animals for teaching and experimental purposes. Of pure-bred Holstein Friesians, we have but three head, and a few additional females of this popular breed should be purchased at an early date.

On account of the importance of the knowledge of bacteriology in the handling of milk, cream, butter and cheese, for the preservation and development in the highest quality and for perfect healthfulness in these important articles of food, it is necessary that a small bacteriological outfit be added to the equipment of the dairy division, and it has been recommended that the sum of $400 be granted for the purchase of a microscope and other supplies for this work. For labor this division has depended largely upon the cadets, with more satisfactory results on the whole than with low-priced hired help. Because of their being employed in College duties all day, it is impossible to employ cadets in experimental work with any advantage.

In order to make experiments in the dairy division, an additional man should be permanently employed, and in the estimates $300 has been requested for payment of same.

With the exception of the Farmers' Institute at Walhalla, I have attended and taken part in these meetings in different parts of the State. The growth of the interest in dairying is being shown by the increasing correspondence upon dairy subjects.

I have the honor to be, sir, your obedient servant.

J. W. HART,
Adjunct Professor of Agriculture.

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Veterinarian's Report.

Professor E. B. Craighead,
Director South Carolina Experiment Station.

SIR: I herewith submit my first annual report of the work done by me as Veterinarian to the South Carolina Experiment Station.

In order to acquaint the people of this State with the establishment of a Veterinary Division at the South Carolina Experiment Station, the fact was announced in all the papers of the State. Most papers kindly responded to the request and inserted the notice free of charge. In this announcement the people of the State were offered the aid of the Veterinary Division in the investigation of contagious and infectious diseases of domestic animals. One supposed case of glanders at
Walhalla, Oconee County, was examined, it proving to be a severe case of influenza, with brain and lung complications. A case of glanders at Higgins’ Ferry, Saluda County, was examined and the subject destroyed, the owner having agreed to pay the Veterinarian’s expenses in case the mule was not glandered. An outbreak of hog cholera in Anderson County was investigated and suggestions as to preventive measures published in all the papers of the county, with satisfactory results, no new cases having been reported to me since then. A disease commonly known as “red water,” killing more cattle in this State in the summer than all other diseases these animals are subject to, has also been partly investigated. I devoted several days to the investigation of such an outbreak at Easley, Pickens County, and Greenville. All animals not too far gone were saved. As the laboratory was not finished at that time, thorough investigation of these outbreaks was necessarily deferred. They will receive more attention during the coming year. The Veterinary Division has issued since March the following bulletins: On Colic in Horses and Mules; Lameness in Horses and Mules; Influenza and Strangles in Horses and Mules; Founder in Horses and Mules and Red Water in Cattle, and one on Wounds and their Treatment. It has been the aim to make these bulletins as practical as possible. The demand for them, the comments of the press, and the fact that reprints of them are made by the papers of this and other States, indicates that they have been of value to our people. A voluminous correspondence has been carried on by the division with the stock owners of the State, giving them free advice whenever requested. That this line of work is of value to the people is probably shown by the many commendatory letters the division has received from stock owners. The establishment of the Veterinary Division is too recent to have allowed opportunity for much orginal work. Experiments are now being conducted with golden-rod (solidago) to test its effects upon the animal economy. These experiments will require the greater part of next year. In the coming year experiments will be made with fowls to find out how much a bird may be safely given of any drug for the cure or prevention of disease. I visited the Farmers’ Institutes at Orangeburg, lecturing on the principles of horse-shoeing, and treated 122 animals brought there for that purpose. At Laurens a lecture on founder was delivered, and 66 animals treated. At Fairview I lectured on the care of the brood mare, treating 49 animals. At Walhalla an address on the care of the horse was made, and 47 animals treated. At Manning a lecture on colic was delivered, and 14 animals treated. At Darlington the lecture was on influenza and strangles; 11 animals
were treated. At Anderson the lecture was on the abuse of the domestic animals, and 34 animals received free treatment. In every instance no charge was made for the examination or treatment.

I also wish to draw your attention to the fact that we have no proper place to house experimental animals or conduct experiments. A building ought to be provided for that purpose, being large enough to keep six cows or horses, pigs and chickens. It ought to have an office which would serve also as laboratory. At the same time a fenced run of about one acre should adjoin that structure. An attendant ought to be employed to attend to the experimental animals and assist in the execution of the experiments.

Respectfully submitted,

W. E. A. Wyman, V. S.

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**United States Appropriation.**

**SOUTH CAROLINA EXPERIMENT STATION**

**IN ACCOUNT WITH**

**THE UNITED STATES APPROPRIATION, 1895-6.**

Dr.

To Receipts from the Treasurer of the United States as per appropriation for fiscal year ending June 30, 1895, as per Act of Congress approved March 2, 1887. . . . . . . . . . $15,000.00

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We, the undersigned, duly appointed Auditors of the Corporation, do hereby certify that we have examined the books and accounts of the Treasurer of the South Carolina Experiment Station for the fiscal year ending June 30, 1896, that we have found the same well kept and classified as above, and that the receipts for the year from the Treasurer of the United States are shown to have been $15,000, and the corresponding disbursements $15,000; for all of which proper vouchers are on file and have been by us examined and found correct, thus leaving no balance.

And we further certify, that the expenditures have been solely for the purposes set forth in the Act of Congress approved March 2, 1887.

(Signed) J. E. BRADLEY, JESSE H. HARDIN, J. E. WANNA MAKER, Auditors.

Attest:
P. H. E. SLOAN, Custodian.