CATALOGUE

OF THE

CLEMSON Agricultural College

OF

SOUTH CAROLINA

State Agricultural and Mechanical College

1902-1903

TENTH YEAR

Columbia, S. C.
The R. L. Bryan Company
1903
Calendar

Session of 1903-1904

Examinations for admission, September 4-9, 1903.
Session begins Wednesday, September 9, 1903.
Second Quarter begins Monday, November 16, 1903.
Thanksgiving Day, Thursday, November 26, 1903.
Christmas Vacation, December 23, 1903, to January 2, 1904.
Society Day, January 19, 1904.
Second Term (Third Quarter) begins Wednesday, January 27, 1904.
Society Day, March 18, 1904.
Fourth Quarter begins Monday, April 4, 1904.
Society and Field Day, May 1st, 1904.
Baccalaureate Sunday, June 5, 1904.
Alumni Address, June 6, 1904.
Address to Graduating Class, June 7, 1904.
Commencement Day, June 7, 1904.

Post-office and Telegraph Office: Clemson College, S. C.
Freight and Express Office: Calhoun (Southern Ry.), S. C.
Board of Trustees

Life Members

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<th>Name</th>
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<tr>
<td>HON. R. W. SIMPSON, President</td>
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<td>SENATOR B. R. TILLMAN</td>
<td>Edgefield</td>
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<td>HON. D. K. NORRIS</td>
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Term Expires 1904

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<td>HON. J. E. TINDAL</td>
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<td>HON. J. S. GARRIS</td>
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<td>HON. JESSE H. HARDIN</td>
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Term Expires 1906

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<td>HON. W. D. EVANS</td>
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<td>HON. A. T. SMYTHE</td>
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<td>HON. L. A. SEASE</td>
<td>Lexington</td>
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H. M. STACKHOUSE... Secretary of Fertilizer Inspection Board
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Associate Professor of Botany and Bacteriology

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Assistant Professor of Agriculture

O. M. WATSON
Assistant in Poultry Industry

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Assistant in Veterinary Science

*Absent on leave for one year, session 1902-3, during which time his place was filled by Dr. R. J. Foster.
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Department of Textile Industry

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Professor of History and Political Economy

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Professor of Mathematics

J. S. McLUCAS, A. M.
Assistant Professor of English

C. B. WALLER, A. M., Ph. D.
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D. W. DANIEL, M. A.
Assistant Professor of English

S. M. MARTIN
Assistant Professor of Mathematics

S. W. REAVES, B. S., A. B.
Assistant Professor of Mathematics

G. SHANKLIN, B. S.
Assistant Professor of Mathematics

T. W. KEITT
Assistant Professor of English

A. B. BRYAN, B. S., B. Lit.
Instructor in English
Military Department

LIEUT. E. A. SIRMYER, 3d Cavalry U. S. A.
Commandant and Professor of Military Science and Tactics

Preparatory Department

M. E. BRADLEY, A. B.
Assistant in English and Mathematics

J. E. HUNTER, B. S.
Assistant in Mathematics

The following members of the Collegiate Faculty also instruct the Preparatory Class in the subjects indicated:

W. S. MORRISON, History
J. V. LEWIS, Geography
T. W. KEITT, English
A. B. BRYAN, English
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(The President is *ex officio* a member of each Committee)

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C. M. FURMAN 
W. S. MORRISON 
J. V. LEWIS

J. H. M. BEATY 
P. T. BRODIE 
W. M. RIGGS 
E. A. SIRMYER

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W. S. MORRISON

J. V. LEWIS 
W. M. RIGGS

Committee on Chapel Services

T. G. POATS, *Chairman*

F. S. SHIVER 
C. C. NEWMAN

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F. D. FRISSELL

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A. B. BRYAN

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H. METCALF

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H. H. KYSER

W. W. KLUGH 
C. B. WALLER

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O. M. WATSON 
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Committee on Athletics

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J. S. McLUCAS  J. V. LEWIS

Committee on Preparatory Department

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W. S. MORRISON  P. T. BRODIE
J. V. LEWIS
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   Commandant

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   Secretary of Faculty

G. SHANKLIN
   Registrar

Miss MINNIE B. WANNAMAKER
   Secretary to the President

J. N. HOOK
   Justice Clemson College Corporation

J. P. LEWIS
   Superintendent of College Farm

A. SCHILLETTER
   Steward

Miss A. L. LEWIS
   Librarian

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REV. K. G. FINLAY

REV. R. P. PELL
REV. A. J. S. THOMAS
Board of Health

P. H. MELL, President
A. M. REDFEARN, M. D., Surgeon
P. H. E. SLOAN, M. D.
M. B. HARDIN
J. S. NEWMAN

Officers of Experiment Station

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J. S. NEWMAN, Vice-Director and Agriculturist
M. B. HARDIN, Chief Chemist
G. E. NESOM, B. Sc., D. V. M., Veterinarian
C. C. NEWMAN, Horticulturist
C. E. CHAMBLISS, M. Sc., Entomologist
C. O. UPTON, B. Agr., Dairy and Animal Husbandry
HAVEN METCALF, A. M., Botanist and Bacteriologist

F. S. SHIVER, Ph. G., Assistant Chemist
*C. C. McDONNELL, B. S., Assistant Chemist
*B. F. BORERTSON, B. S., Assistant Chemist
D. H. HENRY, B. S., Assistant Chemist
H. BENTON, M. S., Assistant Agriculturist
O. M. WATSON, Poultry
J. S. PICKETT, Foreman
B. H. RAWL, Assistant Animal Husbandry
JOHN N. HOOK, Secretary and Librarian

*Engaged in Fertilizer Analyses.
HISTORY AND GOVERNMENT OF THE COLLEGE
History and Government of the College

The College was established in 1889 by the Act of the General Assembly, approved the 27th of November of the same year. This move on the part of the General Assembly was brought about largely by the farmers of South Carolina, who in a convention which assembled in Columbia in 1886, resolved that the time had arrived for the building of an institution the purpose of which should be to give a college education to the farmer’s sons as well as to provide for the education of the industrial classes generally of the State.

An effort, therefore, was made to concentrate the money appropriated by the United States Government for the establishment of an Agricultural and Mechanical College at some convenient point in the State. The matter was given definite form by the action of the Hon. Thomas G. Clemson, son-in-law of John C. Calhoun, who left as a bequest to the State the old Calhoun homestead, Fort Hill, consisting of about 800 acres of land, and $58,539 in other securities for the purpose of establishing an Agricultural College. He died April 6th, 1888.

Thomas G. Clemson’s Will

The following paragraphs are extracts from Mr. Clemson’s will relating to the establishment of the College:

Whereas, I, Thos. G. Clemson, of the County and State aforesaid, did on the 14th of August, 1883, execute my last will and testament, wherein I sought to provide for the establishment of a scientific institution upon the Fort Hill place, and therein provided what sciences should be taught in said institution; and whereas, I am now satisfied that my intention and purpose therein may be misunderstood as intending
that no other studies or sciences should be taught in said institution than those mentioned in said will, which was not my purpose or intention: Now, desiring to make my purpose plain, as well as to make some other changes in the disposition of my property than made in said will, I do now make, publish and declare this instrument as and for my last will and testament, hereby revoking all previous wills and codicils by me made, especially the will above referred to, dated August 14th, 1883. Feeling a great sympathy for the farmers of this State, and the difficulties with which they have had to contend in their efforts to establish the business of agriculture upon a proper basis, and believing there can be no permanent improvement in agriculture without a knowledge of those sciences which pertain particularly thereto, I have determined to devote the bulk of my property to the establishment of an Agricultural College upon the Fort Hill place. My purpose is to establish an Agricultural College which will afford useful information to the farmers and mechanics; therefore it should afford thorough instruction in agriculture and the natural sciences connected therewith; it should combine, if practicable, physical with intellectual education, and should be a high seminary of learning in which the graduate of the common schools can commence, pursue and finish a course of studies terminating in thorough theoretic and practical instruction in those sciences and arts which bear directly upon agriculture. But I desire to state plainly, that I wish the Trustees of said institution to have full authority and power to regulate all matters pertaining to said institution, to fix the course of studies, to make rules for the government of the same, and to change them, as in their judgment experience may prove necessary; but to always bear in mind that the benefits herein sought to be bestowed are intended to benefit agricultural and mechanical industries. I trust I do not exaggerate the importance of such an institution for developing the material resources of
the State, by affording its youth the advantage of scientific culture, and that I do not over-rate the intelligence of the Legislature of South Carolina, ever distinguished for liberality, in assuming that such appropriations will be made as will be necessary to supplement the fund resulting from the bequest herein made.

**Item 1.**—I therefore give and devise to my executor hereinafter named, the aforesaid Fort Hill place, where I now reside, formerly the house of my father-in-law, John C. Calhoun, consisting of eight hundred and fourteen acres, more or less, in trust that whenever the State of South Carolina may accept said property as a donation from me, for the purpose of thereupon founding an Agricultural College, in accordance with the views I have hereinbefore expressed, (of which the Chief Justice of South Carolina shall be the Judge,) then my executor shall execute a deed of the said property to the said State and turn over to the same all property hereinafter given as an endowment of said institution, to be held as such by the said State so long as it in good faith devotes said property to the purpose of the donation: *Provided, however,* That this acceptance by the State shall be signified, and a practical carrying out be commenced, within three years from the date of the probate of this my will. During this term of three years, or as much thereof as may elapse before the acceptance or refusal of this donation, my executor shall invest the net produce of the land and other property, such invested fund awaiting the action of the Legislature, and to form a part of the endowment of said institution, if accepted, or to form a part of the endowment of the college or school hereinafter provided for, should the donation not be accepted by the State.

**Item 2.** The following named gentlemen, seven in number, shall be seven of the Board of Trustees, to wit: R. W. Simpson, D. K. Norris, M. L. Donaldson, R. E. Bowen, B. R. Tillman, J. E. Wannamaker, and J. E. Bradley; and the
State if it accepts the donation shall never increase the Board of Trustees to a number greater than thirteen in all, nor shall the duties of said Board be taken away or conferred upon any other men or body of men. The seven Trustees appointed by me, shall always have the right, and the power is hereby given them and their successors, which right the Legislature shall never take away or abridge, to fill all vacancies which may occur in their number by death, resignation, refusal to act, or otherwise. But the Legislature may provide as it sees proper for the appointment or election of the other six Trustees, if it accepts the donation. And I do hereby request the seven Trustees above named, or such of them as may be living, or may be willing to act, to meet as soon after my death as practicable, and organize and at once fill all vacancies that may have occurred, and exert themselves to effectuate my purposes as herein set forth. And I hereby instruct my executor to notify them of their appointment herein, as soon as practicable. The name of this institution is to be "The Clemson Agricultural College of South Carolina."

Item 4.—It is my desire that the dwelling house on Fort Hill shall never be torn down or altered, but shall be kept in repair, with all the articles of furniture and virtu, which I hereinafter give for that purpose, and shall always be open for the inspection of visitors; but a part of the house may be used by such of the Professors as the Trustees may direct.

Laws of Congress Relating to the College

AN ACT donating public lands to the several States and Territories which may provide Colleges for the benefit of agriculture and the mechanic arts.

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 a 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 eighteen hundred and sixty: 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 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 of the United States, but their assignees may thus locate said land scrip upon any of the unappropriated 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 State: 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 objects 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 Legislature 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, erection, preservation or repair of any building or buildings.

3. Any State which may take and claim the benefit of the provisions 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 number of acres proportionately diminished.

6. No State, while in a condition of rebellion or insurrec-
tion 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 receive 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 compensation shall not be thereby increased.

Sec. 8. And be it further enacted, That the Governors of the several States to which scrip shall be issued under this Act shall be required 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.

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 prin-
ciples 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 disease 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, uni-
formity 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 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 especially 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 succeeding 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 support.

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 University, College or institution not distinctively an Agricultural College or School, and such States shall have established or shall hereafter establish a separate Agricultural College or School, which shall have connected there-
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.

Be it 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 herein-after 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.

Approved August 30, 1890.

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Laws of State Relating to the College

In November, 1889, the General Assembly passed the following law, authorizing the establishment of the Clemson Agricultural College of South Carolina:

Section 1300. The Honorable Thomas G. Clemson having departed this life on the sixth day of April, A.D. 1888, leaving of force his last will and testament, which was duly admitted to probate on the twentieth day of April, 1888, in the office of the Judge of Probate of the County of Oconee, in the State of South Carolina, wherein he devised and bequeathed to his executor, Richard W. Simpson, of Pendleton, South Carolina, a tract of land situated on Seneca River, in Oconee County, in said State, containing eight hundred and fourteen acres, more or less, known as the Fort Hill plantation, as well as all his other property, both real and personal, except certain legacies in the said will mentioned and provided for, all in trust to convey to the State of South Carolina when the said State shall accept the same for the purpose of establishing and maintaining an Agricultural and Mechanical College upon the aforesaid Fort Hill plantation upon the terms and conditions of said will, the State of South Carolina hereby expressly declares that it accepts
the devise and bequest of Thomas G. Clemson subject to the
terms and conditions set forth in his last will and testament,
and the Treasurer of the State is hereby authorized and em-
powered to receive and securely hold the said property,
both real and personal, and to execute all necessary papers
and receipts therefor as soon as the said executor shall con-
vey and transfer the said device and bequest to the State.

Sec. 1301. The deed and transfer of said property to the
State having been duly executed and made by the said exe-
cutor, in accordance with the provisions of said will, an
Agricultural and Mechanical College in connection with the
aforesaid devise and bequest, to be styled "The Clemson
Agricultural College of South Carolina," and situated at
Fort Hill, in Oconee County, on the plantation so devised;
in which College shall be taught all branches of study per-
taining to practical and scientific agriculture and other in-
dustries connected therewith, and such other studies as are
not inconsistent with the terms of the said will.

Sec. 1302. The said College shall be under the manage-
ment and control of a Board of thirteen Trustees composed
of the seven members nominated by said will and their suc-
cessors and six members to be elected by the Legislature in
Joint Assembly.

Sec. 1308. One-half of the Land Scrip Fund heretofore
vested by Section 1045 of the General Statutes (1882) in
the Board of Trustees of the University of South Carolina
is hereby vested in the six members of the Board of Trus-
tees of the Clemson Agricultural College elected by the Gen-
eral Assembly; and the State Treasurer is authorized and
required to issue a certificate of State stock in the sum of
ninety-five thousand nine hundred dollars, bearing interest
at the rate of six percentum per annum, payable semi-annu-
ally, to the said six members of the said Board of Trustees,
to be held as a perpetual fund, the capital of which shall
forever remain undiminished, the income of said fund to be
used by said Board of Trustees for the building and main-
tenance of the said Clemson Agricultural College, in accord-
ance with the purposes for which the said Land Scrip was
donated by the Act of Congress in relation thereto.

Sec. 1309. The annual grant of fifteen thousand dollars,
commonly known as the Hatch Bill fund, made to the State
of South Carolina by the Congress entitled "An Act to
establish agricultural experiment stations in connection with
the colleges established in the several States under the pro-
visions of an Act approved July second, eighteen hundred
and sixty-two, and of the Act supplementary thereto," ap-
proved March 2d, 1887, shall be and hereby is, withdrawn
from the control of the Board of Trustees of the University
of South Carolina, in whom it was vested by an Act entitled
"An Act to amend Chapter XX. of the General Statutes,
entitled 'Of the University of South Carolina,'" approved
December 22, 1887; and the said grant of fifteen thousand
dollars is hereby vested in the six members of the Board of
Trustees of the Clemson Agricultural College of South
Carolina chosen by the General Assembly; and an agricul-
tural experiment station shall be established in connection
with the said Clemson Agricultural College, and under the
direction of the Board of Trustees thereof, to be supported
by said grant according to the provisions of the Act of Con-
gress hereinbefore mentioned.

Sec. 1310. The Department of Agriculture of this State,
as heretofore constituted and provided for by law, is abol-
ished, and also the office of Commissioner of Agriculture for
this State.

Sec. 1311. All the powers, duties, rights and privileges
heretofore vested in and exercised by the Commissioner of
Agriculture and the Department of Agriculture of this State
are hereby vested in and devolved upon the Board of Trus-
tees of the Clemson Agricultural College of South Caro-
olina, except that said Board shall not have any rights, pow-
ers or privileges in reference to or in connection with the management and control of the rights and interests of the State in the phosphate rock or phosphatic deposits in the navigable streams and marshes thereof.

Sec. 1319. All the privilege tax on fertilizers heretofore required to be paid to the Commissioner of Agriculture shall in the future be paid to the Treasurer of the State, subject to the order of the Board of Trustees of the Clemson Agricultural College of South Carolina; and so much of the money so received as shall be necessary to defray the expenses of the Board in performing the duties now by this Chapter devolved upon them shall be thus used, and the balance shall go to the said College, for its erection and maintenance.

Sec. 1320. A municipal corporation is hereby created, known as Clemson College, the limits of which shall consist of all the lands belonging to the said College and cover all the territory included in a circle formed with the College building as a center, with a radius of five miles, thus making the diameter of the circle ten miles, within which boundaries the jurisdiction of the corporation shall extend. No dispensary shall ever be located at Calhoun.

The General Assembly also passed the following law in reference to the appropriation made by Congress under the provisions of the Act approved August 30th, 1890:

Sec. 1299. All sums which shall be received by the State from the United States Government, under the provisions of the Act of Congress approved August 30th, 1890, entitled "An Act to apply a portion of the public lands to the more complete endowment and support of colleges for the benefit of agriculture and mechanic arts established under the provisions of an Act of Congress approved July 2d, 1862," shall be equally divided between the Colored Normal and
Industrial College and Clemson Agricultural College to the purposes specified in said Act.

The College first opened its doors to the admission of students July 6, 1893, and a large number of boys applied for entrance. Each year since that date, the institution has steadily grown in popularity with the people and has justified the wisdom of the founders in building not only for the benefit of the industrial classes, but for the entire people of the State of South Carolina.

The object of the College, in conformity with the Acts of Congress and of the State Legislature, is to give practical instruction in agriculture and in the mechanic arts. To accomplish this object in its highest sense, careful instruction is given in the principles and applications of the sciences bearing upon agriculture and mechanics, and to give the breadth and culture necessary for a rounded education, courses are provided in history, mathematics, economics and English.

It is considered of the utmost importance that students be taught, not only theoretical methods, but practical work in these methods. To this end, much time is devoted to laboratory and shop-work, field-instruction and other practical exercises, as to lectures and recitations.

Clemson College is not only engaged in providing courses of instruction for the youths of the State, but under the laws of South Carolina it is conducting work of great importance to the farmers, fruit growers, and people engaged in animal industry. There are four departments of experimentation and inspection inaugurated by the Board of Trustees:

1. Experiments in Agriculture (State Experiment Station).
2. Inspection of Fertilizers.
3. Veterinary Inspection.
4. Entomological Inspection.

The first of these divisions is devoted to experiments in subjects relating to investigations of the chemical compositions of plants, rotation experiments, &c.; plant breeding; study of forage plants for hay and pasturage; plant diseases; diseases of animals such as tuberculosis, Texas fever, glanders; feeding of pigs; general dairy experiments; insects injurious and beneficial to plants; studies of varieties of fruits; methods of pruning grape vines.

Although the Station was established for the benefit of the farmers and all the energies of the station are directed for the purpose of carrying out the intent of the law in this regard, still the students of the College are allowed to watch the progress of the experiments, and much of value is obtained by them in addition to the prosecution of the regular courses of study in the College.

The second division, viz: the inspection of fertilizers, is conducted by the Board of Trustees for the protection of the farmers in the State against the introduction of fraudulent brands of fertilizers. The inspectors are appointed by the Board of Trustees and the entire work of issuing tags, the analysis of samples and the enforcement of the law is in the hands of the Board of Trustees of Clemson College. After paying the expenses required for conducting this inspection, all the surplus money is turned over to the College for running expenses and equipment.

The Veterinary inspection is also in the hands of the Board of Trustees.

On the 19th of February, 1901, the General Assembly passed an Act empowering the Board of Trustees of Clemson College to promulgate and enforce rules and regulations for the guidance of the Veterinarian of said College in the treatment or destruction of animals affected with contagious diseases, and to prescribe the powers of the Veterinarian whenever such diseases appear in any part of the State. In
view of the frequent appearance of glanders and other contagious diseases in the State, this law is wise, and great good will result therefrom.

The Entomologist is required by the State law to inspect all nursery stock coming into the State and to prevent the ravages of insects as far as possible.

On the 19th of February, 1901, the General Assembly passed an Act requiring the Board of Trustees of Clemson College to designate three of their number, to be known as the State Board of Entomology. To the said Board was given full power to adopt rules and regulations governing the inspections relative to the sale and transportation of trees, plants, shrubs, cuttings, buds, vines, bulbs, or roots that they may deem advisable to prevent or remove or destroy any insect pests or plant diseases in the State. The Board was also given power to appoint an Entomologist, who should be a skilled Horticulturist, and Assistant Entomologist, if, in their judgment, it would be impossible for the Entomologist to discharge the duties hereby devolved upon him. Such an Entomologist was also given the powers of an inspector with authority to visit in sections of the State where insects injurious to plants are believed to exist, and to determine whether such plants should or should not be destroyed.

**Free Analyses, Information, Etc.**

The various departments of the College and Experiment Station will furnish, free of charge, advice and information on any topic pertaining to general agriculture, horticulture, botany, entomology, veterinary science, dairying, stock breeding, etc.; also analyses of fertilizers, marls, waters and other substances, assays of ores, determination of rocks and minerals, tests of bricks, cements, building stones, illuminating oils, calibration of electrical instruments, etc.

The departments cannot undertake to analyze stomachs or other parts of poisoned animals, make tests for poisons.
All inquiries and requests should be addressed to the President, giving explicit account of conditions, difficulties, etc., as far as possible, and the matter will be referred promptly to the proper department for further correspondence. Before sending samples of any kind for examination or analysis, it is best to write for instructions, and thus avoid trouble and delay.

**Location**

The College is located on the dividing line between Oconee and Pickens Counties, in the picturesque foot-hills of the Blue Ridge. It has an elevation of 900 feet above sea level, and commands an excellent view of the mountains to the north and west, some of which attain an altitude of nearly 5,000 feet. The climate is invigorating and healthful, and the surroundings are in every way favorable to the highest physical and mental development. The buildings are located on the old Fort Hill homestead of John C. Calhoun.

The College is one mile from Calhoun, a station on the main line of the Southern Railway, and two miles from Cherry's, on the Blue Ridge Railroad. By means of these roads and their connections, the college is easily accessible from all parts of the State. It is also connected by telephone with Calhoun and Pendleton, and thence by telegraph with all parts of the country. The postoffice is conveniently situated on the campus, and receives five daily mails.

**College Grounds and Buildings**

**Grounds.**—The College grounds occupy 1,122 acres of land, including the campus, sites of buildings and residences, and grounds for military drill and outdoor athletics, the farm and Experiment Station grounds. The farm is provided with barns, silos and all the other necessary equipment for first class work in farming operations. The campus, about 200 acres, is laid out in walks, drives and lawns, and is shaded by a beautiful grove of native forest trees.
In memory of the lamented R. T. V. Bowman, late instructor in forge and foundry work, the athletic and parade grounds have been named “Bowman Field.”

The Main Building is a three-story brick structure, 130x140 feet, trimmed with gray sandstone. It contains twenty-two rooms, including recitation rooms, library and reading room, literary society halls, laboratories for botany, entomology, physics and mineralogy, besides the offices of the President, the Commandant, the Secretary and Treasurer, and Secretary Fertilizer Control. Adjoining this building is Memorial Hall, the College Chapel, which has a seating capacity of 1,000. It is used for religious purposes and an assembly room.

The Mechanical Building is a substantial brick structure containing about 30,000 square feet of floor space. On the first floor are the mechanical laboratory, machine shop, forge shop, foundry, and the power and light station. On the second floor are the offices and recitation rooms, while the wood shop occupies the whole of a two-story wing, 45x100 feet. The third floor is entirely occupied by the division of drawing.

The Chemical Laboratory consists of two buildings. One is a two-story brick structure, 50x80 feet, covered with slate, and finished inside with Southern pine. Overlapping this at one corner, and connected with it, is a new and somewhat similar building, 53x86 feet, of modern style and handsome design. This double building constitutes a commodious structure adequate to all the needs of the department.

The Textile Building is a two-story brick structure with basement, of modern cotton mill design, protected from fire by automatic sprinklers and a 10,000 gallon water tank in the tower. The first floor is occupied by recitation rooms, card-
JOHN C. CALHOUN'S MANSION ON THE COLLEGE CAMPUIS
ing and spinning rooms, and office. On the second floor are recitation rooms, the designing and weaving departments. In the basement are located the dyeing, bleaching and printing machinery.

**Agricultural Hall.**—The Board of Trustees at their last meeting in March, 1903, appointed a building committee with the authority to select plans and make estimates for an Agricultural Hall, which the Board contemplates erecting within the very near future. This building will provide for the accommodation of the Agricultural Department and its divisions of agriculture, horticulture, botany, bacteriology, entomology and zoology, geology and mineralogy, dairying and animal husbandry, veterinary science, poultry industry and the general museum of the College.

The Cadet Barracks comprise two large brick buildings. One is three stories high and contains one hundred and forty-eight rooms for students, a dining hall 134 by 44 feet, and a kitchen 50 by 37 feet. The other building is 199 by 42 feet, and contains 82 rooms. These buildings are heated by steam and lighted by electricity, and have an abundant supply of pure spring water. The rooms in the barracks are furnished with single width iron cots and other necessary appointments. The dining hall is well supplied with table linen, silver ware, and china. The kitchen is furnished with modern culinary appliances.

The bath rooms and closets are located in brick buildings apart from the barracks, and connected with them by covered gangways.

The Electrical Instrument Laboratory is a brick building of special design. It is arranged especially for delicate instrument work.

The Dynamo Laboratory is a modern brick structure, 37 x 80 feet. Besides containing the dynamo electric machin-
ery for instructional use, it also contains the electrical engineering lecture room.

The Dairy Building is a wooden structure constructed especially to illustrate the most approved methods of dairy practice.

The Veterinary Hospital is a two-story frame building, 30x48 feet, with a basement 18x30 feet. It contains a dissectioning room, drug room, an office, feed rooms, and apartments for an attendant.

The Hospital, located about a quarter of a mile from the barracks, is a wooden building, especially designed for the purpose. It is lighted by electricity, and has a thorough sewerage system. The hospital is in the immediate charge of the college surgeon, who is assisted by an experienced matron and nurses, thus ensuring the best personal attention to each patient.

The Calhoun Mansion, the former residence of John C. Calhoun, is kept in honor of his memory, in accordance with the provisions of Mr. Clemson’s will.

Residences.—Nine two-story brick buildings, nine six-room cottages, and twenty-six smaller houses furnish residences for professors and other officers of the college.

Clemson Club Hotel.—The College Hotel, a frame building, situated on a hill, overlooking the campus, is operated as a club by some members of the faculty. In addition to furnishing a home for the members of the club, it is open the entire year to a limited number of transients.

The Laundry is a brick building specially constructed and fitted with the improved machinery of a modern steam laundry. It is operated exclusively for students.

Experiment Station Offices.—A wooden building,
containing offices, a library, and storage and seed rooms, is provided for the use of officers of the Experiment Station.

Farm Buildings.—The College is provided with commodious barns and other farm buildings of modern design, which are described more fully in connection with the equipment for instruction in agriculture.

The Poultry Yards are supplied with incubators, brooders and other modern appliances. There are thirty-six pens, 20x42 feet, each containing a house 6x8 feet. For every four pens there is a run 80x150 feet, all enclosed with poultry cabled wire.

Water Supply

There are two sources from which water is obtained. The general supply is collected from springs through iron pipes into a reservoir, from which it is pumped into a standpipe one hundred feet high, whence it is distributed.

Drinking water is pumped from a bold spring, in a continuous stream, directly into the barracks. It is by this means furnished fresh, pure and cold.

The waste water is used for flushing the sewer pipes, which empty into the Seneca River more than half a mile away.
DEPARTMENTS OF THE COLLEGE

COURSES AND FACILITIES
FOR INSTRUCTION
Departments of the College

The College is divided into seven departments, and presiding over each is a Director who has general supervision of all the work and interests of his department. The divisions are the chairs of the College which are occupied by the Professors, Associate and Assistant Professors, Instructors and Assistants. The following shows this classification of the work of the College:

1. Agricultural Department

1. Agriculture,
2. Geology and Mineralogy,
3. Horticulture,
4. Veterinary Science,
5. Zoology and Entomology,
6. Dairying and Animal Husbandry,
7. Botany and Bacteriology,
8. Poultry.

2. Mechanical and Electrical Department

1. Electrical Engineering,
2. Mechanical Engineering,
3. Drawing and Designing,
4. Forge and Foundry,
5. Woodwork,
6. Machine Shop,
7. Physics.

3. Chemical and Scientific Department

1. Chemistry and Metalurgy.
4. Textile Department
1. Carding and Spinning.
2. Weaving and Designing,

5. Academic Department
1. English,
2. History,

6. Military Department
1. Theoretical and Practical instruction in Military Science and Tactics.

7. Preparatory Department
Laboratories and Facilities for Instruction

Clemson College is well equipped with laboratories for the successful prosecution of every subject relating to biological sciences, textile industry and mechanic arts. The student is offered excellent facilities for acquiring knowledge of a number of the leading professions in agriculture, mechanical and electrical engineering, civil engineering, textile industry, chemical and natural sciences. The institution now possesses facilities for giving instruction in the following laboratories:

1. *Agriculture.*—The farm and pastures connected with this division of the agricultural department, consist in the aggregate of more than 500 acres, and they are equipped with cow barns furnished with various forms of stanchions, mule barns and silos, and cattle of the best breeds, thus giving special advantages to the students in agriculture to derive instruction in reference to this important division of farm life.

2. *Horticulture.*—There is an experimental garden, consisting of five or six acres, with twenty acres in vineyards, orchards and small fruits. There is connected with this division a green-house 21x140 feet, heated with hot water.

3. *Veterinary Science.*—The building for this laboratory is 48x65 feet, provided with steam heat and electric lights, water, gas and all of the necessary furniture. This laboratory is provided with facilities for clinic practice and clinics are given at stated periods for the benefit of the farmers as well as for the students. The Veterinary hospital contains besides the offices, stalls, feed bins, and apartments for dissecting and horse-shoeing. One of the best revolving operating tables and a supply of surgical instruments and appliances places this laboratory in a position to furnish
instruction of special importance to students in veterinary science.

4. Geology and Mineralogy.—The laboratory is well supplied with specimens of minerals, for lecture illustration and for blowpipe practice. There are many specimens of rocks and fossils. In connection with this laboratory there is a petrographic microscope and a photomicrographic camera and all important accessories, 20-inch relief globe, a set of geographical and geological relief models and several hundred lantern slides.

5. Zoology and Entomology.—The laboratory of this division occupies a room on the second story of the main building. It is equipped with simple and compound microscopes, microtomes, dissecting instruments, photographic outfit, stereopticon, lantern slides and charts. The entomological cabinet contains a large number of injurious and beneficial insects, and this cabinet is still growing.

6. Botany and Bacteriology.—This laboratory is also located in the main building in the third story. It has a northern exposure which makes it especially suitable for work with the microscope. In this laboratory are to be found simple and compound microscopes in sufficient numbers for a class of twenty-two. All of the necessary apparatus and appliances for satisfactory work in botany and bacteriology are to be found in this laboratory. A creditable beginning has been made in the installation of an herbarium. This collection includes plants from the State of South Carolina, also some received by exchange and about twenty-five hundred mounted specimens donated by Dr. A. P. Anderson.

7. Dairying and Animal Husbandry.—The dairy building is provided with steam plant and water works, and everything required for making butter and cheese. In this labor-
atory are located the leading makes of cream separators, churns, and milk-testers. A new barn has just been completed provided with modern apparatus and conveniences for the proper handling of cattle, and the following breeds of cattle have been recently purchased and placed at this barn for experimental purposes: Ayrshire, Devon, Jersey, Hereford, Polled Angus, Polled Durham, Short-horn (bare-faced dairy strains), Guernsey, Holstein.

8. Poultry Industry.—The poultry yards are provided with incubators, brooders, and other appliances for the proper raising of chickens. There are 36 pens 20x32 feet each containing a house 6x8 feet. For every four pens, there is a run of 80x150 feet, all enclosed with poultry cabled wire.

9. Electrical Laboratory.—A brick building is designed especially for the delicate electro-magnetic work, in which there is no iron, steel or other magnetic substances used in its permanent construction. This building is equipped with all standard instruments of the best approved pattern for high grade electric work. For a detailed description of these instruments and appliances, see account given in another portion of this catalogue.

The Dynamo Laboratory.—In connection with this division is another building in which the dynamo electric machine is installed. Here may be found direct current generators, direct current motors, direct current instruments, arc lighting apparatus, alternating current apparatus. There is also attached to this laboratory a dark room containing a complete outfit for high potential, high frequency and X-ray work, and a Deshler-McAllister central station type photometer with rotating stand for incandescent lamp testing.

10. Mechanical Laboratory.—This laboratory occupies a room 41x45 feet, and contains the following equipment:
For steam engineering: 15-horse power horizontal, locomotive type boiler; 6-horse power vertical boiler; Erie 6-horse power plain slide-valve steam engine; 6-horse power vertical steam engine built in the shops; Corliss cross-compound condensing steam engine arranged so that either side may be run condensing or non-condensing and each side independent of the other; Wheeler surface condenser with combined air and circulating pumps; set of steam-gauge testing apparatus; Carpenter's separating steam calorimeter; two throttling steam calorimeters; five steam engine indicators of various makes; two standard injectors. For hydraulic engineering: two hydraulic rams; Pelton water motor; power triplex pump; three duplex pumps of different makes; three weirs; recording altitude gauge; 6 pressure and altitude gauges. For compressed air: Clayton air compressor with jacketed cylinders; improved air motor. For fuel and lubricants: Carpenter's fuel calorimeter, with scales, balances, and oxygen generating devices; standard viscometer. For testing building materials: 100,000-pound Olsen automatic vertical testing machine driven by 5-horse power Westinghouse electric motor, and fitted for tension, compression, and transverse testing; Fairbank's cement testing machine, 3,000-pound transverse testing machine. The laboratory also contains a 5-horse power Otto gasoline engine, an Ericsson hot-air engine, a 6-horse power transmission dynamometer, graduated to read horse power direct and built by students, and an assortment of standard thermometers, weights and measures. The apparatus is so arranged that any of it may be used for separate or combined tests, or for any original investigations.

11. Drawing.—In this laboratory all students pursuing courses in civil engineering, mechanical and electrical engineering are taught drawing and designing. The drawing rooms occupy the entire third floor of the mechanical build-
ing. In these rooms are to be found a good selection of drawing instruments with cases for the instruments, drawing boards, and T-squares for over 200 students.

12. *Wood-work.*—The wood shop occupies the two-story wing on the east side of the Mechanical Engineering building, 45x100 feet. The lower floor contains the Freshman Class room, equipped with fifteen work benches and sets of tools, six turning lathes, with tools for each, and other tools for hand work. On this floor is also the planing mill machinery, consisting of a double roll planer, power rip and cut-off saws, band saw, scroll saw, 16-inch jointer, moulding machine, mortising machine, tenoning machine, emery grinder, lathes with 12-foot bed, etc.

The upper floor is devoted to the work for the Sophomore Class, and is fitted up with fifteen work benches and sets of tools, six 10-inch turning lathes, one large pattern lathe, one combination saw and boring machine, one double-headed shaper, with a full set of cutters, one power carving machine, jig saw, one universal trimming machine, special door and sash clamps, steam glue pots, mitre cutters, etc.

Power is supplied by electric motors conveniently located in the various rooms. A large lumber yard and dry-kiln provide seasoned lumber at all times.

13. *Machine-work.*—The machine shop is located in the southwest wing of the Mechanical building, and contains eighteen benches, with vises, 110 kits of tools and the following machine tools: 1 18-in.x12-foot engine lathe; 1 18-in.x8-foot engine lathe; 3 14-in.x6-foot engine lathes; 4 14-in.x6-foot Lodge & Shipley lathes; 1 10-in.4-foot F. E. Reed pattern maker’s lathe; 1 15-in.x8-foot speed lathe; 1 18-in. drill press; 1 28-in. back geared drill press; 1 22-in.x22-in.x6-foot Powell planer; 1 Cincinnati cutter and tool grinder; 1 15-in. Gould and Eberhardt crank shaper; 1 dry emery grinder; 1 12-in. power hack saw; 1 36-in. grind-
stone; 1 22-in. Leland and Faulconer wet emery tool grinder; 1 American twist drill grinder; 2 14-in.x6-foot F. E. Reed compound rest engine lathes; 2 14-in.x6-foot Hendey compound rest engine lathes; 1 10-in. clotting machine, built by New Haven Mfg. Co.; 1 fan; 1 forge. The tool room in connection with the shop contains all tools necessary for use with the machines.

14. Forge and Foundry.—Forge Shop.—This is a room 37x60 feet, situated in a wing of the Mechanical building. It is equipped with 18 Buffalo down draft forges and steel-faced anvils, with sets of hammers, tongs, swages, fullers, flatters, etc. Continuous blast is furnished by a Buffalo blower driven by a 15 H. P. electric motor, the down draft being produced by a 60-inch Buffalo exhaust fan. The shop is also supplied with vises, swage blocks, emery wheel, bending cone, drill-press, bolt shears, &c.

Foundry.—This building occupies a space 43x76 feet. It is equipped with a 26-inch Victor Collian cupola, a Millett's improved core oven, a two-ton post crane, 8 improved moulder's benches, an 18-inch brass furnace, with its usual complement of crucibles, tongs, etc., full sets of moulder's tools for the accommodation of 20 students, besides the usual accessories to the foundry, such as ladles, flasks, etc.

15. Physical Laboratory.—In this laboratory the student performs all the experiments illustrating the lectures and the text-book work in the recitation room. This division of the College is equipped with apparatus for both the lecture and experimental work of a general course in Physics.

16. Civil Engineering.—All of the necessary instruments for field work including vernier compasses, level, transit with solar attachment and stadia, telescope, plane-table, leveling rods, Gurley's clinometer reading to degrees, chains, steel tape flag poles and other accessories.
17. Chemical Laboratories.—On the first floor of the old building, which is used for academic work, there are five rooms. Two of these, connecting with each other, are employed as a laboratory for the Agricultural Seniors. Of the other rooms on this floor, one is a laboratory for postgraduate students and one a balance room, while the third is reserved for such use as the ever increasing demands upon the Department may require.

On the second floor of this building, there are two large laboratories, one for the Juniors in Analytical Chemistry, the other for the Sophomores in General Chemistry. A third and smaller room is used as a balance room.

The Junior laboratory will accommodate thirty-six students, the Sophomore laboratory, sixty students at a time. The laboratories are all provided with hoods for carrying on noxious gases, convenient working tables, water, gas, electric lights, and all necessary appliances for experimental work.

The basement of the building is used for assaying, for the preparation of distilled water and for storage.

On the first floor of the new building there are nine rooms, all of which are appropriated to the chemical work of the State and of the Experiment Station.

On the second floor of this building are seven rooms; a lecture room, and six smaller rooms which are used for recitations, cabinets, apparatus, chemicals, library and Professor's laboratory.

An electric motor supplies the power which drives the machinery for grinding and pulping samples of vegetable substances.

18. Laboratories in Textile Industry.—In this department are laboratories for practical instruction in carding and spinning, designing, Textile chemistry and Dyeing. The student is carried through a complete course of work from handling the raw material, opening and mixing, carding,
spinning and weaving. The designing of the special pattern represented in the cloth is accomplished by the student on paper and it is then worked into the cloth on the loom. In the dyeing room of this department the course in organic chemistry is designed to introduce the student to the scientific methods of manufacturing dyes and the general use of coloring matters found in the factories where colored goods are manufactured.

The textile building is equipped with the necessary machinery of approved patterns to be found in the best mills of the country. For a detailed account of these machines see elsewhere in this catalogue under the head of the description of work in the department.

19. Military Tactics.—Instruction in this department is in accordance with the Act of Congress, and the course consists of drills in the school of the soldier. The department is supplied with a full stand of guns and accoutrements, and two rifled artillery pieces.
# Course in Agriculture

## Freshman Class

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**Sophomore Class**

| Mathematics                  | 1st Term 5     | Surveying                 | 1st Term 0     |
|                              | 2nd Term 4     | Drawing Freehand          | 2nd Term 0     |
| English                      | 1st Term 3     | Chemical Lab              | 2nd Term 3     |
|                              | 2nd Term 3     | Animal Husbandry          | 2nd Term 0     |
| Physics                      | 1st Term 3     | Agriculture               | 2nd Term 2     |
| Agriculture                  | 1st Term 2     |                           | 2nd Term 3     |
| History                      | 1st Term 3     |                           | 2nd Term 2     |
| Physiology                   | 1st Term 0     |                           | 2nd Term 2     |
| Animal Husbandry             | 1st Term 2     |                           | 2nd Term 1     |

**Junior Class**

| English                      | 1st Term 2     | Chemical Lab              | 1st Term 6     |
|                              | 2nd Term 2     | Horticulture              | 2nd Term 0     |
| Chemistry                    | 1st Term 2     | Agri. Soil Phys           | 2nd Term 2     |
| Horticulture                 | 2nd Term 2     | Botany                    | 2nd Term 0     |
| Botany                       | 1st Term 2     | Zoology                   | 2nd Term 0     |
| Zoology                      | 2nd Term 2     | Veterinary Science        | 2nd Term 0     |
| Veterinary Science           | 1st Term 2     | Dairying                  | 2nd Term 3     |
| Dairying                     | 2nd Term 0     | Mineralogy                | 2nd Term 2     |
| Military Science             | 1st Term 1     |                           | 2nd Term 2     |

**Senior Class**

| English                      | 1st Term 2     | Chemical Lab              | 1st Term 6     |
|                              | 2nd Term 2     | Bacteriology              | 2nd Term 2     |
| Political Economy            | 1st Term 3     | Entomology                | 2nd Term 2     |
| Chemistry                    | 2nd Term 2     | Horticulture              | 2nd Term 0     |
| Geology                      | 1st Term 3     | Veterinary Science        | 2nd Term 3     |
| Animal Husbandry             | 2nd Term 2     |                           | 2nd Term 3     |
| Bacteriology                 | 1st Term 2     |                           | 2nd Term 0     |
| Entomology                   | 2nd Term 0     |                           | 2nd Term 2     |
| Veterinary Science           | 1st Term 2     |                           | 2nd Term 2     |
| Military Science             | 1st Term 1     |                           | 2nd Term 1     |
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Drill, 45 minutes.
# Course in Biology

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## Course in Mechanical and Electrical Engineering

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## Course in Civil Engineering

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### Sophomore Class

| Mathematics                        | 5              | 4        |         | Surveying                        | 0              | 2        |
| English                            | 3              | 3        |         | Drawing                           | 3              | 2        |
| Physiology                         | 0              | 2        |         | Woodwork                          | 3              | 3        |
| Chemistry                          | 3              | 3        |         | Foundry                           | 3              | 3        |
| Physics                            | 2              | 2        |         | Chemical Lab                      | 4              | 4        |
| History                            | 3              | 2        |         | Descriptive Geo                   | 0              | 2        |
|                                    |                |          |         | Drill, 45 minutes                |                |          |

### Junior Class

| Mathematics                        | 5              | 5        |         | Drawing                           | 3              | 3        |
| Physics                            | 2              | 2        |         | Civil Eng. Field Work            | 4              | 4        |
| Civil Eng.                         | 3              | 3        |         | Machine Shop                      | 3              | 3        |
| Mechanics                          | 2              | 2        |         | Mineralogy                        | 2              | 2        |
| English                            | 2              | 2        |         | Physical Lab                      | 3              | 3        |
| Military Science                   | 1              | 1        |         | Drill, 45 minutes                |                |          |

### Senior Class

| Civ. Engineering                   | 5              | 5        |         | Civil Engineering Field Work      | 6              | 6        |
| Mechanics and Mechanical Eng.      | 5              | 5        |         | Drawing and Designing            | 3              | 3        |
| Geology                            | 3              | 0        |         | Mechanical Lab                   | 3              | 3        |
| English                            | 2              | 2        |         | Drill, 45 minutes                |                |          |
# Course in Metallurgy

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<tbody>
<tr>
<td>Physics</td>
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<tr>
<td>Physiology</td>
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<tr>
<td>Chemistry</td>
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<tr>
<td>English</td>
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<td>3</td>
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<tr>
<td>History</td>
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<td>2</td>
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</tbody>
</table>

| Surveying                           | 0              | 2        |         |
| Drawing                              | 2              | 2        |         |
| Mech. Drawing                       | 3              | 2        |         |
| Chemical Lab.                       | 4              | 4        |         |
| Foundry                             | 3              | 3        |         |
| Drill, 45 minutes.                  |                |          |         |

## Junior Class

<table>
<thead>
<tr>
<th>Chemistry</th>
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<tbody>
<tr>
<td>Physical Lab.</td>
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<tr>
<td>Mineralogy</td>
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<tr>
<td>Geology</td>
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<tr>
<td>English</td>
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<tr>
<td>Military Science</td>
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<tr>
<td>Mechanics</td>
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<tr>
<td>Chemical Lab.</td>
<td>8</td>
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<tr>
<td>Metallurgical Design</td>
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</table>

| Metallurgy (Assaying)               | 0              | 4        |         |
| Drill, 45 minutes.                  |                |          |         |

## Senior Class

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<thead>
<tr>
<th>Chemistry</th>
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<tbody>
<tr>
<td>Econ. Geology</td>
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<td>3</td>
<td></td>
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<tr>
<td>Petrology</td>
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<td>Metallurgy</td>
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<tr>
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<tr>
<td>Chemical Lab.</td>
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<tr>
<td>Mechanical Lab.</td>
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<tr>
<td>Petrology</td>
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<tr>
<td>Geol. Field Work, equivalent to</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Thesis, equivalent to</td>
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<tr>
<td>Drill, 45 minutes.</td>
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</table>
# Course in Textile Industry

## Freshman Class

<table>
<thead>
<tr>
<th>Theoretical</th>
<th>Hours per week</th>
<th>Hours per week</th>
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</thead>
<tbody>
<tr>
<td>Mathematics</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>English</td>
<td>5</td>
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</tr>
<tr>
<td>History</td>
<td>3</td>
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<tr>
<td>Agriculture</td>
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<table>
<thead>
<tr>
<th>Practical</th>
<th>Hours per week</th>
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<tr>
<td>Woodwork</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Mech. Drawing</td>
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<td>3</td>
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<tr>
<td>Freehand Drawing</td>
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<tr>
<td>Forge Work</td>
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<tr>
<td>Drill, 45 minutes</td>
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## Sophomore Class

| Mathematics                          | 5              | 4              |
| English                              | 3              | 3              |
| Chemistry                            | 3              | 3              |
| Physics                              | 2              | 2              |
| History                              | 3              | 2              |

| Mech. Drawing                        | 3              | 2              |
| Foundry                              | 3              | 3              |
| Chemical Lab                         | 4              | 4              |
| Descriptive Geo.                     | 0              | 2              |
| Surveying                            | 0              | 2              |
| Drill, 45 minutes                    |                |                |

## Junior Class

| Mathematics                          | 5              | 5              |
| Textile Chem.                        | 2              | 2              |
| Carding and Spinning                 | 2              | 2              |
| Designing                            | 2              | 2              |
| English                              | 2              | 2              |
| Mechanics                            | 2              | 2              |
| Military Science                     | 1              | 1              |

| Chemical Lab                         | 4              | 4              |
| Carding and Spinning                 | 4              | 4              |
| Weaving                              | 3              | 3              |
| Machine Shop                         | 3              | 3              |

## Senior Year

| Textile Chem.                        | 2              | 2              |
| Carding and Spinning                 | 2              | 2              |
| Designing                            | 2              | 2              |
| Cloth Analysis                       | 2              | 0              |
| Jacquard Designing and Tie-ups       | 0              | 2              |
| English                              | 2              | 2              |
| Political Econ.                      | 0              | 3              |
| Mechanical Eng.                      | 3              | 0              |
| Military Science                     | 1              | 1              |

| Dyeing                               | 4              | 4              |
| Carding and Spinning                 | 4              | 4              |
| Weaving                              | 6              | 6              |
| Cam Drawing                          | 2              | 0              |
| Mech. Lab.                           | 0              | 3              |
Special Course in Textile Industry

First Year

<table>
<thead>
<tr>
<th>Theoretical</th>
<th>Hours per week</th>
<th>Practical</th>
<th>Hours per week</th>
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<tr>
<td>Textile Chem.</td>
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<td>Chem. Laboratory.</td>
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<tr>
<td>Carding and Spinning</td>
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<td>Carding and Spinning</td>
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<tr>
<td>Designing</td>
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<td>Weaving</td>
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<td>Mechanics</td>
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<td>Freehand Drawing</td>
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<td>Mech. Drawing</td>
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<td>Surveying</td>
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Second Year

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<tr>
<th>Theoretical</th>
<th>Hours per week</th>
<th>Practical</th>
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<tr>
<td>Textile Chem.</td>
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<td>Dyeing</td>
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<tr>
<td>Cloth Analysis</td>
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<tr>
<td>Jacquard Designing and Tie-ups</td>
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Three hours throughout session elective.
Instruction and Equipment

General Agriculture

Director Newman
Assistant Professor Benton

This study is pursued in all of the classes, commencing with the elementary principles in the Freshman year. During this year the instruction is confined to the application of fundamental principles which do not require a knowledge of the sciences related to agriculture, embracing a broad foundation for future study.

As the student progresses in the study of the natural sciences, the application of these sciences is taught in their relation to the art of agriculture, special stress being placed upon the protection, improvement, fertilization, and all manipulations of the soil in the preparation for planting and in the cultivation of crops.

The cultivation of each important crop is discussed in the concrete. Special attention is bestowed upon the grasses and their cultivation. The employment and management of labor, farm equipment, and farm management are also discussed.

Text-books used in Freshman Class: Elements of Agriculture, by J. B. McBryde; Principles of Agriculture, by L. H. Bailey.

Reference-books: Voorhees' First Principles of Agriculture, Storer's Agriculture, Experiment Station Bulletins, Leading Periodicals.

Equipment

The College has a large storage barn provided with silos, a cow barn furnished with various forms of stanchions, a mule barn provided with the most improved forms of stalls.
and feed-racks, implement and wagon sheds for storage of tools, etc., compost building for making compost in large quantities, and two large cribs for storage of corn.

Among agricultural machinery and implements may be mentioned the following: Self-binder, corn-harvester, Deer- ing ball-bearing mower, Osborne mower, self-dumping rake, check-row corn planter, Buckeye cultivator, B. F. Avery cul- tivator, Tower cultivator, disc-cultivator, spring-toothed harrow, smoothing harrows, various forms of pulverizers, manure-spread ing machines, fertilizer and grain drill, vari- ous forms of small fertilizer drills, Planet, Jr., drill, two Planet, Jr., plows, scientific mill, stone grist mill, Tornado ensilage cutter, small thresher, hand-gin, rock-crusher, road machine, three terrace levels, and a 10-kw. electric motor.

**Geology and Mineralogy**

**Professor Lewis**

**Junior Class**

**First Term.**—*Mineralogy.*—The elements of crystal- lography, with labora tory study of crystal forms by the use of models and natural crystals and the construction of simple crystal drawings; the chemical and physical properties of minerals; classification and description of minerals.

**Second Term.**—*Determinative Mineralogy.*—Practical study of the common minerals by determinative work in the laboratory, by comparison with the labeled specimens of the systematic collection, and by the use of unlabeled collections for practice in identifying minerals at sight.

**Agricultural Juniors**

**Both Terms.**—*Soil Physics.*—Practical studies of the constitution and physical properties of soils and their relations to heat, moisture, and air; determination of physical
conditions of soil best suited to retention of moisture, drainage, development of root structure, utilization of plant food, and growth of different species of plants; effects of cultivation on the mechanical condition of soils.

Junior Class in Metallurgy

Both Terms. — Geology. — A broad course in the elements of general geology. Special stress is laid on structural and dynamical geology in their relations to the formation and metamorphism of rocks and the deposition of minerals and ores. The course also includes a historical study of the continent of North America, with brief references to other countries.

Agricultural Seniors

Both Terms. — General Geology. — The elements of dynamical, structural, and historical geology. The influences of geologic phenomena on man are emphasized, particularly in the study of rock-decomposition and the formation of soils, the processes of erosion and deposition, and the resultant topographic forms. In historical geology special attention is given to the development of the North American continent.

Second Term. — Economic Geology. — A supplementary course of about twenty lectures given upon the completion of the text-book course in general geology. Brief notes upon the origin and general characters of ore-deposits, the ores of the more useful metals, the origin and distribution of the principal non-metallic minerals of value.

Engineering Seniors

First Term. — Geology. — This course is designed to furnish a general knowledge of the science, with special emphasis on dynamical and structural geology in their relations to engineering materials and practice. The course is fully illustrated by maps, specimens, and lantern slides.
Senior Class in Metallurgy

First Term.—Petrology.—The origin, structure, composition, distribution, and modes of occurrence of the various families of rocks. Practical work in methods of investigation in field and laboratory, including an introduction to the use of the petrographic microscope.

Both Terms.—Economic Geology.—A general survey of geological products of value, metalliferous and non-metalliferous, including the study of their origin and nature, their geographic distribution and geologic modes of occurrence. The course deals particularly with the economic deposits of North America, but references are frequently made to those of other countries for purposes of comparison and for the elucidation of questions of origin, etc.

Equipment

The systematic collections contain over a thousand labeled specimens of rocks, minerals, and fossils. These are exhibited in glass cases in the laboratory, and are available to students. There is also an unlabeled collection of minerals for practice in identifying the more important species at sight, and unlabeled collections of the most useful minerals are provided for determinative work in the laboratory.

The laboratory is supplied with water and gas and all apparatus and reagents necessary for the determination of minerals by means of their chemical and physical properties. A chemical balance is also provided, and a petrographic microscope, with photomicrographic camera and all important accessories.

The class-room is supplied with large physical wall maps of the world and of all the continents, a select series of topographic contour-maps furnished by the United States Geological Survey, an 18-inch terrestrial globe, a 20-inch relief globe, a set of geological and geographical relief models, and several hundred lantern slides.
The library of the department contains the principal standard works of reference in geology and mineralogy, and receives all publications of the United States Geological Survey as issued, including annual reports, monographs, geologic folios, and bulletins.

The laboratory for soil physics is provided with all apparatus necessary for performing experiments, making mechanical analyses of soils, moisture determinations, etc.

Veterinary Science

Associate Professor Nesom
Assistant Shealy

The object of this course is to acquaint the agricultural student with the elementary principles of anatomy and physiology, veterinary medicine and surgery. The time is too short to make professional veterinarians of those who take this study, but is sufficient to make them more intelligent stockmen when graduated.

The instruction begins with the second term in the Junior year of the Agricultural course and is given as follows:

Junior Class

Anatomy, Physiology and Histology of the domestic animals, two hours a week class room both terms and two hours a week laboratory second term. Texts, "A Manual of Veterinary Physiology," F. Smith; "Manual of General Histology," Wm. S. Gottheil.

Senior Class

First Term.—Surgery, Materia Medica and Pharmacy, two hours a week class room and three hours a week clinic and laboratory. Lectures on Surgery and Pharmacy. Text: "A Compend of Veterinary Materia Medica and Therapeutics," A. C. Hassloch.
SECOND TERM.—Lectures on the Principles and Practice of Veterinary Medicine, two hours a week and three hours a week clinic.

Only the more common diseases of farm animals can be considered during the limited time devoted to this study, but special attention is given to those diseases that occur in epizootic outbreaks. Among these may be mentioned glanders, anthrax, Texas fever, tuberculosis, cholera, sheep "scab," hydrophobia, and favus. Careful consideration is given to the bacteriological and parasitic agencies causing the diseases.

LABORATORY.—Laboratory work is given during the lectures to illustrate the structure of normal and pathologic tissues and the simpler reactions in chemical physiology. In pharmacy each student is required to compound a limited number of prescriptions.

CLINIC AND DISSECTION.—Every Monday afternoon a free clinic is held at the veterinary hospital. This is liberally patronized by the stockmen of the surrounding country, and affords the students ample practical work in surgical operations and the treatment of animal diseases. Advantage is taken of accidental material for post-mortem examination and gross dissection.

POST-GRADUATE AND SPECIAL WORK.—Graduates of this and other colleges and young men found proficient in the elementary branches of science and literature may receive special instruction. This work is designed as a preparatory course to entrance into a regular veterinary college. The special needs of each student are considered, and the work is planned to meet his individual case. The course taken here will shorten the time necessary for graduation from the leading veterinary colleges, whether the student desires to become a veterinary practitioner, government meat-inspector, or army veterinarian.
Equipment

The veterinary class-room and laboratory is about 30x50 feet, provided with steam heat, electric lights, water, gas, and the necessary furniture. It is amply supplied with stereopticon, microscopes, microtome, skeletons, anatomical specimens, plaster casts, chemicals and the best apparatus for technical work.

The veterinary hospital is a structure of modern design, 48x65 feet, containing rooms for office, drugs, dissecting and horse-shoeing, besides stalls, feed-bins, water supply and electric lights. One of the best revolving operating tables has been provided. The surgical instruments and appliances now on hand, with a few additions, would do credit to a regular veterinary college. A complete outfit for horse-shoeing is provided. A good stock of drugs and chemicals is kept on hand and prescriptions are filled on request.

Horticulture

ASSOCIATE PROFESSOR C. C. NEWMAN

The course in horticulture consists of horticulture proper, home gardening, truck farming, pomology, viticulture, canning and experiment work.

Instruction is given by text-book and lectures, covering the subject of horticulture in its comprehensive sense.

Instruction is given in Junior and Senior classes and is illustrated by practical exercises in the garden, the orchard, the vineyard and the greenhouse.

In the practical work, the student is required to labor, and is thereby taught by actual experience the use of tools, the proper mode of preparing, fertilizing and cultivating the soil; shipping, storing, and canning vegetables and fruits; training and pruning vines and trees; propagating plants by seeds, grafts, buds, layers, leaves, and division. Instruction is
also given in the making and use of hot-beds, cold-frames, mulching, etc., together with the art of forcing, crossing, and hybridizing, and the care of plants in the greenhouse.

**Equipment**

The equipment for practical instruction in horticulture consists of the following: canning outfit complete; greenhouse, 21x140 feet, heated by hot water; experiment garden, about five acres; orchard, vineyard, and plats of small fruits, twenty acres, and a small nursery.

**Zoology and Entomology**

**Associate Professor Chambliss**

The instruction in this division is largely conducted by the laboratory method with lectures and recitations, and is so given as to lead the student to observe and think for himself, as well as to secure a working knowledge of the science for practical purposes.

**Sophomore Class**

**Physiology.**—An elementary course in which the physiology of digestion, circulation and excretion will receive special attention. The instruction will serve as a basis for hygiene and as an aid to those who may teach in public schools.

**Junior Class**

**General Invertebrate Zoology.**—This course includes a general discussion of groups, and dissection of types, especially of the forms related to insects, and is further extended to lay a foundation for a knowledge of animal development. Animals of economic importance are given special attention.

**Books of Reference:** Invertebrate Morphology (McMurrich); The Riverside Natural History; Text-book of Zoology (Parker & Howell).
Senior Class

Economic Entomology.—By laboratory studies and field work, the students, in this course, will be made familiar with the most important injurious insects. For the systematic and biological work, a collection of one hundred species, with full notes on the habits of twenty-five, will be required. The practical work will consist of the preparation and application of insecticides.


Books of Reference: Insects Injurious to Fruits (Saunders) ; Economic Entomology (Smith) ; Guide to Study of Insects ; and a Text-book of Entomology (Packard) ; U. S. Government, Experiment Station and State Publications on Entomology.

Equipment

The Zoological and Entomological Laboratory is located in Agricultural Hall. The equipment includes compound and simple microscopes, an automatic laboratory microtome, dissecting instruments, camera, stereopticon, lantern slides and charts. The entomological cabinet contains a large number of injurious and beneficial insects of South Carolina. The students have access to a small but carefully selected entomological library.

Botany

Associate Professor Metcalf

Junior Class.—During the Junior year instruction is given in general botany. The flowering plants are first studied, and especial attention given to plant physiology; afterward a rapid survey of the whole plant kingdom is made by a study of types. While the work is necessarily very general, it serves to show the bearing of the results of mod-
ern botanical research on the problems underlying the cultivation of plants.

Senior Class.—The first half year is devoted to a general course in bacteriology. The nature and distribution of bacteria, the facts underlying the phenomena of decay and disease, the hygiene of contagious diseases, and the elaborate technique of practical work in the science, form the subject matter of the course.

The second half year is devoted to the study of the diseases of economic plants. The class first studies Pear Blight as a typical disease, producing the disease by inoculation and watching its progress and effect. Other diseases induced by plant parasites are then studied from the systematic standpoint of the parasite; the students are taught to recognize the more common diseases, particularly in the early stages; and the whole question of prevention and of practicable remedies is fully discussed.

Equipment

The botanical laboratories are located on the third and fourth floors of the main building. They contain a good equipment for such work as is given, including twenty-five dissecting microscopes, fourteen compound microscopes, student dissecting sets, student microtomes, Zimmermann microtome, embedding baths, balances, water still, incubator, Arnold and Koch sterilizers, autoclave, dry ovens, anaerobic apparatus, cameras for ordinary and photomicrographic work.

The students have access to a small botanical library.

A creditable beginning has been made in collecting a herbarium. This now includes plants collected in the State, plants received by exchange, and a donation of about twenty-five hundred mounted specimens from Dr. A. P. Anderson, which includes many species not present in the flora of South Carolina.
A complete collection of all economic plants grown within the limits of the State is contemplated; upon this a beginning has already been made.

**Dairy and Animal Husbandry**

**Assistant Professor Upton**

**Sophomore Class**

Stock Breeding.—A careful study of the different types of domestic animals is pursued, and the student is thoroughly drilled in the principles and methods of successful breeding, heredity, atavism, variation, selection, fecundity, influence of environment, in-breeding, cross-breeding, grading, influence of previous impregnation.

The different breeds of horses, cattle, sheep and swine are considered, and those best adapted to the South are discussed at length.

The College farm has a number of breeds of domestic animals which serve to illustrate the subject.

As a supplement to this work, the student is drilled in the use of the score-card, which fixes the different types and breeds firmly in his mind.

**Junior Class**

Students who take the course in Agriculture receive instruction in the formation and management of a dairy, care of the cows, and feeding for milk production. A short course for special students is in contemplation.

In the dairy building the instruction is supplemented by practical work in the care of milk, separation of cream, making butter and cheese, and testing milk and its various products.

The text-book used is Wing’s “Milk and its Products,” in
addition to which the latest methods are gleaned from the various experiment station bulletins.

Those wishing to take a short course in practical work can enter February 1st and continue for ten weeks, during which time instruction will be given similar to that in the regular course.

Students taking the short course must be employed as many hours per week as those in the regular course.

Board and tuition will be the same as for other students in the regular course.

Senior Class

Stock Feeding.—This course includes the following subjects: Laws of animal nutrition; composition of the animal body; fodders as a source of nutrients; digestion, resorption, circulation, respiration, and excretion; formation of muscle, flesh and fat; composition and digestibility of feeding stuffs, and their preparation and use; feeding for fat, for milk, for wool, for work and for growth.

The available feed-stuffs of the South are discussed at length. Henry's "Feeds and Feeding" is used as a textbook.

Equipment

The commodious dairy building has an independent steam plant and water works, and is supplied with everything needed for making butter and cheese on a factory and private dairy scale, including the leading makes of cream separators, churns, butter-workers, milk-testers. Students are thoroughly drilled in the use of this apparatus.

The Experiment Station has a new dairy barn, with silos and feed rooms to illustrate the sanitary production of milk and scientific feeding of cattle.
Poultry Industry

Assistant Watson

Instruction in this division will embrace a careful study of the origin, and the qualities of the different breeds of poultry, and the student is thoroughly drilled in the principles and methods of successful poultry breeding.

Instruction is given by lectures. Practical work will be done in caponizing, management of incubators and brooders, and judging of fowls by comparison and by score card system.

The Poultry Yards are supplied with incubators, brooders and other modern appliances. There are thirty-six pens, 20x32 feet, each containing a house 6x8 feet. For every four pens there is a run of 80x150 feet, all enclosed with poultry cabled wire.

Electrical Engineering

Director Riggs

Assistant Professor Kyser

Junior Year

Both Terms.—Three hours per week are devoted to the study of electricity and magnetism, and the elementary design of electro-magnetic mechanism. The work of this session is largely in laying a foundation for the more strictly engineering work of the Senior year.

Text-books—Thompson’s Elementary Lessons in Electricity and Magnetism, Electricity and Magnetism, Jackson.

Both Terms.—Laboratory Practice.—Three hours per week for the session are devoted to experimentally verifying fundamental electrical laws, measuring currents, electro-mo-
tive force, resistance, quantity, induction, capacity, permeability; calibrating instruments, etc.

*Reference books*—Ayrton's Practical Electricity; Stewart and Gee's Practical Physics; Nichols' Physics, Vol. I.; Henderson's Practical Electricity and Magnetism, Vols. I. and II.

**Senior Year**

**Both Terms.**—Five hours per week are given to the study and design of dynamo electric machinery. The second half session is devoted to the study of alternating currents, and their applications to light and power, special attention being given to polyphase systems, and apparatus.

A dynamo design, with complete set of drawings, is required of each student as part of the course.


**Both Terms.**—Laboratory Practice.—Three hours per week devoted to the care, management and testing of arc, incandescent and alternating current generators; direct current, synchronous and induction motors; arc lamps; transformers; calibration of station instruments, incandescent lamp photometry, etc.

**Equipment**

**Electrical Instrument Laboratory.**—This is a separate brick building, designed especially for delicate electromagnetic work—no iron, steel or other magnetic substances having been used in its permanent construction. It contains, in addition to all necessary elementary apparatus, the following instruments: Kelvin-Deka ampere balance, Kelvin four-coil astatic galvanometer, four D'Arsonval dead-beat galvanometers, large ring tangent galvanometer, three Elliott Brothers' standard resistance sets, Elliott Brothers' standard tangent galvanometer, Queen's standard ballistic galva-
nometer, Nalder Brothers’ sensitive galvanometer, Rowland-D’Arsonval ballistic galvanometers, Willyoung standard condenser, Becker’s chemical balance, Cahart-Clark standard cell, thermometers, Wheatstone bridges, storage and primary cells, etc.

Dynamo Laboratory.—To meet the demands of larger attendance and increased equipment, a new building has been provided in which is installed the dynamo-electric machinery. This building also contains a class room and a dark room for photometric work. It is a single story brick structure, 37x80 feet, with basement for supply rooms.

The first story is divided into a class room 25x35 feet, and a dynamo laboratory room 53x35 feet. The building is heated by steam and lighted by enclosed arc and incandescent lamps.

The lecture room has elevated seats and is equipped with a complete line of illustration models, apparatus and electrical instruments. It contains an electro magnet capable of supporting the weight of two tons.

The Dynamo Laboratory contains, in addition to rheostats, speed counters, switches, and other small apparatus, the following machines and instruments:

50 H. P. high speed McEwen automatic engine.


Direct Current Motors—15 and 10 H. P. Kester, three 1-6 H. P. Crocker-Wheeler.

Direct Current Instruments—Weston Laboratory Standard Voltmetre, set of Weston portables, Jewell Ammeter and Voltmetre, Weston Switchboard Ammeter and Voltmetre, Thompson Recording Watt Metre, etc., etc.


Co. 2 and 3 and 6 phase revolving field generator complete with marble switchboard and full set of indicating instruments.

7 1-2 K. W. Genl. Elec. Co. single, two and three phase rotary converter; 7 K. W. 3 phase converter (built by students.)

Genl. Elec. Co. 2 and 3 phase induction motors. Three, 3,000 Watt constant potential transformers. Assortment of small transformers, motors and models.

*Alternating Current Instruments*—Two Weston and one Genl. Elec. watt metre, Weston Standard A. C. volt metre, 6 Thompson inclined coil ammeters and volt metres, Cardew & Electrostatic volt metres, Kelvin ampere balance, Siemens electro-dynometre, Stanley hot wire ammeter.

*Miscellaneous*—Two Schaeffer & Budenberg tachometers, leading types of lightning arresters, fuse testing apparatus.

The dark room contains a complete outfit for high potential, high frequency and X-ray work, and a Deshler-McAllister central station type photometer, with rotating stand for incandescent lamp testing.

**College Power and Light Plant.**—The machinery in the dynamo laboratory is driven by the 50 horse power engine or two 20 horse power motors. Steam and electric power for these is furnished by the power plant situated in a neighboring building. This plant consists of an 85 horse power Corliss engine, driving a 40 kw. Westinghouse generator and a 30 kw. General Electric Company's multipolar generator. This station furnishes power to 20 motors, ranging from 3 to 30 horse power. These motors are used at different points on the College property for a variety of purposes, such as pumping water, driving agricultural machinery, supplying power for machine shop, wood shop, textile department, etc. Several of these are at a considerable distance from the power station, thus furnishing examples of electrical transmission of power. Two of these, 7 horse power each, were built
by students. In addition to power for driving motors, the same generators furnish electricity for lighting the barracks and other College buildings. Students have access to this plant, and are thus enabled to see the practical workings of a combined electric light and power plant, and to test its efficiency.

The aim of the course is to make practical as well as theoretical engineers.

Special Course

Requirements.—Students desiring to take a special course in electrical engineering should remember that no one can hope to become an electrical engineer who has not the necessary foundations in mechanical engineering, to which electrical engineering is the superstructure. Two-thirds of an electrical engineer's training must be mechanical. No special classes will be formed, and students desiring to enter the Junior Class will be expected to be prepared on elementary mechanical drawing, physics and chemistry, and on mathematics, through plane trigonometry. They will be expected to take with the Junior Class, in addition to their electrical studies, physics, mechanics, mathematics, mechanical drawing and machine shop work. Without these additional branches the student will not be prepared for the more strictly engineering work of the Senior year.

To enter the Senior Class, a student must be proficient in the work of the Junior year, in which physics and calculus are completed.

In addition to the electrical subjects prescribed for the Senior year, he must take—unless he is proficient along these lines—mechanics, mechanical engineering and laboratory, machine shop, drawing and machine design.

Students who are not prepared, or are not willing to take the other subjects necessary to successful study of electrical engineering, will not be permitted to take a special course in electrical work.
Physics

ASSOCIATE PROFESSOR POATS

The study of Physics is begun in the Sophomore year by all regular students, and completed in that year by those students taking Chemistry and Agriculture, and Textile Industry. All other regular students take Physics, both theoretical and practical, in the Junior year.

The instruction is by lectures and recitations, special stress being laid upon those principles and facts which are fundamental to the several engineering professions. The lectures and recitations are illustrated by numerous experiments before the class.

In the Physical Laboratory the student is taught to perform for himself all the experiments of a general laboratory course. The properties of matter, the laws of mechanics, heat, electricity, magnetism, light and sound are investigated. Students are required to make accurate and neatly written reports of all experiments.

Sophomore Class

First Term.—Properties of matter, physical measurements, mechanics of solids and fluids.
Second Term.—Heat, electricity and magnetism.
Text-book—Carhart and Chute’s Physics.

Junior Class

Both Terms.—Sound and light.
Text-books—Carhart & Chute’s Physics; Carhart’s University Physics.

Laboratory Work.—First Term.—Experimental determination of the physical properties of matter and the verification of laws of mechanics, electricity and magnetism.
Second Term.—Experiments with heat, sound and light.

Equipment

The Physical Lecture Room and Laboratory is situated in the main College building, is 33x60 feet, and is well equipped for both the lecture and experimental work of a general course in physics.

Drawing

Associate Professor Lee
Assistant Professor Klugh
Assistant Dargan

All members of the Freshman class are required to take freehand and mechanical drawing, except those choosing the Agricultural course, who omit mechanical drawing during the second term. Members of the Sophomore, Junior and Senior classes in Mechanical, Electrical and Civil Engineering, and of the Senior class in Textile Industry are required to take mechanical drawing.

Throughout the entire course the best methods of work in the drawing rooms of workshops and manufacturing establishments are given.

Freshman Class

Freehand Drawing.—Graded exercises in sketching from plaster casts, machine parts and other objects in pencil and ink, particular attention being paid to outlines and perspective.

Mechanical Drawing.—Exercises in the use of drawing instruments, geometrical problems, lettering, conventional section and shade lines, working drawings of simple parts of machines from sketches and models.
Sophomore Class

Working drawings of machines or parts of machines from sketches and specifications. Elementary principles of machine design; construction of screw threads, proportioning of bolts and nuts; isometric drawing, intersection and development of surfaces, shades and shadows, orthographic projection and perspective.

Junior Class

Mechanical Drawing.—Working drawings of machines from sketches and specifications. Elementary principles of design continued—riveting, couplings, belt gearing, cams, gear teeth, etc., tinting, railroad and map drawing, plans and details of bridges and buildings. Work is assigned with reference to the course of study a student is pursuing.

Senior Class

Mechanical Drawing.—Toothed gearing and details of steam engine, electrical and textile machinery, map and bridge drawing. Design drawing required in graduation thesis.


Equipment

The drawing rooms occupy the entire third floor of the Mechanical Engineering building. The third and fourth floors of the tower are also used as a dark room and blue-print room respectively. A good selection of drawings and models in these rooms are of great benefit to the student in his work. These rooms are equipped to accom-
moderate 35 students each, with cases, boards and T-squares for over 200. Students in the Freshman class are allowed the use of the necessary instruments and apparatus free of charge. Members of the Sophomore, Junior and Senior classes are required to furnish their own drawing instruments. All instruments used by students must be approved by the instructor in charge, an inferior grade of instruments will not be accepted. Students are advised to buy their instruments at the Cadet Exchange, where samples can be seen and wholesale prices obtained.

**Mechanical Engineering**

*Associate Professor Earle*

In this course the student is taught the application of his scientific, mathematical and technical knowledge to the design and construction of engineering structures, and of machinery and manufacturing plants in general.

**Junior Class**

*First Term.*—*Mechanism.*—Spur, bevel, and screw gearing, belt gearing, lobed and elliptic wheels, epicyclic trains, escapements, ratchet motions, link motions, quick return motions, cam motions.


*Second Term.*—*Elementary Mechanics.*—Motion, force, velocity, work, energy, power, stress, strain, elasticity, resilience, moments of force, centre of gravity, moments of inertia, momentum, hydrostatics.


**Senior Class**

*Both Terms.*—*Mechanics and Mechanical Engineering.*—Two hours per week during the first term are given to the study of pure Mechanics, strength of engineering materials,
and hydraulics. Three hours per week first term and five hours per week second term are devoted to the study of the design and construction of steam boilers, heaters, pumps and injectors; theory and design of simple, compound and triple expansion steam engines, gas and gasoline engines, hot air engines, air compressors and motors, ice and refrigerating machinery, heating and ventilating systems, transmission of power; engineering specifications and the law of contracts. Theory of the strength of engineering materials. Graphical solution of problems. Hydraulics.

Text-books—Kerr’s Power and Power Transmission; Hutton’s Mechanical Engineering of Power Plants; Church’s Mechanics of Engineering; Ewing’s “Steam Engines and other Heat Engines.”

Both Terms.—Mechanical Engineering—Laboratory Practice.—Study, use and calibration of water-meters, weirs, steam gauges, indicators, dynamometers, calorimeters; efficiency tests of screw-jacks and hoists; tests of fuels and lubricants; tests of building materials, as iron, wood, brick, cement, etc.; erecting, lining up and setting the valves of plain slide-valve and automatic cut-off steam engines; indicator practice; horse-power and efficiency of steam, gasoline and hot-air engines and air-compressors and motors; efficiency trials of steam boilers; duty trial of steam pump and of College pumping engine.

Reference books—Carpenter’s “Experimental Engineering,” Smart’s “Engineering Laboratory Practice,” Thurston’s “Steam Engine.”

Equipment

This laboratory occupies a room 41x45 feet, and contains the following equipment: For steam engineering: 15 horse-power horizontal, locomotive type boiler; 6 horse-power vertical boiler; Erie 6 horse-power plain slide-valve steam engine; 6 horse-power vertical steam engine built in the shops; Payne
15 horse-power high speed automatic engine; Corliss cross-compound condensing steam engine arranged so that either side may be run condensing or non-condensing and each side independent of the other; Wheeler surface condenser with combined air and circulating pumps; set of steam-gauge testing apparatus; Carpenter's separating steam calorimeter; two throttling steam calorimeters; five steam engine indicators of various makes; two standard injectors. For hydraulic engineering: two hydraulic rams; Pelton water motor; power triplex pump; three duplex pumps of different makes; three weirs; recording altitude gauge; 6 pressure and altitude gauges. For compressed air: Clayton air compressor with jacketed cylinders; improved air motor. For fuel and lubricants: Carpenter's fuel calorimeter with scales, balances, and oxygen generating devices; standard viscometer. For testing building materials: 100,000-pound Olsen automatic vertical testing machine driven by 5-horse power Westinghouse electric motor, and fitted for tension, compression, and transverse testing; Fairbank's cement testing machine; 3,000-pound transverse testing machine. The laboratory also contains a 5-horse power Otto gasoline engine, an Ericsson hot-air engine, a 6-horse power transmission dynamometer, graduated to read horse power direct and built by students, and an assortment of standard thermometers, weights and measures. The apparatus is so arranged that any of it may be used for separate or combined tests, or for any original investigations. Besides the equipment in this room, the electric light and power plant, the heating plant of the College and barracks, the isolated plants at the dairy, horticultural grounds and pumping station are available for instructional purposes.
Forge and Foundry

Assistant Professor Johnson

Assistant Gantt

Freshman Class

Both Terms.—Forge Work.—The student is first familiarized with the names and uses of the tools necessary in this work, and in the manipulation of the Buffalo down draft forge. Graduated exercises are then taken up, beginning with those embracing the fundamental operations of forging: such as drawing out, upsetting, bending, punching, twisting, welding, etc., and leading to the forging of articles of a practical commercial nature. The latter part of the second term is devoted entirely to work in tool steel, involving all the processes of hardening, tempering, annealing, etc., and each student is required to complete a set of cold and cape chisels, and a complete set of machinist's lathe tools, before he is allowed to pass up on this work.

Sophomore Class

Both Terms.—Foundry Work.—Students are taught the names and uses of tools; tempering of molding sand; molding and patching of molds. Patterns of various shapes and sizes are used to illustrate the different principles of molding, venting and gating; the use of risers, pressure gates, skim gates, gaggers, chaplets, facing sands; feeding of castings; core-making; grading and mixing of iron; charging and managing the cupola. Several weeks are devoted to work in the brass foundry. The practical instruction is supplemented by a course of lectures, covering the last six weeks of the course, and touching upon all phases of foundry work, including the metallurgy of foundry metals.
Equipment

Forge Shop.—This is a room 37x60 feet, situated in a wing of the Mechanical building. It is equipped with 18 Buffalo down draft forges and steel-faced anvils, with sets of hammers, tongs, swages, fullers, flatters, etc. Continuous blast is furnished by a Buffalo blower driven by a 15 H. P. electric motor, the down draft being produced by a 60-inch Buffalo exhaust fan. The shop is also supplied with vises, swage blocks, emery wheel, bending cone, drill-press, bolt shear, &c.

Foundry.—This building occupies a space 43x76 feet and is free from posts or other obstructions. It is equipped with a 26-inch Victor Collián cupola, a Millett's core oven, a two-ton post crane, 8 improved moulder's benches, an 18-inch brass furnace, with its usual complement of crucibles, tongs, etc., full set of moulder's tools for the accommodation of 20 students, besides the usual accessories to the foundry, such as ladles, flasks, etc.

Machine Shop

Assistant Professor Wright

Junior Class

Both Terms.—Instruction begins at the bench with exercises in chipping, filing, scraping and polishing. Castings and drawings are given the student, and he is required to chip, file, scrape and polish each casting into the exact form and size represented by the corresponding drawing. From bench work the student is advanced to machine work, where he is taught turning, boring, polishing, drilling, threading, planing, milling, grinding, etc., in iron, brass and steel. In all cases the exercises are required to be worked to drawings. The graded course of exercises is designed to teach the fun-
fundamental principles and practices of machine metal-work from the simplest to the most difficult operations.

Only a few set exercises are given to teach important fundamental processes. It is the policy of the shop to keep several large machines in process of construction, requiring the students to do the work. Experience has taught that students take greater interest in making parts of a machine that is for actual use than in mere routine exercise work.

**Senior Class**

Both Terms.—The Senior year is devoted to more advanced work in the construction of engines, dynamos, motors and other machines. The student is encouraged to work from his own designs as far as possible, but is guided and directed by the instructor in charge.

**Equipment**

The machine shop is located in the southwest wing of the Mechanical building, which wing is 45x100 feet, well lighted, heated and ventilated.

It contains eighteen benches, with vises, 110 kits of tools and the following machine tools: 1 18-in.x12-foot engine lathe; 1 18-in.x8-foot engine lathe; 3 14-in.x6-foot engine lathes; 4 14-in.x6-foot Lodge & Shipley lathes; 2 14-in.x6-foot F. E. Reed compound rest engine lathes; 2 14-in.x6-foot Hendey compound rest engine lathes; 1 10-in.x4-foot F. E. Reed pattern maker’s lathe; 1 15-in.x8-foot speed lathe; 1 18-in. drill press; 1 28-in. back geared drill press; 1 22-in.x6-foot Powell planer; 1 Cincinnati cutter and tool grinder; 1 15-in. Gould and Eberhardt crank shaper; 1 dry emery grinder; 1 12-in. power hack saw; 1 36-in. grind-stone; 1 22-in. Leland and Faulconer wet emery tool grinder; 1 American twist drill grinder; 1 10-in. slotting machine, built by New Haven Mfg. Co.; 1 fan; 1 forge. The tool room in connec-
tion with the shop contains all tools, etc., necessary for use with the machines.

The 7 H. P. motor which drives the machinery was built by students.

**Wood-work**

**Assistant Professor Hook**

**Assistant Gantt**

The course in wood-work does not aim to make the student a skilled workman, but rather to teach the proper use of tools and impress the importance of working to exact dimensions. At the same time, it gives a certain amount of manual dexterity, useful in every vocation.

The course covers two years, beginning with the most elementary principles and advancing gradually by a series of graded exercises to the more complicated constructions where special methods and tools are required. All work is done from working drawings, and commercial shop methods are constantly employed.

**Freshman Class**

**Both Terms.**—Use and care of tools; graded exercises in carpentry, joining, wood-turning, and hand-carving; construction of articles from working drawings; use of turning lathe and other simple machinery; construction of boxes, desks, etc., involving dove-tailing, gluing, polishing; turning of cups, vases, Indian clubs, etc.

**Sophomore Class**

**Both Terms.**—Use of wood-working machinery, as plainer, jointer, moulder, mortice and tenoning machine, carving and paneling machine, shaper, circular and jig-saws. Pattern work, with graded exercises, illustrating the principles of draft and shrinkage, and teaching the construction
of core prints, core boxes, etc. Patterns for machines under construction. Cabinet work, and furniture construction, as chairs, desks, book-cases, hall stands, etc.

**Equipment**

The wood shop occupies the two-story wing on the east side of the Mechanical Engineering building, 45x100 feet. The lower floor contains the Freshman Class room, equipped with fifteen work benches and sets of tools, six turning lathes, with tools for each, and other tools for hand work. On this floor is also the planing mill machinery, consisting of a double roll planer, power rip and cut-off saws, band saw, scroll saw, 16-inch jointer, moulding machine, mortising machine, tenoning machine, emery grinder, lathe with 12-foot bed, etc.

The upper floor is devoted to the work for the Sophomore Class, and is fitted up with fifteen work-benches, and ninety sets of tools—one set for each student; six 10-in. turning lathes, large pattern lathe, combination saw and boring machine, double head shaper, panelling machine, carving machine, jig-saw, universal trimming machine, special door and sash clamps, steam glue pots, miter cutters, etc. The power is supplied by electric motors conveniently located in the various rooms. A large lumber yard and dry-kiln provide seasoned lumber at all times.

**Chemistry**

**Director Hardin**

**Associate Professor Brackett**

**Assistant Professor Shiver**

**Instructor Henry**

**Sophomore Class**

**Both Terms.—General Chemistry.**—Inorganic chemistry and the leading facts and principles of organic chemistry.

**Junior Class**

**Both Terms.**—*Industrial and Analytical Chemistry.*—The applications of chemistry in the more important arts and manufactures. Among the subjects studied are: Sulphuric acid; soda; chlorine; potash salts; fertilizers; lime, mortar and cements; glass; porcelain; illuminating gas; coal tar; mineral oils; vegetable and animal oils; soap; fermentation industries, etc. Text-book, Thorp’s Outlines of Industrial Chemistry. *Laboratory*—Qualitative and quantitative analyses and assaying. Books used: Jones’ Junior Course in Practical Chemistry, Fresenius’ Qualitative and Quantitative Analysis.

**Senior Class**


**Equipment**

The original Chemical Laboratory is a two-story brick building, 50x80 feet, covered with slate and finished inside with Southern pine. Overlapping this at one corner, and connected with it by a glass-enclosed passage, is a new and somewhat similar building, 53x86 feet, of modern style and
handsome design. This double building, which is well ventilated, heated by steam, and lighted by electricity, constitutes a commodious structure adequate to all the needs of the Department.

On the first floor of the old building, which is used for academic work, there are five rooms. Two of these, connecting with each other, are employed as a laboratory for the Agricultural Seniors. Of the other rooms on this floor, one is a laboratory for post-graduate students and one a balance room, while the third is reserved for such use as the ever increasing demands upon the Department may require.

On the second floor of this building, there are two large laboratories, one for the Juniors in Analytical Chemistry, the other for the Sophomores in General Chemistry. A third and smaller room is used as a balance room.

The Junior laboratory will accommodate seventy-two students, thirty-six at a time; the Sophomore laboratory, one hundred and twenty students, sixty at a time. The laboratories are all provided with hoods for carrying off noxious gases, convenient working tables, water, gas, electric lights, and all necessary appliances for experimental work.

The basement of the building is used for assaying, for the preparation of distilled water and for storage. The air pump and the mixer of the gas machine for supplying the laboratories with gas are placed in this basement and connected with the generator, which is in a brick vault eighty-five feet from the building.

On the first floor of the new building there are nine rooms, all of which are appropriated to the chemical work of the State and of the Experiment Station. On one side of the wide hall which extends the entire length of the building are the rooms for the analysis of fertilizers. Three of these rooms are used respectively for the determination of phosphoric acid, ammonia and potash; the fourth as a balance room; the fifth and last as a sample room. On the other side of the
hall there are four rooms. The largest of these is used for the Agricultural Analysis of the Station. Adjoining this is a balance room, in which provision is made also for the optical and electrolytical apparatus. Of the remaining rooms, one is used for water analysis, the other as an office.

On the second floor of this building there are seven rooms; a lecture room, and six smaller rooms which are used for recitations, cabinets, apparatus, chemicals, library and Professor's laboratory.

The lecture room will seat one hundred and seventy students, the seats being arranged in tiers.

The hoods in this building are all connected by earthenware pipes with a tightly-built room, just under the roof, over which there is a large ventilator. An electric fan will be placed in this room, should the draught be found insufficient without it.

The rooms in the basement are used for assaying ores, for the preparation of agricultural products for analysis, and for storage. An electric motor located in one of three rooms supplies the power which drives the machinery for grinding and pulping samples of vegetable substances.

**Department of Textile Industry**

**Director Beaty**

**Associate Professor Frissell**

**Assistant Professor James**

**Instructor Parker**

**Textile Course**

This course comprises a system of liberal education and culture as a part of the textile training. The object has been to arrange a course in which students will not only be given special knowledge of textile subjects, but will at the same
time and along with this special training receive the advantages of a good general education.

The first two years of the course are devoted to the study of general principles underlying the sciences involved in manufacturing. The third and fourth years of this course consist, in part, of a study of materials, processes, machinery and apparatus used in modern manufacturing, from those used in the production of plain coarse fabrics, to those used in the production of fine and elaborate, fancy colored fabrics.

**Special Textile Course**

A special two year course has been arranged in this department to meet the demands of mature young men, who already have a good general education. The course covering a period of two years only, does not provide time for a general mechanical training, but instruction is devoted almost exclusively to mill processes, dyeing, bleaching, mercerizing and printing of textile fabrics. The method of instruction, in both courses, is practically the same, and individual instruction is given in every instance where circumstances will permit.

The examination of applicants will be at the College at the beginning of each fall term. For admission to this course it is required that students be proficient in Mathematics, English, History, Physics, General Inorganic Chemistry and Qualitative Analysis as completed in the Sophomore year at this College.

**Details of Instruction**

In carding and spinning, after the subject of raw material has been completed, machinery and processes used in the production of cotton yarns will be taken up systematically, going into a detailed examination and explanation of the separate machines and the mechanisms peculiar to them. Calculations for making changes of gears, speeds, production, etc., and practical operation of each machine will be required.
In designing, instruction begins with explanations of the principles of representing weaves on design paper, after which the designing of plain simple weaves, laying out of harness drafts, pegging plans, etc., are taken up, advancing into the designing of more complicated weaves usually made on harness. After the completion of harness weaves the time will be devoted to designing of Jacquard weaves and tying-up of Jacquards. The aim of the instruction in designing will be to develop originality in the student.

The practical work in weaving is laid out to parallel the instruction in designing. The first part of the instruction in this work will be on hand looms. After the completion of that amount of work required on hand looms the student is advanced to plain and fancy power looms, where in addition to the practical operation of weaving, the loom will be analyzed and explained in detail, together with timing and setting all working parts. The latter part of this work will be on Jacquards.

Cloth analysis consists in dissecting samples of various kinds of cloth to ascertain the weave, texture, weight per yard and the counts of yarn used in its construction. The students are required to reproduce some of these patterns on the looms in the school.

The work in textile chemistry and dyeing covers inorganic quantitative analysis; the general principles of organic chemistry, with special reference to the coloring matters; the preparation of mordants and dyes, and the application of the latter to the several textile fibres.

Care is taken to develop accuracy in observation, neatness and clearness in written reports; and to this end each student is required to submit a comprehensive report—including the necessary notes and references from standard works on the subject—of every experiment performed by him. By this method each student is able to verify for himself in the labor-
atory, the truth of the principle stated to him in the classroom.

Each student will be required to submit an organization and a list of the machinery equipment, for several different sizes of mills, making different classes of products.

In all the divisions of this department, the lecture work, so far as is necessary, will be illustrated with drawings and lantern slides.

**Division of Carding and Spinning**

**Raw Material.**—That the manipulation of cotton fibres may be carried out successfully, under various conditions, it is essential that the characteristics peculiar to the cotton fibre should be understood. Therefore, the introductory work of the students of this department is to examine the physical properties of cotton fibres, to ascertain their lengths of staple, spinning qualities, color, harshness and softness, and to determine their suitability for making various kinds of yarn, filling, warp, ply yarns, etc. This study of fibres will not be limited to American cottons, but will include the more important commercial cottons of the world. The effects of temperature and humidity on fibres will be fully discussed. Also the handling of cotton, prior to manufacturing processes, together with the injury to cotton fibres therefrom.

**Opening and Mixing.**—Beneficial effects of opening and airing cotton; length of time to air for best results; effects on resultant yarn if not properly opened; necessity of mixing; when to mix cottons and methods of carrying out same; effects of improper mixing; effects of a judicial mixing on the after processes of manufacture; reasons for blending; effects of blending cottons on the resultant yarn, for strength, appearance, cost, etc.; effects on finished products if cottons are not properly mixed or blended.

**Picker Room.**—Proper situation of picker room; arrangement of machinery in same; automatic feeder; purpose for
which used; construction, adjustment of parts, etc.; action on cotton; manner of connecting them to breaker lappers with and without dust trunks; advantages of dust trunk; facilitating good results by proper care; breaker lapper, use, explanation of parts, beaters used, adjustment of working parts and experimenting with different speeds of beater; intermediate and finisher lappers, necessity of using same, construction, speeds, care of beaters, kinds of beaters, speeds of beaters for different lengths of staple; evener motion and its control of feed rolls; adjustment of grids to regulate amount of waste, disposition of waste; regulation of air current; effects of air current on proper working of the lapper; lap formation; calculation on above machines for drafts, length of lap, etc.

Carding.—Purpose of carding; principle upon which cards are built; comparison of types of cards; explanation of purpose and construction of feed plate, licker-in, cylinder, flats, screens, doffer, coiler head, etc.; different settings of card to produce best results on different lengths and qualities of fibre; regulation of waste; amount of draft; grinding; effects of improper grinding on card clothing and fibre; calculations for changing gears and speeds of various working parts.

Combining.—Silver lap machine, its construction, use, etc.; care and operation; leather covered rolls, metallic rolls; ribbon lap machine, its construction, use, etc.; advantages of using same; care and operation; lap formation; combing machine, its use, care and operation; detailed explanation of working parts, cylinder, half laps, segments, detaching rolls, etc.; with rules for adjusting and timing same; regulation of waste made; necessity of the process; relation of the process to fine smooth yarns; practical experience in adjusting above machines; calculation for change gears, etc.

Railway Heads and Drawing Frames.—Purpose, use, construction, advantages and disadvantages of railway heads; explanation of stop motions, evener; principle of drawing
slivers; purpose of drawing frame; comparing work of leather covered and metallic rolls; adjustment of rolls; distribution of draft between the rolls; speeds, stop motions; all calculations on above machines, drafts, production, etc.

**Fly Frames.**—Slubber, intermediate, fine roving and jack frames; construction, care and operation of the modern fly frame; bobbin and flyer lead machines; advantages of the bobbin lead; detailed explanation of working parts, differential motion, horse head, builder, full bobbin stop motion, etc.; adjustment of drawing rolls; calculations for draft, twist, lay, tension and other gears.

**Spinning Frames.**—Construction of the modern ring spinning frames; purpose of ring spinning; discussion of its principal parts; rings and ring holders; various types of spindles in use; speed of spindles; weights, sizes and speeds of travellers; warp, filling and combination builder motions; speeds and settings of rolls for different lengths of staple; effects of twist on the strength, color and elasticity of yarns; calculations for draft, twist, production and various constants.

**Spinning Mules.**—Construction and operation of the self-acting spinning mule; special features; description of the head stock, cam shaft, copping rail, nosing motion, easing motion, jacking motion, twisting at the head, etc.; different movements in the mule and timing of the same; formation of a cop; characteristics and uses of mule spun yarn; calculations for draft, twist, builder gear, etc.

**Yarn Manipulation.**—In this branch of work is included twisting; reeling; bundling; spooling; beaming. The slasher, construction and use; necessity for sizing; creels, cylinders, size boxes, etc.; mixing of size; different sizing ingredients for special purposes; method of preparing warps for the slasher; various calculations regarding each of the above processes.

**Text and Reference Books**—Nasmith’s "Student Cotton

Division of Weaving

Designing.—Purpose of designing; explanation of “warp” and “filling;” representing weaves on design paper; foundation weaves; plain or cotton weave; weaves derived from plain weaves, such as rib and basket weaves; twill weaves and methods of construction; derivative weave from twills, such as, broken, steep, skip, reclining and curved twills; corkscrew twills, entwining twills; satin weave and the purpose of same; weaves derived from satins; such as double satins and granites; shading of satins; figured effects produced by using warp and filling satins; color effects produced by using two or more colors in the above fabrics; methods of constructing granite weaves; points to be considered in combination weaves; special weaves; honey combs, gauze and imitation gauze, bedford cord, plain and fancy piques, matelas, etc.; two systems of warp and one system of filling, or two systems of filling and one system of warp for the purpose of figuring; explanation of double cloth, purposes, and class of fabrics in which generally used; representing double cloth weave on design paper; use of different proportions of “back” and “face” for special effects; method of stitching double cloth so that the stitching will produce a figuring effect; stitching so that it will not show either on “face” or “back” of cloth; leno weaves and method of representing on design paper; methods of making drawing-in drafts, plain and fancy drafts, point, skip, mixed or cross draws; chain drafts; rules for finding the number of heddles required for each harness; methods used in reducing weaves to the lowest number of harness.

Jacquard Designing.—Explanation of the various Jacquard machines; methods of shedding, such as, the rise and
drop, single lift, double lift machine; single and double cylinder machine; open and closed shed machine; drawing of tie-ups, straight tie-up both in French and English system, point tie-up, combination tie-up for special goods as table damask, Marseilles quilts, etc.; practical operation of tying-up a Jacquard, cutting leashes, threading of comber board, tying on and leveling up mail eyes; figuring comber board for a given texture of goods; casting out hooks to reduce texture of goods without retying the harness, cutting and lacing cards for a given design; selection of design paper for different fabrics, with regard to picks and ends per inch used; methods used in laying out the figure for a Jacquard design; enlarging the sketch for design paper.

Cloth Analysis.—Methods of arranging cloth sample for analysis; figuring the counts of cotton, woolen, worsted, and silk yarns; calculations for converting one system of yarns into that of another; finding the weight of cloth per yard and the counts of yarn used in its construction from the analysis; figuring width of warp in reed and number of reed to use to produce a given width and texture when woven; calculations to determine the cost of producing a fabric having given values of material, labor, counts, picks and ends per inch, weight per yard, etc.

This work takes up all representative classes of weaves that can be woven on harness, and gives the student a thorough knowledge of figuring yarns, weight of cloth, ends and picks per inch, etc.

Hand Loom Weaving.—The first practical work in weaving is on the hand loom. These hand looms have 4x4 box motion and 30 harness dobbies. After the design and necessary calculations have been made the student proceeds with dressing, drawing-in, reeding, tying the warp in loom, building harness chain and starting up loom; producing different weave effects from the same drawing-in draft by changing the harness chain; using box motions for color effects; com-
binning two or more systems of filling with one system of warp, two or more systems of warp with one system of filling, two or more systems of warp with two or more systems of filling to produce figured fabrics of a special character; explanation of the different methods used in raising and lowering the harness.

**Power Loom Weaving.**—Power loom weaving will be taken up after the student has finished the required amount of hand loom work and will include a study of the plain or cam loom; cam motions used for raising and lowering the harness, such as the under cam, side cam, etc.; setting cams; sketching cams to produce a given motion; arrangement of strapping for two, three, four and five harness; timing cams to suit the number of harness used; speed of different width looms on the same class of fabrics; selection of temples and measurements for same; Draper loom; warp stop motion, filling change mechanism, etc.; the dobbay analysed and explained; methods of shedding; head motions; harness chains for single and double index dobbyis; chains for head motions; explanation of box motions, four by one, four by four box, etc.; building box motion chains; explanation of multipliers used on box motions and harness motions; let-off motions, Morton, Bartlett, Shepard, and friction let-offs; open and closed shed machines explained; single and double index dobbyes, etc.


**Division of Textile Chemistry and Dyeing**

**Junior Year.**—To the qualitative and quantitative analysis of the general course is added a course of lectures in inorganic chemistry especially relating to the materials used in the various textile processes of mordanting, fixing, scouring, bleaching, etc. Also lectures on organic chemistry, taking
up as much of the aliphatic series as is necessary for an understanding of the chemical reactions involved in the application of these compounds to textile operations, and to prepare the student for the study of the aromatic compounds. Toward the end of the year the discussion of the simpler aromatic compounds is begun as an introduction to the special work on synthetic dyestuffs in the Senior year.

The laboratory work will include the preparation of typical compounds of each class of derivatives taken up in the lectures.

Senior Year.—First Term.—Organic chemistry taking up the discussion of the aromatic series with special reference to the coloring matters. A course of lectures is given which covers that portion of the aromatic series which has reference to the study of the principal synthetic dyestuffs. The laboratory work consists of the preparation of certain typical dyestuffs and the study of their reactions. A complete written report of each experiment is required of the student, and written reviews are given each month on the subjects covered in the lectures and laboratory work. The purpose of the course is to give the student an understanding of the chemistry of the operations by which coal tar products are separated, purified and converted into dyestuffs.

Second Term.—Dyeing, Bleaching, etc., of Textile Fibres.—A course of lectures is given on the application of the different classes of dyestuffs to the various fibres, together with the chemical and physical properties of the latter; bleaching and mercerizing of cotton yarns and cloth; scouring and bleaching of wool; the manufacture of artificial silk; calico printing, etc. In the laboratory the dyeing of cotton and wool is carried on in an experimental way, a study being made of typical dyestuffs of each of the principal classes. In the dye-house the dyeing of larger quantities of cotton and wool is carried on, as well as the bleaching and mercerizing
of cotton, scouring and bleaching of wool, and the printing of calico.

The student is required to make a written report of each experiment performed, accompanied by samples of the dyed material, which have been subjected to the action of various agencies, such as light, acids, alkalis, etc.

The purpose of this training, taken in connection with the work preceding it, is to serve as an introduction to the work of the practical dyer, and to prepare the student for the position of chemist in textile establishments. The constant aim of the instruction is to point out the chemical reactions at the foundation of the above textile operations, so that the student going into practical work in the mills, will have at his command scientific knowledge sufficient to enable him to study intelligently into such problems as may come before him in his line of work.


Building and Equipment

The building is a brick structure of modern cotton mill design, 168x75. It is of the slow burning type, built according to fire insurance regulations, after plans of an experienced mill engineer. The building although designed for educational and experimental purposes, containing offices, lecture rooms and laboratories, retains the more prominent features of a typical Southern cotton mill. This affords the student an opportunity of observing many points of valuable information in connection with mill construction, along with the manipu-
lation of cotton fibres and the study of cotton mill processes and operations.

The first floor is occupied by the carding and spinning machinery, a lecture room, the main office, an exhibit room and the departmental library. The machinery on this floor is driven by two electric motors, one a 22 K. W. 220 volt direct current Westinghouse motor, driving the carding machinery, and a 15 K. W. 220 volt direct current General Electric Co. motor, driving the spinning machinery.

The second floor is occupied by the experimental dyeing laboratory, hand looms, power looms, and a lecture room and two offices. The power machinery on this floor is driven by a 15 K. W. 220 volt direct current General Electric Co. motor.

The basement, which is situated under the right hand half of building, is occupied by the dye-house, and is nicely equipped for that purpose. The equipment is as follows: A system of "Vortex" humidifiers from the American Moistening Co.; steam heating system and automatic fire sprinklers from The D. A. Tompkins Company; equipment of shafting, pulleys and hangers, from Jones and Laughlin, Ltd., and from T. B. Wood's Sons; one 22 K. W. electric motor from the Westinghouse Electric Co.; two 15 K. W. electric motors from General Electric Co.

Carding Division

Pickers—One Atherton automatic feeder; one Atherton combination breaker and finisher lapper, with evener motion.

Cards—One Saco & Pettee 40-in. revolving top flat card; one Mason 40-in. revolving top flat card; two traverse wheel grinders; two drum traverse grinders; stripping and burnishing rolls; two complete sets of carder's tools.

Combing—One Mason silver lap machine; one Mason ribbon lap machine; one Mason six-head combing machine.

Railway Heads—One Saco & Pattee railway head, with evener motion, stop motions, and metallic rolls; one Mason
railway head, with evener motion, stop motions, and metallic rolls.

Drawing—One Saco & Pettee drawing frame, 4 deliveries, stop motions, and metallic rolls; one Mason drawing frame, 4 deliveries, stop motions, and metallic rolls.

Fly Frames—One Saco & Pettee 12-in.x6-in. 40 spindle slubber, with latest differential motion; one Saco & Pettee 8-in.x4-in. 60 spindle intermediate roving frame, with latest differential motion; one Saco & Pettee 7-in.x3 1-2-in. 80 spindle fine roving frame, with latest differential motion; one Woonsocket 6-in.x2 1-2-in., 96 spindle jack roving frame, with Daly's improved differential motion.

Spinning Division

Ring Spinning—One Saco & Pettee combination warp and filling ring spinning frame, 128 spindles; one Mason combination warp and filling ring spinning frame, 112 spindles; two Fales & Jenks' combination warp and filling ring spinning frames, 80 spindles each, designed for spinning fine counts.

Mule Spinning—One Mason self-acting spinning mule, 120 spindles, 1 3-4-in. gauge, with all latest improvements.

Spooling—One Draper spooler, 40 spindles; one Saco & Pettee spooler, 72 spindles; one Barber & Colman knotter.

Twisting—One Draper combination wet and dry twister, 48 spindles; one Fales & Jenks wet twister, combination filling and taper top wind, 70 spindles.

Winding—One W. W. Altemus & Son bobbin winder; one Atwood-Morrison Co. bobbin winder; one Geo. W. Payne & Co. skein winder; one Universal cone and tube winder.

Reeling—One D. A. Tompkins Co. adjustable reel, 50 spindles.

Warping—One Draper warper with creel.

Beaming—One Entwistle beaming machine.
The divisions of carding and spinning are well equipped with all necessary supplies, such as, doff boxes, roving cans, bobbins, spools, cops, cones, tubes and change gears for all machines.

**Weaving Division**

Hand Looms—Seventeen hand looms, with 4x4 box motion, and 30 harness shedding engines, arranged for four beam work.

Power Looms—One 40-in. Northrop cam loom, with warp stop motion and automatic filling magazine; one 28-in. Northrop cam loom, with warp stop motion and automatic filling magazine also fitted with Stafford 20 harness dobbey; one Mason 36-in. gingham loom, with 4x1 box motion; one Mason 40-in. loom, with 1x1 box motion, with Stafford 20 harness dobbey also arranged for center selvage motion; one Mason 44-in. fancy cotton loom, with 24 harness dobbey; one Stafford 30-in. fancy cotton loom, with 20 harness dobbey and leno attachment; one Stafford 30-in. dress goods loom, with Stafford 400 hook, single lift, swing cylinder, jacquard; one Knowles 40-in. fancy "Gem" loom, with 30 harness dobbey, 4x4 box motion; one Crompton & Knowles 36-in. fancy cotton towel loom; one Crompton 65-in. loom, 4x1 drop box motion, fitted with 624 hook double lift, swing cylinder, jacquard, tied for weaving table damask; one Whitin 40-in. cam loom, arranged to weave up to 6 harness; one Whitin 40-in. fancy cotton loom, fitted with 20 harness dobbey; one Kilburn & Lincoln 40-in. loom, 4x1 box motion, arranged for dobbey; one Kilburn & Lincoln 40-in. loom, 2x2 drop box motion, arranged for dobbey.

Jacquard Card Cutting—One Jno. Royle French index foot power card cutter.

This division is also equipped with one floor stand, fitted with 8 harness dobbey and leno attachment, built specially for illustrating leno weaves; one jacquard tying-up frame; warp-
ing pegs; beaming frames; drawing-in frames; extra heddles and heddle frames; reeds; change gears, etc.

**Division of Textile Chemistry and Dyeing**

The work in textile chemistry and dyeing is carried on in an experimental laboratory and a practical dye-house. These are equipped with the necessary apparatus and chemicals for instruction in organic chemistry, scouring, bleaching, dyeing, mercerizing, printing, etc.

The experimental laboratory is fitted with appropriate work-tables furnishing accommodations for sixty-four students working by detachments. Each table is supplied with the necessary arrangements for gas and water, and drawers and lockers in which may be stored apparatus and unfinished experiments.

Dye-house—Eight standard size dye vats, three fitted with copper heating coils; one Schaum & Uhlinger self-balancing hydro-extractor; one steaming and ageing box; one mercerizing apparatus for yarn; one calico printing machine; one 20 gal. copper kettle; one set copper measures. Other machinery will be selected and installed, in this division, during the coming year. This division is well equipped with reels, yarn testers, analytical balances, etc., and necessary instruments for experimental purposes.

**Departmental Library**

For the use of students and instructors, a reading room in the textile building has been fitted up and is furnished with some of the more important books of reference relating to the textile industry, and also with the leading periodicals relating to the subject. New books are being added constantly. The room will open every week day throughout the session.
Donations

The following donations are acknowledged with thanks:

The A. T. Atherton Machine Co., Pawtucket, R. I.—One automatic feeder; one combination breaker and finisher lap-per; one lot of lap rods.

Saco & Pettee Machine Co., Newton Upper Falls, Mass.—One 40-in. revolving top flat card; one Entwistle traverse grinder; one Entwistle drum grinder; one burnisher; one set carder’s tools; one improved railway head, with back, front and full can stop motion; one 4 delivery draw frame, with back, front and full can stop motion, fitted with single preventer rolls; one 40 spindle slubber; one 60 spindle intermediate roving frame; one 80 spindle fine roving frame; one 128 spindle combination warp and filling ring spinning frame; one 72 spindle improved spooler. A sufficient number of gears were sent with these machines to make various changes that may be necessary.

Mason Machine Works, Taunton, Mass.—One 40-in. revolving top flat card; one Entwistle drum grinder; one stripper brush; one set carders’ tools; one railway head, with back, front and full can stop motion; one 4 delivery draw frame, with back, front and full can stop motion; fitted with single preventer roll; one 112 spindle combination warp and filling ring spinning frame; one 40-in. plain loom; one 36-in. fancy cotton loom; one 36-in. 24 harness dobby loom; half value on combing machinery. All necessary gears with these machines to make the required changes.

The D. A. Tompkins Co., Charlotte, N. C.—One adjustable reel; one draw-in frame; one loom box; one doffer box; two section beams; one switch board, complete; one emery wheel and stand.

Draper Co., Hopedale, Mass.—One 40-in. Northrop loom; one 28-in. Northrop loom; one 48 spindle combination wet and dry twister; one 40 spindle spooler; one warper, with
creel; four section beams; temples as required; loom findings.

Crompton & Knowles Loom Works, Providence, R. I.—Half value on following: One 32-in loom, with 416 hook jacquard; one 32-in. loom, with leno attachment; one 65-in. 4x1 box loom, with 624 hook jacquard; one 36-in. Knowles "Gem" loom; one 36-in. fancy cotton towel loom; two 16 harness dobies.

Universal Winding Co., Boston, Mass.—One 32-in loom, with 416 hook jacquard.


Whitin Machine Works, Whitinsville, Mass.—Half value on following: One 40-in. cam loom; one 40-in. loom, with 20 harness dobbey.

T. C. Entwistle, Lowell, Mass.—Half value on one beam ing frame.

Fales & Jenks Machine Co., Pawtucket, R. I.—Two combination warp and filling spinning frames, 80 spindles each; one wet twister, combined filling and taper top wind, 70 spindles.

T. B. Wood's Sons, Chambersburg, Pa.—One-fourth value on equipment of shafting, hangers and pulleys used in new extension of building.

Jones & Laughlin Co., Limited, Pittsburg, Pa.—The entire original equipment of shafting, hangers and pulleys.

Schaum & Uhlinger, Philadelphia, Pa.—One top engine drive, self-balancing, hydro-extractor.

The Metallic Drawing Roll Co., Indian Orchard, Mass.—Metallic drawing rolls for railway heads and draw frames as required.


The Aerophor Co., Boston, Mass.—Complete system of "Vortex" humidifiers, including pump, tank and connections.
Beattie Machine Works, Cohoes, N. Y.—One single elastic stitch looper.


W. W. Altemus & Son, Philadelphia, Pa.—One bobbin winder.

New Bedford Paper Co., New Bedford, Mass.—Cops, cones, tubes, etc., as required.

Charlotte Supply Co., Charlotte, N. C.—All belting as required.

American Supply Co., Providence, R. I.—Heddles, heddle frames, reeds and loom supplies as required.

Loom Picker Co., Biddeford, Me.—Loom supplies.

The Emmons Loom Harness Co.—Cotton harness, reeds and loom supplies.

Roney & Rae Co., Woonsocket, R. I.—Twelve bobbin holders.


R. A. Blythe, Philadelphia, Pa.—One lot mercerized yarns.

Barber & Colman, Boston, Mass.—One Barber knotter.

National Ring Traveller Co., Providence, R. I.—One lot of spinning and twister travellers.

DeHaven Manufacturing Co., Brooklyn, N. Y.—One lot of spinning and twister travellers.

Victor Shaw Ring Traveller Co., Providence, R. I.—One lot spinning travellers.

Morley Button Manufacturing Co., Boston, Mass.—One lot spinning travellers.

Sykes & Street, New York, N. Y.—Collection of dye stuffs.


Farbenfabriken, of Elberfield Co., New York, N. Y.—Large collection of dye stuffs, over 300 samples.
Southern Railway Co.—Half freight rates, over their lines, on entire original equipment of machinery.

English

Professor Furman

Assistant Professors McLucas, Daniel, Keitt

Instructor Bryan

The purpose of the course in English is to enable the student to acquire the power to express his thoughts with clearness, precision and force; and to cultivate in him a taste for good literature. Elementary English grammar and the rudiments of composition are taught in the Preparatory class.

Preparatory Class.—This class is carefully prepared for entry upon the work of this College, several of the professors in English having charge of its sections. The intention is to make the English course continuous, so that there may be no break between the preparatory and Freshman work, either in teachers or text-books. The books used in the Preparatory class are: Buehler’s Grammar, Gilbert’s Studies in Words, and such reading texts as may from time to time be selected by the instructors. Special attention is paid to spelling, definition of words, oral reading, and written exercises.

Freshman Class.—A review of the subject of grammar introduces the work of this class. Constant drill is given in theme writing; pupils being expected to make use of the
College Library under direction of instructors. Methods of using dictionaries, encyclopedias, and other reference books, are explained practically to the students. Full supplementary readings are required and practice is given in the writing of abstracts of books so read.

*Text-books*—Emerson-Lockwood’s Lessons in English, Buehler’s Practical Exercises in English, Webster’s School Dictionary, and such English classics as may be assigned.

*Sophomore Class.*—The study of rhetoric is pursued throughout the Sophomore year. Lewis’s Second Manual of English Composition and Rhetoric introduces the course. Constant theme writing is continued. An elementary course in American literature is also given embracing the study of Hawthorne, Lowell, Longfellow, Poe, Lanier, Timrod and other standard American authors.

*Junior Class.*—The work in the Junior class begins with the critical study of Macaulay as an essayist. This is followed by a general course in English literature. Pancost’s English Literature is the text-book—this work being supplemented by lectures. Monthly essays are required, and frequent oral readings embracing selections from the principal English authors from Chaucer to the present time.

*Senior Class.*—This class is given instruction in the principles of literary criticism. A somewhat full course in Shakespeare study is furnished. Several plays are read in class—the students being orally examined on all questions, grammatical, historical, and ethical, which arise in the study of this author. Monthly essays are required.
History and Political Economy

Professor Morrison

The course includes history of the United States, South Carolina history, general history, commercial geography, civics, and political economy.

The method of instruction is a combination of the text-book and lecture methods, with parallel readings, under the instructor's direction as far as practicable. This class-room is supplied with globes, charts, maps and works of reference, in the use of which the young men are carefully trained. The students make liberal use of the many volumes of poetry, historical romance, biography and history found in the College library.

The history of South Carolina and the history of the South receive special attention. "A people which takes no pride in the noble achievements of a remote ancestry will never achieve anything worthy to be remembered by remote descendants." Every effort is made to enable the young men to see and feel as their fathers and forefathers saw and felt.

Text-books—Eggleston's History of the United States and its People (Preparatory); Weber's History of South Carolina and Olin's Commercial Geography (Freshman); Clark's Government and Anderson's New General History (Sophomore); Walker's Political Economy—Briefer Course (Senior).
Mathematics
Professor Brodie

Assistant Professors Waller, Martin, Reaves, Shanklin

This course presupposes a thorough knowledge of arithmetic and of algebra through quadratics. (See requirements for admission, page 128.

Freshman Class

First Term.—Algebra.—Quadratics (reviewed); simple indeterminate equations; inequalities; theory of exponents, logarithms; proportion and variation; series; binomial theorem.

Text-book—Hall and Knight's Algebra for Colleges and Schools.

Second Term.—Plane Geometry.—Rectilinear figures; circles; similar figures; comparison and measurement of surfaces of polygons; regular polygons and circles. Special attention is given to the formation, on the part of students, of the habit of clear and accurate reasoning and concise expression.


Sophomore Class

First Term.—Solid Geometry.—Planes and solid angles; polyhedrons; cylinders and cones; spheres, spherical polygons and pyramids; volume.

Higher Algebra.—Continued fractions; theory of limits, undetermined co-efficients; exponential theorem; equations in general.

Text-books—Wentworth's Geometry and Hall & Knight's Algebra for Colleges and Schools.

Second Term.—Trigonometry.—Measurements of angles; trigonometric functions; right triangle; goniometry;
relations between functions of one angle; functions of multiple angles; inverse functions; trigonometric equations; oblique triangles; De Moivre’s theorem; spherical trigonometry; general formulas; right spherical triangle; oblique spherical triangle; applications.

Text-book—Wentworth’s Trigonometry.

Descriptive Geometry.—Study of the representation of points, lines, planes, surfaces and solids, and of their relations; tangencies, intersections and developments; shades, shadows and perspective; numerous original exercises.

Text-book—Low’s Practical Solid or Descriptive Geometry.

Plane Surveying.—This course includes the general principles and fundamental operations of surveying with compass, level and transit. The field work includes actual surveys of tracts of land, of which the areas are computed and plats are drawn. Experience is given in numerous problems of laying out and dividing up land, and in locating irregular boundaries. Practice is also had in section leveling, laying out terraces, ditches, etc. Ample training is here furnished for the needs of agricultural students, and a preparation is given for the higher work of the engineering courses.

Text-book—Davies-Van Amringe’s Surveying.

Students in the Agricultural Course take no mathematics beyond the Sophomore year.

Junior Class

First Term.—Analytic Geometry.—Cartesian and polar systems of co-ordinates; discussion and construction of loci; the straight line; transformation of co-ordinates; circle; parabola; ellipse; hyperbola; general equation of second degree involving two variables; higher plane curves; solid analytic geometry; systems of co-ordinates; equation of the plane; the straight line in space; transformation of co-ordinates; surfaces of the second order.

Second Term.—Differential Calculus.—Differentiation of algebraic functions; transcendental functions; successive differentiation and development of functions; functions of two variables; tangents and asymptotes; maxima and minima; radius of curvature; evolutes and involutes; envelopes.

Integral Calculus.—Elementary forms of integration; rational fractions; integration of irrational fractions; successive reduction; integration of functions of two variables; lengths of curves; areas of plane curves; rectification of curves; cubature of volumes.

Text-book—Snyder & Hutchison’s Differential and Integral Calculus.

Civil Engineering

(Included in the Department of Mathematics.)

The schedule on page 60 will explain in detail the subjects included in the Civil Engineering course. This course will be found to embrace much that is common to the other engineering courses. Below is an outline of the special work pursued by students in this course in the Junior and Senior years.

To begin this work the student must have completed the mathematical course through trigonometry and plane surveying. For the Senior course he must have a working knowledge of analytical geometry and calculus.

Junior Class

Both Terms.—Use and adjustment of transit, stadia, solar compass and plane-table; topographic surveying with transit and stadia; railroad topography; triangulation; city and hydrographic surveying; map and plan drawing, topographical symbols, etc.

Highway Engineering.—Location, construction and main-
tenance of country roads and city streets; advantages of various materials for road covering; effects of grades and surface upon the cost of transportation; plans and specifications; practical problems in change of grade and relocation, from surveys of existing roads.

Theory of Railway Construction.—Preliminary and location surveys; location from contour map; laying out of simple and compound curves; setting of slope stakes; computation of earthwork; switches; turnouts; theory of economic location; effects of grades, curves and length upon the cost of operation.

Text and Reference Books—Johnson's Higher Surveying; Gillespie's Roads and Railroads; Burne's Highway Construction; Godwin's Field Engineering; Wellington's Economic Location.

Senior Class

Both Terms.—Railway Engineering.—Surveys are made for a line of railway a mile or more in length; the necessary plans, profiles and cross-sections are prepared; grades are determined, curves laid out, slope stakes set, and all the needed measurements made to enable the student to compute the excavations and embankments, and to estimate the cost of construction.

Surveys of Water Powers.—Discharge of stream, head and available power; form and dimensions of pond or reservoir; detailed topography of site for dam and determination of its form and dimensions for stability.

Geodesy.—Method of least squares; precise triangulation; base lines; precise leveling; azimuth by solar transit, by polaris and by altitude of the sun; measurement of meridian arcs; the earth as a spheroid; the earth as an ellipsoid; history of geodesy.

Structures.—Building materials; mechanics of construction; derivation of practical formulas; masonry; foundations on land and in water; stability of walls and arches; analyti-
cal and graphical investigation of stresses in plate girders, Howe, Pratt, Warren and other types of highway and rail-
road bridges, and various forms of roof trusses; bridge de-
sign.

*Text-books*—Wheeler’s Civil Engineering; Merriman and Jacoby’s Roofs and Bridges; Merriman’s Geodesy.

**Equipment**

The collection of field instruments contains the following: Two 6-inch vernier compasses; 20-inch wye level; engineer’s transit, with solar attachment and stadia; plane-table, with 9-inch telescope, vertical circle and stadia; drainage level; 12-foot self-reading leveling and stadia rod; 12-foot New York leveling rod; 10-foot cross-section rod, graduated; Gurley’s clinometer, reading to degrees; two surveyor’s chains; engineer’s chain; standard 100-foot steel tape, graduated to hundredths of a foot; and full supply of ranging poles, flag poles and other accessories. There are also sets of drawing instruments for office work.

In addition to the drawing done under the immediate di-
rection of the instructor in this division, the regular work in
drawing and designing provided for civil engineering stu-
dents is arranged with special view to their needs.
Military Science and Tactics

Lieut. Sirmyer, Commandant

Junior and Senior Classes

Both Terms.—The course in military instruction, as prescribed and followed, is both theoretical and practical. The theoretical instruction, given by recitation and lecture, includes the subjects of organization and administration, grand and minor tactics, logistics, castrametation, military engineering, gunnery and pyrotechnics, military history, etc. The practical instruction includes infantry drill, in the school of the soldier, the company, the battalion and the evolutions of the regiment, in both close and extended order, target practice and guard duty, and in the manual of piece in light artillery drill. Practice is also given in signaling with the flag.

In addition to the benefit which the general government derives from the military instruction given at this and other colleges, it is believed that the discipline enforced, the habits of punctuality and obedience inculcated, the improvement in bearing and appearance of those instructed, and also the practice in directing and commanding others, which nearly all in course of time get, is of immense benefit to the students individually.
REGULATIONS, ADMISSION AND GENERAL INFORMATION
Regulations of the College

Government

The government of the College is administered by the President with the advice and assistance of the Faculty. The students have free access to the President's office, and all complaints and irregularities are carefully investigated.

The nature of the exercises at Clemson College, complicated by the many laboratories, practical work in the field, especially render punctuality in attendance upon work and systematic effort on the part of the student indispensible. There is, therefore, no place at Clemson Agricultural College for the boy who is self-indulgent and not willing to submit to wholesome control and lawful authority. The discipline of the College is exercised simply to keep the machinery of the institution running smoothly, and those boys who are too reckless to submit to restraint will soon get in conflict with the regulations and will be forced to leave College. The rules and regulations authorized by the Board of Trustees are enforced by the Commandant under the advice of the President, and the Commandant discharges all of the duties imposed upon him, and requires the Cadets to conform to the rules of the College. The main object in view is the boys' education. Those boys who fully appreciate this important fact, and who are striving to do their best for the accomplishment of this end, will find the regulations not a hardship, but rather an aid in the prosecution of the work before them.

Communications from parents, requesting leaves of absence from the College for their sons, must be addressed directly to the President and not through the cadets. The rules governing in cases of permits to visit home during the session of the College require that cadets who have accumu-
lated more than five demerits in any one term, and who have fallen below grade two in their studies on any report, will not be allowed to leave College during the term except in cases of extreme sickness or death in the family. Cadets who receive no demerits during any calendar month will be given a credit of five, to be applied in removing any demerits they may have had charged against them during any preceding month of that term.

Students who have been granted leaves of absence and who stay over the date allowed, unless for sickness or other good and valid reasons, will be required to pay again the incidental fee of $5.00 before they will be permitted to continue their studies. In case of sickness, a certificate from the attending physician must be submitted to the President.

In addition to the special regulations of the military department, a copy of which is given each cadet, the following general regulations are enforced.

Cadets are subject to military discipline at all times, and are required to take part in drill, guard duty and other military exercises.

All undergraduate students are required to board in the barracks, except those who live with their parents near enough to attend from their homes.

Each student is required to purchase the prescribed uniform; also a pair of over-shoes and a water-proof coat. Students may provide themselves with such work-clothes as they desire.

Those occupying a room are consulted before another student is assigned to that room. A student not satisfied with his room-mate has the privilege of applying for permission to move to another room, and such applications are granted when practicable.

Cadets must at all times be respectful in their bearing to professors and other officers of the College.

The practice known as hazing is positively forbidden, and
any cadet indulging in this practice will be expelled from the College.

Cadets are positively forbidden to use, or have in their possession, intoxicating liquors of any description.

The use of tobacco in any form by cadets is prohibited.

Profanity and gambling are positively forbidden.

All combinations of cadets for the purpose of censuring or praising one of their number are prohibited; also all combinations to defeat the purpose of any regulation of the College.

If any cadet shall consider himself wronged by another, or by an officer of the College, he has the right to complain thereof in writing to the President, who will examine into the complaint and take such measures for redressing the wrong as he may deem proper.

Cadets are forbidden to keep any arms in their possession not issued by the proper authority.

Any cadet receiving 100 demerits during a term of five months will be dismissed.

Any cadet absent from barracks at night without proper authority will be dismissed.

Reports

Each term is divided into four approximately equal parts for the purpose of making up class marks. At the end of each one of these periods a report is sent to the parent giving the standing of the student in the subjects of his class. Parents will be advised to withdraw students who habitually shirk duties.

No student conditioned on any subject can be promoted to a higher class until all conditions are removed.

Any student taking a subject over waives the right to all previous records in that subject, and is placed upon the same footing as students taking the work for the first time.

All students who are put back into any class must take the full work of that class.
Any student desiring to change his course of study must apply for such change within one month from date of entrance.

The students who make the highest average grade during a term are appointed marchers of their respective sections for the succeeding term.

Irregular courses are not allowed to students in the Preparatory department.

Practical work must be made up, hour for hour, under the direction of the instructor.

Text-books are kept at the Cadet Exchange and are furnished to students at wholesale prices.

Matriculation is equivalent to a pledge to conform to the rules and regulations of the College.

Rules for the Appointment of Students

In selecting the students who shall be notified to report to the College, the following rules, prescribed by the Board of Trustees, will govern:

1. Students must undergo a medical examination, and no student will be admitted who is not healthy and free from contagious diseases, including consumption.

2. Students will be apportioned among counties in proportion to representation in the House of Representatives, under the following rules and regulations:
   (a). Boys prepared to enter College classes will have preference over those who can only enter the Preparatory class.
   (b). As between boys of equal preparation, the oldest will have the preference.
   (c). Other things being equal, the first applicants will receive permission to enter.
   (d). When a county has not sent its quota, the places thus left shall be apportioned among the other applicants.
   (e). Applicants not entering within ten days after the
opening of the session will have their rights in the place given to applicants next on the roll.

Preparatory Department

For the benefit of students who are not prepared to enter the College classes a course of one year of preparatory work is provided, in which thorough instruction is given in the elements of English, mathematics, history, and geography. This course is designed to meet the needs of young men, particularly farmers’ sons, who have not had the advantages of the thorough and systematic training afforded by many of the town and city schools.

The instruction in this department is under the immediate supervision of the Professors of English, Mathematics, History, and Geology in the College, and is closely articulated with the work of the advanced classes.

The course of study is as follows:
Arithmetic, 5 hours a week.
Algebra, 5 hours a week.
Grammar and Composition, 5 hours a week.
Reading and Spelling, 5 hours a week.
Geography, 5 hours a week, one-half year.
History, 5 hours a week, one-half year.

Students who satisfactorily complete this course will be advanced to the Freshman class. Those who fail to pass to the higher class may review the course the next session. Upon the recommendation of the instructors of the department, a student in the Preparatory class may be permitted, at any time during the session, to stand examinations for admission to the Freshman class.
Requirments for Admission

Each candidate must be at least sixteen years of age. Certificates of good moral character are required of all candidates not known to members of the faculty; and if the candidate comes from another college, this certificate must show that he was honorably discharged.

For admission into the Freshman class a thorough knowledge is required of arithmetic, elementary algebra, English grammar, geography, and history of the United States.

*Arithmetic.*—The applicant is expected to have a thorough practical acquaintance with the ordinary principles and operations of arithmetic. Wentworth's Practical Arithmetic is recommended as a suitable text-book.

*Algebra.*—The detailed requirements are as follows: Definitions and notation, fundamental operations, including laws of signs, and the interpretation of negative results; use of parentheses; factoring; highest common factor; lowest common multiple; simple and complex fractions; simple integral and fractional equations with one unknown number, and problems leading to such equations; simultaneous equations of the first degree, with applications to solution of problems; involution of monomials and polynomials; evolution of monomials and polynomials; theory of exponents with applications; radicals, including solution of equations involving rationalization; simple operations with imaginary expressions; pure and affected quadratic equations containing one unknown number, with application to problems.

The student should cover carefully the whole ground here specified, and should acquire a clear understanding not only of algebraic processes but of the principles and reasons involved in every operation. Students fail on entrance examinations more frequently because of imperfect knowledge of the subject matter passed over, than because they have not gone far enough in the text-book.
A satisfactory treatment of the topics in Algebra may be found in Wentworth’s New School Algebra (used in the public schools).

*English.*—Applicants are examined in spelling, sentence analysis, and oral reading; and are required to write short essays on an assigned subject.

*Geography.*—The applicants must possess a fair knowledge of general geography, such as may be obtained from a proper study of Frye’s Advanced Geography, Maury’s Manual of Geography, or other standard text-book of equal grade. The following topics will be especially emphasized in the entrance examinations: Outlines and positions of the continents, and locations of the principal mountains, plateaus, river basins, and coastal lowlands; influences of land forms upon the life and industries of the inhabitants; locations and outlines of important countries, particularly those of America and Europe, and of the States in the United States; locations of great cities in all countries, and conditions favorable to the growth of cities.

*History.*—Eggleston’s History of the United States and Its People is the text-book recommended. Any other school history may be used in place of the one named.

**Entrance Examination**

Students upon arrival at Clemson College at the opening of the session must report at once to the President’s office and matriculate before they will be assigned to quarters in the barracks. No student will be admitted to any of the classes or examinations of the College before matriculation and payment of the fees.

Five days before the opening of College each year the barracks will be prepared for the accommodation of new and conditioned students, at which time the entrance examinations will be held. All students who contemplate entering College for the first time are urged to report during this
period and stand the entrance examinations. Board will be free during these five days to new students and to those members of the classes for the previous year who have conditions in theoretical or practical work to bring up. The charges for board will begin with the opening of the session on September 9th, 1903. Upon presentation at the President's office of a certificate from the Examining Committee stating that the holder has passed satisfactorily the subjects required, he will be assigned to the class recommended by the Committee. For admission to the higher classes, students must be prepared to stand examinations covering the subjects of the lower classes as indicated in the course of study to be found on other pages of this catalogue.

A Committee consisting of five members of the Faculty is appointed annually by the President, which is known as the Re-examination Committee. The duties of this Committee shall be to examine carefully into the merits of all petitions for re-examinations referred to them by the President, and to report to the Faculty with recommendations. No student is entitled to a second examination except by special permission of the Faculty.

Tuition

The following extract is taken from Section 1120, Revised Statutes of South Carolina, 1893, Volume I., setting forth the powers and duties of the Board of Trustees: "They shall charge each student a tuition fee of forty dollars per annum; * * * indigent students shall not be required to pay said tuition fee."

In accordance with this law, residents of South Carolina are granted free tuition upon presentation of the following certificate, properly signed:
Certificate of Inability to Pay Tuition.

This is to certify, That I am unable to pay tuition for my.......................... in the Clemson Agricultural College for the session of 1903-1904.

................................
Father or Guardian.

I hereby certify that, to the best of my knowledge and belief, the above statement is true.

................................
County Auditor.

All other students pay the tuition fee of $10.00 per session. Blank certificates will be furnished upon application to the President.

Expenses for the Session of 1903-1904

For free tuition students.............................$102 42
For tuition paying students.......................... 142 42

These charges are due and payable in advance on the first day of each quarter, as follows:

September 9, 1903, or on date of entrance:
Incidental fee ...........................................$ 5 00
Medical fee............................................... 5 00
Uniform.................................................... 23 00
Board and washing, first quarter............. 16 88
Breakage fee (see page )......................... 2 00

Total for free tuition student...................... $51 88
Tuition, first quarter.................................$10 00
Total for tuition paying students............ $61 88

November, 16, 1903.
Board and washing, second quarter......... $16 88

Total for free tuition students................. $16 88
Tuition, second quarter..........................$10 00
Total for tuition paying students............ 26 88
January 27, 1904.
For free tuition students, third quarter..... 16 88
For tuition paying students.............. 26 88

April 4, 1904.
For free tuition students, fourth quarter.... 16 88
For tuition paying students.............. 26 88

A deposit of $2.00 is required of all students upon entrance, according to the following order of the Board of Trustees:

At the beginning of a session each student is required to deposit $2.00 with the Treasurer, to be known as a breakage fee. Whenever the property of the College is damaged, the actual cost of the repair of the property damaged shall be charged to the student who damaged the property. If, however, the responsibility cannot be fastened upon any student, the amount of the damage shall be prorated equally among all the students. At the end of the session any amount to the credit of a student shall be returned to him.

The price of uniforms is subject to fluctuations of the market.

To the above must be added the cost of books and stationery, which may be obtained at the Cadet Exchange at wholesale prices; also $1.50 for diploma, payable on graduation.

Remittances should be made in cash, money order, or New York Exchange, not by local checks, to P. H. E. Sloan, Treasurer, Clemson College, S. C. Banks charge exchange on local checks.

A deduction will be made for board and washing only when a student is absent one month or more.

Uniform

The College uniform is of cadet gray of the West Point pattern, except that the College button is used. For military full dress, the cadet officers wear a plume and sash, and the
Irregular Courses

Students are earnestly advised to pursue regular courses; but those who for satisfactory reasons are unable to do so, may, upon the approval of the Faculty, pursue irregular courses. No student whose time is not fully occupied will be permitted to remain at the College. An application for an irregular course must be accompanied by the written approval of parent or guardian, and of instructors in all subjects for which application is made. Diplomas are not issued to irregular students; but certificates of proficiency will be given when the prescribed work granted by the Faculty has been completed.

A student who is permitted to take an irregular course will be assigned to a member of the Faculty, who will advise the student in reference to the character and degree of work it is best for him to pursue, and after this course has been approved, no other changes will be allowed without the endorsement of his adviser.

Special Courses

Besides students above indicated, who are members of the military organization in the College, there may be farmers and others of mature age who may desire to avail themselves of the special privileges offered by this College to work along their lines. To such persons the opportunity is offered, under the advice of the Director of the department, to pursue special lines of investigation in any one of the subjects or divisions, provided attention can be given them without detriment to the regular classes of the department. These persons will be admitted for the prosecution of such work after
they have satisfied the Director of the department that they have sufficient qualification to undertake the work. They will be excused from the military regulations, but will be under the general rules of good behavior and diligent prosecution of the course selected. The fees, except the price of the uniform and board in the barracks, will be required. They may board anywhere in the community except in the barracks.

Degrees

Students who complete satisfactorily any one of the regular prescribed four years courses of instruction in Mechanical and Electrical Engineering, Chemistry and Agriculture, Civil Engineering, Biology, Textile Industry, or Metallurgy, will be awarded the degree of Bachelor of Science at commencement.

Distinguished Students

Students who make an average of 90 per cent. or more on each and every study for the entire session are designated as distinguished.

Library

In the main building are a series of rooms specially constructed for the use of the library. There are now on the shelves 5,337 volumes of literature, history, biography, and science, and about 2,200 volumes of government publications, together with about 3,000 pamphlets. The library is supported by an annual appropriation, and the number of books is added to each year. In recent purchases special efforts have been made to procure books on South Carolina history and literature.


Farmers' Institutes

During the year farmers' institutes are held, under the management of the College, in many Counties of the State. The President and Professors of Agriculture, Chemistry, Horticulture, Dairying, Veterinary Science, Botany and other members of the Faculty take part in these institutes. The effort is made to bring practical information to the farmer, and to give him the results of scientific investigation in the interest of Agriculture. The success thus far attained is most encouraging, and leads to the hope that these institutes may become a permanent feature in the work of the College.

They will be continued during the coming year. A special institute of seven days' duration will be held at the College during the month of August, in which, besides the College Faculty, a number of prominent speakers from this and other States are expected to participate.

Farmers wishing an institute held in their County or community should write to the President.

Student Labor

The College assumes no obligation to furnish employment to students for wages. Considerable manual labor is necessary to carry on the various departments of the College. When practicable students are employed in this work and are paid for it at the rate of eight cents an hour; but no student is allowed to undertake work that interferes with his College course. The number of students who apply for work always
exceeds the number that can be employed. Students who enter late are at a special disadvantage in securing this work.

**Religious Influence**

Every effort is made to surround the students with safe religious influences. There is preaching in Memorial Hall every Sunday morning by ministers of the different denominations, and chapel services are conducted every morning by the President and other members of the Faculty. All students are required to attend these exercises unless specially excused.

A Sunday School, at which attendance is voluntary, also meets every Sunday morning, and students are encouraged and urged to attend.

**Young Men's Christian Association**

This is a voluntary organization of the students, and is entirely under their management. The objects of the Association are to promote Christian fellowship among its members and aggressive Christian work among the students. The meetings are held in Memorial Hall every Sunday evening. The membership is of two classes—active and associate. A member in good standing of any evangelical church may become an active member of the Association, and any young man of good moral character may become an associate member. The Faculty are in hearty sympathy with the work of the Association, and render cheerful service when requested to do so. Parents and guardians are advised to encourage the students to join the Association as soon as they reach the College.

**Care of the Sick**

The College Surgeon will keep parents fully informed of the condition of sick students. In case of serious illness parents are notified by telegraph.
Students have permission to call on the Surgeon at any time for advice and treatment. The Surgeon cannot undertake to notify parents every time a student reports to the hospital for medicine or rest, on account of some slight complaint; but parents may rest assured that they will hear from the Surgeon promptly in case of sickness of any consequence.

The health record for the past year has been exceptionally good, and many sanitary improvements have been made to insure the continued health of the students.

The College rules require that all students be vaccinated, and parents are advised to have this done before sending their sons away from home.

**Society of the Alumni**

This Association is composed of the graduates of the College, and there is an annual meeting at the period of Commencement exercises at which time one of the members selected by the Association delivers an address in Memorial Hall. The orator for 1903 is B. R. Tillman, Jr., Trenton, S. C. The officers for 1902-1903 are:

- J. S. Garris, President
- D. H. Henry, Vice-President.
- A. B. Bryan, Secretary.
- W. W. Klugh, Jr., Corresponding Secretary.
- R. E. Lee, Treasurer.

**Museum**

The collections of botanical, entomological and geological specimens are small. An earnest effort is being put forth by the heads of these divisions to make the Museum an important department of the College. By recent enactment of the General Assembly, the State Geologist is required to send duplicates of everything he collects in conducting the geological survey of South Carolina.
Literary Societies

Three literary societies, the Calhoun, the Columbian and the Palmetto, furnish a valuable supplement to the work of the College. These societies afford facilities for practice in debate, oratory, declamation and essay-writing, and their members acquire valuable knowledge of parliamentary law and usage. The meetings are held weekly on Friday evenings. Public celebrations and contests are also held at intervals during the year, at which there are debates, orations and declamations by the students.

The societies occupy halls in the main College building, which are furnished with carpets and opera-chairs, and are maintained entirely by the students. A small fee is charged for initiation, and there are also monthly dues of a few cents to meet running expenses. All students are advised to join one of these societies. The students award medals for excellency in debate, oratory, and declamation.

There is also a monthly published by the students, called The Clemson College Chronicle, and the editorial staff of this periodical also awards three medals for the best story, the best poem and the best essay appearing in that publication during the year. This magazine is designed to encourage literary work among the students.

By order of the Board of Trustees, the following days have been set aside as Society days: R. E. Lee's birthday, January 19th; Calhoun's birthday, March 18th; and May 1st; on which occasions the societies are expected to hold public exercises in Memorial Hall. The Columbian Society holds a celebration on January 19th, the Calhoun on March 18th, and the Palmetto on May 1st. At each of these contests, judges selected by the societies will determine the successful debator or speaker, and these successful contestants will represent the societies at Commencement, at which time the judges will be selected by the Faculty, and
the best orator will be awarded a gold medal called the Trustee Medal, awarded by the Board of Trustees.

Science Club

The Clemson College Science Club was organized for the purpose of promoting knowledge of the progress of the natural sciences, theoretical and applied. Public meetings are held every month, at which subjects of general scientific interest are discussed by members of the Faculty and advanced students of the College.

Lecture Course

A lecture course, employing some of the best talent on the American platform, has been provided for the coming season. These lectures will be delivered in Memorial Hall, and will occur monthly while the course is in progress. The cost to students will be about $1.00 for the course.

Cadet Exchange

A Cadet Exchange is maintained, where students may purchase at wholesale prices necessary articles, such as books, stationery, collars, cuffs, underwear, etc.

Athletics

It is the policy of the College to sanction and encourage athletics so long as studies and other duties are not interfered with. Class records show that, as a rule, students engaged in athletics do as well in their classes as those who are not. Should future experience reverse these records, athletic sports will be restricted or prohibited altogether.

The following resolution relative to athletics has been passed by the Faculty: That it is the sense of the Faculty that only cadets in good class standing be permitted to play in any intercollegiate game of tennis or of ball—either baseball or football—to appear in any public exhibition or on the
rostrum; or to attend as a college representative any meeting of any sort at any time or place.

The most popular games this year are baseball and football. It is assumed that parents are willing for their sons to participate in these games unless the President is definitely notified to the contrary. The athletic teams will be permitted to take a few trips each season, usually on Saturdays, to play inter-collegiate games. Students must file written permission from parents for these trips.

The Southern Inter-Collegiate Athletic Association has decided that it is to the best interests of athletics to have an Athletic Council, consisting of members of the Faculty and of the student body. This Council is to consist of nine members—two members of the Faculty selected by the students for President and Secretary-Treasurer respectively, three members of the Faculty chosen by the Faculty and four students.

On May 1st there will be a contest between the students in the direction of general field work. This will be made a special occasion, at which time contests in general field athletics will be held and this day be known as Field Day.

**The Clemson Pictures**

Following is a list of the oil-paintings bequeathed by Thomas G. Clemson. This collection, with additional portraits, may be seen in the President's office in the Agricultural building:

1. Virgin and Child.......................... Rubens
2. Head of Velasquez..........................
3. Landscape.................................. Poussin
4. Flower Piece.............................. Zegers
5. The Jesuit with Medallion................ Teniers
6. Fruit, etc.................................. Deheem
7. Student's Repast........................... Vansomer
8. Peasant Eating Soup .................................. Frans Hals
9. Adoration (on copper) .................................. Frans Hals
10. Boy Mending Pen ..................................... Spanish
11. Head Study ........................................... Greuze
12. Flowers ............................................... Robert
13. Cattle .................................................. Louis Robert
14. Goats and Sheep ...................................... Louis Robert
15. Landscape .............................................. Louis Robert
16. Magdalen ............................................... Van Schendel
17. Landscape ............................................. Fearnley
18. Gateway ................................................ Tavernier
19. Titian Placing his Model ............................... Venneman
20. The Quarrel ............................................ Venneman
21. Reconciliation ........................................ Venneman
22. Two Old Men .......................................... Venneman
23. Scene in Spain ......................................... Bossnet
24. Marine View in Holland ............................... Francia
25. Poverty and Suffering ................................ DeBlock
26. Group of Lambs ....................................... Louis Robert
27. Tasso in Prison Visited by Montaigne. Copy after Gallait
28. Magdalen, Study after Murillo ........................ DeBlock
29. Girl of Antwerp with two Dogs ...................... Copy after Landseer
   (Original in the gallery of King Leopold of Belgium.)
30. Landscape .............................................. Copy of Koekkoek by Louis Robert
31. Waterfall ............................................. Copy of Auerbach by L. Robert
32. Peasant Girl .......................................... By an Antwerp Artist
33. Gate of the Alhambra ................................ Copy of Bossnet
34. Beatrice Cenci. Very old copy; done before original had faded.
35. Mother Teaching Son .................................. Copy
36. Landscape ..............................................
37. Old Man Smoking ..................................... Leys (Copy)
DEGREES, HONORS
AND
LIST OF STUDENTS
DEGREES AND HONORS

Graduates

At the Commencement, June 17th, the degree of Bachelor of Science was conferred upon the following graduates:

Course in Chemistry and Agriculture

E. B. Boykin........................................ Darlington County
E. Brockmann, Jr................................. Richland County
J. M. Burgess...................................... Clarendon County
G. H. Hardin...................................... Oconee County
J. E. Martin, Jr................................. Charleston County
G. F. Mitchell................................. Charleston County
L. H. McCullough............................... Williamsburg County
F. K. Norris.......................................Orangeburg County
S. M. Robertson................................. Pickens County
D. H. Sally..........................................Aiken County
J. B. Tinsley...................................... Union County
M. E. Zeigler......................................Orangeburg County

Mechanical and Electrical Course

G. E. Bamberg.....................................Bamberg County
B. H. Barre........................................Lexington County
E. G. Campbell.................................Charleston County
A. B. Carr........................................Richland County
G. B. Clinkscales..............................Spartanburg County
W. W. Coleman.................................Aiken County
F. Crawford.......................................Pickens County
C. Douthit.........................................Anderson County
J. C. Earle.........................................Anderson County
C. N. Gignilliat.................................Oconee County
F. M. Gunby.......................................Orangeburg County
F. M. Jordan......................................Oconee County
E. J. Larsen .............................................. Colleton County
J. D. Meador ............................................ Union County
T. H. Munro .............................................. Union County
G. T. McGregor .......................................... Richland County
H. T. Poe, Jr. ........................................... Greenville County
T. R. Phillips .......................................... Orangeburg County
J. M. Rodger ............................................ Union County
C. H. Seigler ............................................. Aiken County
M. A. Sitton ........................................... Anderson County
W. F. Sneed ............................................. Charleston County
S. C. Stewart ........................................... Pickens County
H. G. Stokes ............................................ Hampton County
D. A. J. Sullivan ....................................... Charleston County
S. M. Ward, Jr. ......................................... Georgetown County
J. B. Watkins ........................................... Saluda County
H. A. Wilson ........................................... Sumter County

Course in Civil Engineering

H. T. Cantey ........................................... Clarendon County
C. L. Reid ............................................... York County

Course in Textile Industry

A. R. Barrett ........................................... York County
J. H. Brown ............................................. Oconee County
W. E. Chapman ....................................... Greenville County
W. E. Cole .............................................. North Carolina
W. B. Cothran ......................................... Greenwood County
B. C. Cromer ........................................... Anderson County
J. E. Gettys .............................................. York County
David Jennings ........................................ Charleston County
H. B. Jennings, Jr .................................... Charleston County
D. Kohn ................................................... Orangeburg County
H. F. Little ............................................. Spartanburg County
F. E. Pearman .......................................... Anderson County
W. T. Prescott ......................................... Edgefield County
Distinguished Students

Students who make an average of 90 per cent. or more on each and every study for the entire session are designated as distinguished. The following students attained this distinction during the session of 1901-1902:

Senior Class: S. C. Stewart.
Junior Class: T. S. Gandy and T. M. Harvey.

Postgraduate Students

M. E. Bradley .......................................... Abbeville
J. W. Gantt ........................................... Virginia
G. H. Hardin ......................................... Oconee
H. T. Poe ............................................... Greenville
S. M. Robertson ........................................ Pickens

Undergraduates

Senior Class

<table>
<thead>
<tr>
<th>Name</th>
<th>Course</th>
<th>County</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. H. Alford</td>
<td>Text.</td>
<td>Marion</td>
</tr>
<tr>
<td>J. T. Beaty</td>
<td>Civil</td>
<td>North Carolina</td>
</tr>
<tr>
<td>C. E. Boineau</td>
<td>Text.</td>
<td>Horry</td>
</tr>
<tr>
<td>J. L. Bradford</td>
<td>Civil</td>
<td>Lexington</td>
</tr>
<tr>
<td>W. O. Cain</td>
<td>Text.</td>
<td>Sumter</td>
</tr>
<tr>
<td>W. B. Chisolm</td>
<td>Mech. Elec.</td>
<td>Charleston</td>
</tr>
<tr>
<td>J. C. Cullum</td>
<td>Text.</td>
<td>Lexington</td>
</tr>
<tr>
<td>J. P. Cummings</td>
<td>Text.</td>
<td>Fairfield</td>
</tr>
<tr>
<td>F. H. Cunningham</td>
<td>Text.</td>
<td>Anderson</td>
</tr>
<tr>
<td>Name</td>
<td>Course</td>
<td>County</td>
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<tr>
<td>J. G. Cunningham</td>
<td>Text.</td>
<td>Anderson</td>
</tr>
<tr>
<td>F. G. DeSaussure</td>
<td>Mech. Elec.</td>
<td>Charleston</td>
</tr>
<tr>
<td>D. E. Earl</td>
<td>Text.</td>
<td>Pickens</td>
</tr>
<tr>
<td>E. D. Ellis</td>
<td>Mech. Elec.</td>
<td>Abbeville</td>
</tr>
<tr>
<td>S. W. Epps</td>
<td>Agri.</td>
<td>Williamsburg</td>
</tr>
<tr>
<td>E. R. Finger</td>
<td>Civil</td>
<td>Spartanburg</td>
</tr>
<tr>
<td>L. W. Fox</td>
<td>Text.</td>
<td>Lexington</td>
</tr>
<tr>
<td>Benj. Freeman</td>
<td>Agri.</td>
<td>Charleston</td>
</tr>
<tr>
<td>W. D. Garrison</td>
<td>Agri.</td>
<td>Anderson</td>
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CLEMSON COLLEGE

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A. J. Speer           Mech.      Abbeville
J. W. Stickley        Mech.      Beaufort
F. R. Sweeney         Mech.      Spartanburg
D. B. Swygert         Mech.      Laurens
W. H. Taylor          Mech.      Oconee
S. L. Verner          Agri.      Oconee
J. W. VonHasseln      Text.      Anderson
N. Wakefield          Text.      Abbeville
L. W. Walker          Mech.      Clarendon
F. E. Watkins, Jr.    Mech.      Anderson
R. M. Watson          Agri.      Greenwood
C. Webb               Mech.      Richland
W. S. Weston          Mech.      Charleston
W. C. Wilbur          Text.      Charleston
A. M. Williams        Agri.      Greenville
J. H. Williams        Mech.      Barnwell
W. H. Wise            Mech.      Cherokee
L. S. Wood            Mech.      Barnwell
A. Youmans            Mech.      Spartanburg
C. P. Zeigler         Mech.      Orangeburg
J. C. Zimmerman       Mech.      Orangeburg

Freshman Class

D. G. Adams .......................................................... Darlington
W. C. Adams .......................................................... Marlboro
C. R. Alexander ....................................................... Chester
F. G. Alexander ....................................................... Charleston
R. T. Allston ......................................................... Georgetown
W. W. Altman .......................................................... Berkeley
W. D. Anderson ....................................................... Cherokee
G. C. Cauthen ......................................................... Lancaster
D. F. Cherry ......................................................... Charleston
A. F. Cleveland ..................................................... Spartanburg
C. Coles .............................................................. Richland
In preparing catalogue, a sheet of manuscript was lost, and the following names were thus omitted from the roll of the Freshman Class:

J. H. Barksdale .................................................. Greenwood
H. S. Bartless .................................................. Beaufort
T. F. Barton, Jr............................................... Orangeburg
W. S. Baskin ..................................................... Abbeville
W. A. Beaty ...................................................... Fairfield
A. T. Beaver ...................................................... Georgia
W. Beckett ......................................................... Charleston
L. Bellinger ....................................................... Chesterfield
O. H. Bissell, Jr.................................................. Charleston
J. C. Boesch ...................................................... Charleston
J. T. Bolt .......................................................... Anderson
R. E. Bowen ....................................................... Pickens
J. W. Bradley ...................................................... Greenwood
E. C. Breese ....................................................... North Carolina
J. A. Brice, Jr..................................................... Fairfield
A. E. Brock ....................................................... Clarendon
O. R. Brown ....................................................... Fairfield
A. L. Brunson, Jr ............................................... Edgefield
J. C. Brunson ...................................................... Florence
I. W. Bull ......................................................... Orangeburg
T. B. Caldwell ................................................... Spartanburg
E. P. Campbell .................................................... Charleston
L. F. Carpenter ................................................... Anderson
O. B. Coskry ............................................................. Clarendon
A. H. Cottingham ..................................................... Marion
T. J. Crane ............................................................. Laurens
W. H. Crawford ....................................................... Richland
P. S. Cromer ............................................................ Abbeville
I. C. Cross .............................................................. Chester
H. E. Davison ........................................................... Cherokee
W. A. C. DeLorme ...................................................... Darlington
St. J. Dendy ............................................................ Oconee
O. L. Derrick .......................................................... Lexington
S. L. Dreher ............................................................ Lexington
W. D. Drew .............................................................. Barnwell
A. P. DuBose .......................................................... Kershaw
A. F. H. Dukes, Jr .................................................... Orangeburg
S. E. Dunbar ........................................................... Barnwell
F. M. Dwight .......................................................... Sumter
C. F. Elliott ........................................................... Fairfield
A. G. Ellison ........................................................... Fairfield
A. L. Ervin .............................................................. Florence
R. H. Evans ............................................................ Newberry
L. Fields ................................................................. Darlington
S. L. Fort ................................................................. Cherokee
J. A. Gelzer ............................................................. York
T. L. Goodwin .......................................................... Anderson
R. D. Graham .......................................................... Sumter
C. A. Grainger .......................................................... Horry
F. L. Habenicht ......................................................... Fairfield
L. L. Harris ............................................................ Anderson
S. P. Harper ............................................................ Williamsburg
H. C. Hastings ......................................................... Spartanburg
J. W. Hicklin ............................................................ Chester
D. H. Hill ............................................................... Abbeville
H. M. Hill ............................................................... Abbeville
E. S. Hitch .............................................................. Georgia
L. R. Hoyt .............................................................. Sumter
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*Died March 8, 1903.
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W. S. Zimmerman .................................. Spartanburg

Irregular Students

W. J. Austin ............................................ Abbeville
J. S. B. Baskin ........................................ Clarendon
S. L. Blair .............................................. York
J. W. Bradberry ......................................... Anderson
J. E. Clark ............................................... Chesterfield
J. O. Enecks ............................................. Georgia
W. R. Enecks ............................................ Georgia
R. E. Epting ............................................ Newberry
W. W. Fellers ........................................... Newberry
R. A. Gandy .............................................. Darlington
B. Genoble .............................................. Spartanburg
J. L. Gossett ............................................. Spartanburg
W. F. Gossett ............................................. Spartanburg
H. F. Hunsucker ......................................... Marlboro
T. E. Keitt ............................................... Newberry
A. Keller ................................................ Greenwood
J. R. London, Jr. ....................................... York
L. L. McDonald .......................................... Florence
S. Paul .................................................... Beaufort
H. E. Phillips ........................................... Barnwell
J. C. Schrimp ............................................ Anderson
Joseph Sherard .......................................... Anderson
C. V. Sitton ............................................ Anderson
C. E. Smith ............................................... Georgia
E. E. Ware ............................................... Greenville
Albert Yates ............................................. Charleston

Preparatory Class

J. F. Arthur ............................................ Kershaw
R. W. Beaty .............................................. Union
C. W. Best ............................................... North Carolina
T. W. Blease ............................................. Saluda
F. F. Bolt .............................................................. Anderson
S. A. Boozer ........................................................... Newberry
H. D. Boykin ........................................................... Kershaw
James Brinkley ....................................................... Georgetown
F. W. Brock ........................................................... Anderson
B. C. Brown ............................................................ York
W. E. Campbell, Jr. .................................................... Beaufort
M. M. Carter ........................................................... Darlington
R. F. Cason ............................................................... Anderson
H. S. Chapman .......................................................... Lexington
J. F. Claffy .............................................................. Orangeburg
W. C. Clinkscales ...................................................... Anderson
H. L. Cogburn .......................................................... Edgefield
P. L. Cogburn ........................................................... Edgefield
J. D. Connor, Jr. ...................................................... Colleton
W. C. Cromer .......................................................... Greenwood
R. E. Dalton ............................................................ Greenville
G. W. Dorman .......................................................... Spartanburg
J. J. Dorn ............................................................... Greenwood
W. K. R. DuBose ....................................................... Darlington
J. A. Duffie .............................................................. Oconee
D. J. Dunlop ............................................................ Williamsburg
H. M. Dunn ............................................................. Abbeville
C. E. Durant ........................................................... Colleton
H. B. Ellis .............................................................. Abbeville
J. S. Elrod ............................................................... Anderson
R. T. Farley ............................................................. Laurens
R. F. Fraser ............................................................. Georgetown
F. M. Furtick ........................................................... Lexington
W. A. Gantt ............................................................. Aiken
F. D. Griffin .......................................................... Greenville
G. W. Gyles ............................................................. Barnwell
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**Total, South Carolina** 523
Regimental Organization
April 1, 1903

For instruction in infantry, and, to a slight degree, in light artillery tactics, and for the purpose of discipline, the cadets are organized into seven companies of infantry and one company of artillery.

The infantry is divided into two battalions—one of four companies and one of three companies—each battalion being under the immediate command of a Cadet Major. The artillery being a separate organization, commanded by a Cadet Captain.

The officers and non-commissioned officers are chosen from those who have shown themselves the most efficient in their general deportment and military duties. The officers from the Senior Class, and in general the Sergeants from the Junior Class, and Corporals from the Sophomore Class.

The figures indicate the relative rank in the several grades. The first seven ranking Sergeants being classed as Company Quartermaster Sergeants.

Commandant Cadets

FIRST LIEUTENANT EDGAR A. SIRMYER, 
THIRD U. S. CAVALRY

Regimental Staff
T. S. Perrin......................... Capt. and Adjutant
T. B. Young......................... Capt. and Quartermaster

Non-Commissioned Staff
F. T. Hamlin.......................... Sergeant Major
J. P. Tarbox......................... Quartermaster Sergeant
C. Y. Reamer......................... Color Sergeant
First Battalion

MAJOR J. C. WYLIE

Adjutant
J. L. Bradford$^2$

Sergeant Major
J. R. Connor$^2$

Company A

Captains
E. D. Ellis$^7$

Company B

Lieutenants
F. K. Rhodes$^6$

J. F. Prioleau$^{12}$

Captains
J. P. Glenn$^4$

Company C

Lieutenants
C. W. McSwain$^4$

F. K. Norris$^2$

First Sergeants
C. B. Hagood$^5$

A. M. Henry$^1$

V. B. Hall$^3$

First Sergeants
L. Lipscomb$^7$

R. E. Miller$^3$

W. F. Mauldin$^4$

Sergeants
I. H. Morehead$^8$

A. E. Holman$^{10}$

S. J. Faris$^{11}$

L. E. Boykin$^{25}$

Corporals
W. S. Beaty$^{22}$

S. J. Faris$^{11}$

L. E. Boykin$^{25}$

M. S. Reeves$^{24}$

S. C. Dean$^{29}$

W. P. Walker$^5$

First Grade

C. P. Josey$^{14}$

R. M. Watson$^{12}$

B. O. Kennedy$^5$

L. S. Wood$^{15}$

R. L. Link$^{20}$

J. W. Ruff$^9$

W. H. Wyse$^{27}$

R. L. Link$^{20}$

R. P. Evans$^{18}$

H. W. Barre$^{30}$

H. G. Bryan$^{22}$

J. M. Jenkins$^{21}$

T. H. J. Williams$^{33}$

C. Hanvey$^{34}$

M. S. Reeves$^{24}$

Company D

Captain
W. H. Barnwell$^3$

Lieutenants
J. T. Robertson$^1$

H. C. Sahlmann$^{13}$
CLEMSON COLLEGE

First Sergeant
J. A. Wier

Sergeants
F. W. Lachicotte
H. W. Crouch

Sergeants
H. W. Matthews
S. Ford

Corporals
C. R. Robinson
W. S. Weston

Corporals
B. F. Lee
M. C. Shirley

Second Battalion

MAJOR C. W. LEGERTON

Adjutant
H. C. Tillman

Sergeant Major
J. R. Siau

Company E

Company F

Company G

Captains
T. S. Gandy
P. J. Quattlebaum
T. M. Harvey

Captains
N. H. Alford
V. Livingston
D. E. Earle

Lieutenants
G. L. Morrison
W. O. Cain
B. Freeman

Lieutenants
J. C. Norton
W. L. Templeton
V. M. Williams

First Sergeants
J. M. Hill

First Sergeants
H. M. Manigault
E. F. Brown

Sergeants
S. G. Bryan
G. L. Preacher
V. Baker

Sergeants
G. T. McGregor
A. M. Williams
V. C. Platt

Sergeants
P. L. Elias
W. M. McWhorter
A. J. Speer

Sergeants
A. L. Matthews
Corporals

T. K. Elliott
A. A. Gandy
M. B. Booth
J. C. Goggans

E. H. Jones
J. H. Rodger
F. R. Sweeney
E. R. McIver

G. B. Holland
J. G. Parks
C. J. Lemmon

Artillery Company

Captain
W. E. G. Black

Lieutenants

B. H. Gardener
W. M. Wightman

First Sergeant
H. N. McCrary

Sergeants

E. R. Finger
D. H. Sadler

W. D. Garrison

Corporals

H. R. Pollitzer
J. C. Cullum

D. G. Lewis
H. W. Marvin
Cadet Band

The band is a part of the military department and is, therefore, under the immediate control of the Commandant. The cadets who are detailed to the band are required by the regulations of the College to practice one hour each day under the direction of the band master. The organization of the band for the session 1902-1903 is as follows:

B. H. Rawl, Director

J. E. Harrall, Drum Major
C. E. Boineau, Solo Cornet
L. P. Slattery, Solo Cornet
J. Maxwell, Solo Clarinet
W. B. Chisolm, Second Clarinet
C. Webb, Second Cornet
J. L. Caldwell, Third Cornet
J. W. Von Hasselen, Baritone
F. H. Cunningham, First Trombone
J. M. Pauling, Second Trombone
J. G. Cunningham, Bass
C. F. Simmons, Bass
A. A. Merrick, First Tenor
S. J. Dendy, Second Tenor
R. G. Williams, Solo Alto
E. P. Crouch, Second Alto
J. E. Traxler, Third Alto
W. H. L. Homsley, Snare Drum
W. D. Drew, Bass Drum
J. A. Simmons, Cymbals
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