THE

NORTH CAROLINA COLLEGE

OF

AGRICULTURE AND MECHANIC ARTS,

WEST RALEIGH.

1908-1909.

RALEIGH:
E. M. UZZELL & CO., STATE PRINTERS AND BINDERS.
1909.

CALENDAR.

1909.

JANUARY.

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COLLEGE CALENDAR.

1909.

Thursday,	July	8,	Entrance examination at each county courthouse, 10 A. M.
Wednesday,	September	1,	Entrance examination at the College, 9 A. M.
Thursday,	September	2,	First Term begins; Registration Day.
Thursday,	November	25,	Thanksgiving Day.
Wednesday,	December	22,	First Term ends.

1910.

Wednesday,	January	5,	Second Term begins; Registration Day.
Saturday,	March	19,	Second Term ends.
Monday,	March	21,	Third Term begins.
Sunday,	May	29,	Baccalaureate Sermon.
Monday,	May	30,	Alumni Day. Annual Oration.
Tuesday,	May	31,	Commencement Day.

BOARD OF TRUSTEES.

Name.	*Post Office.*	*Term Expires.*
C. W. GOLD	Raleigh	May 1, 1911.
E. M. KOONCE	Jacksonville	May 1, 1911.
T. W. BLOUNT	Roper	May 1, 1911.
D. A. TOMPKINS	Charlotte	May 1, 1911.
J. T. ELLINGTON	Smithfield	May 1, 1913.
W. E. DANIEL	Weldon	May 1, 1913.
W. H. RAGAN	High Point	May 1, 1913.
W. B. COOPER	Wilmington	May 1, 1913.
M. B. STICKLEY	Concord	May 1, 1915.
T. T. BALLENGER	Tryon	May 1, 1915.
N. B. BROUGHTON	Raleigh	May 1, 1915.
O. L. CLARK	Clarkton	May 1, 1915.
EVERETT THOMPSON	Elizabeth City	May 1, 1917.
R. H. RICKS	Rocky Mount	May 1, 1917.
O. MAX GARDNER	Shelby	May 1, 1917.
LOCKE CRAIG	Asheville	May 1, 1917.

FACULTY.

DANIEL HARVEY HILL, A.M., Lit.D., President.

WALLACE CARL RIDDICK, A.B., C.E., Professor of Civil Engineering and Vice President.

WILLIAM ALPHONSO WITHERS, A.M., Professor of Chemistry.

FRANK LINCOLN STEVENS, M.S., Ph.D., Professor of Botany and Vegetable Pathology.

ROBERT E. LEE YATES, A.M., Professor of Mathematics.

THOMAS NELSON, Professor of Textile Industry.

JOHN SOMERVILLE EATON YOUNG, First Lieutenant U. S. A., Professor of Military Science and Tactics.

CLIFFORD LEWIS NEWMAN, M.S., Professor of Agriculture.

JOHN MICHELS, B.S.A., M.S., Professor of Dairying and Animal Husbandry.

WILLIAM HAND BROWNE, Jr., A.B., Professor of Physics and Electrical Engineering.

HOWARD ERNEST SATTERFIELD, B.S. in M.E., Professor of Mechanical Engineering.

THOMAS PERRIN HARRISON, Ph.D., Professor of English.

GUY ALEXANDER ROBERTS, B.S., D.V.S., Professor of Veterinary Science and Physiology.

HENRY C. WALTER, B.S., Acting Professor of Physics and Electrical Engineering.

FRANK C. REIMER, M.S., Associate Professor of Horticulture.

BARTHOLOMEW MOORE PARKER, B.S., Assistant Professor of Textile Industry.

WILLIAM ANDERSON SYME, B.S., M.S., Ph.D., Assistant Professor of Chemistry.

CHARLES BENJAMIN PARK, Instructor in Machine Shop and Assistant in Power Plant.

CARROLL LAMB MANN, B.S., C.E., Instructor in Civil Engineering.

GEORGE SUMMEY, Jr., Ph.D., Instructor in English.

CLARENCE ANDREW SPRAGUE, B.S., Instructor in Physics.

ALFRED HENRY THIESSEN, B.S., Section Director United States Weather Bureau, Instructor in Meteorology.

JOHN STRAUCHON JEFFREY, Instructor in Poultry Husbandry.

ABRAHAM RUDY, A.M., Pd.D., Instructor in Modern Languages.

RALPH INGRAM SMITH, B.S., Instructor in Zoology and Entomology.

WILEY THEODORE CLAY, B.E., Instructor in Wood-working and Pattern-making.

JOHN ALSEY PARK, B.E., Instructor in Mathematics.

MICHAEL RALPH RICHARDSON, A.M., Instructor in Mathematics.

LILLIAN LEE VAUGHAN, B.E., Instructor in Drawing and Mechanics.

CARL PHILIP BONN, B.A., Instructor in English.

VANCE SYKES, B.E., Instructor in Mathematics and Civil Engineering.

WELDON THOMPSON ELLIS, B.E., M.E., Instructor in Machine Design and Steam Laboratory.

LEON FRANKLIN WILLIAMS, A.B., A.M., Ph.D., Instructor in Chemistry.

JOHN WORTHINGTON DORSEY, E.E., Instructor in Electrical Engineering.

JOHN EDWARD HALSTEAD, B.S., Instructor in Dyeing.

HUBERT HILL, B.S., M.S., Instructor in Chemistry.

WILLIAM BROOKS TRUITT, B.E., Instructor in Physics.

JOHN LAWRENCE VON GLAHN, B.E., Instructor in Mathematics and Civil Engineering.

JESSE PAGE SPOON, B.Agr., Laboratory Assistant in Anatomy and Physiology.

JOHN GALENTINE HALL, A.M., Instructor in Biology.

PERCY LEIGH GAINEY, B.Agr., Assistant in Bacteriology.

HERBERT NATHANIEL STEED, Instructor in Weaving and Designing.

FRED BARNET WHEELER, Instructor in Forge.

OTHER OFFICERS.

EDWIN BENTLEY OWEN, B.S., Registrar.

ARTHUR FINN BOWEN, Bursar.

BENJAMIN SMITH SKINNER, Farm Superintendent.

JAMES OLIVER LOFTIN, Steward.

Miss ELSIE LANIER STOCKARD, Librarian.

Mrs. DAISY LEWIS, Hospital Matron.

Miss ISABELLA WILLIS PESCUD, Stenographer.

HENRY McKEE TUCKER, M.D., Physician.

NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION DEPARTMENT, WEST RALEIGH.

DANIEL HARVEY HILL, A.M., Lit.D., President.

CHARLES BURGESS WILLIAMS, M.S., Director and Agronomist.

WILLIAM ALPHONSO WITHERS, A.M., Chemist.

FRANK LINCOLN STEVENS, Ph.D., Vegetable Pathologist.

JOHN STRAUCHON JEFFREY, Poultryman.

FRANK CHARLES REIMER, M.S., Horticulturist.

ROBERT SETH CURTIS, B.S.A., Animal Husbandman.

JOHN MICHELS, M.S.A., Dairy Husbandman.

RALPH INGRAM SMITH, B.S., Entomologist.

GUY ALEXANDER ROBERTS, D.V.S., Veterinarian.

WILLIAM ANDERSON SYME, Ph.D., Assistant Chemist.

JOHN GALENTINE HALL, A.M., Assistant in Plant Diseases.

WILLIAM CARLYLE ETHERIDGE, B.Agr., Assistant in Farm Crops.

JAMES KEMP PLUMMER, B.S., Assistant Chemist.

PERCY LEIGH GAINEY, B.Agr., Assistant Bacteriologist.

A. R. RUSSELL, Assistant in Field Experiments.

ARTHUR FINN BOWEN, Bursar.

CRAVEN PEARCE FRANKLIN, Secretary and Stenographer.

MILITARY ORGANIZATION.

Commandant of Cadets.

FIRST LIEUTENANT JOHN S. E. YOUNG, U. S. Army.

Cadet Major.

H. N. SUMNER.

Battalion Staff.

T. M. CLARK, Captain and Adjutant.
W. F. MORRIS, Captain and Quartermaster.

Noncommissioned Staff.

S. H. McNEELY, Sergeant Major.
T. D. HARRIS, Color Sergeant.

Band.

T. F. HAYWOOD, Captain.
W. R. MARSHALL, First Lieutenant.
J. H. ROBERTSON, Second Lieutenant.
R. J. WYATT, Drum Major.
W. E. DAVIS, First Sergeant.
I. N. TULL, Sergeant.
C. E. WALTON, Sergeant.
W. R. PHILLIPS, Sergeant.
O. M. SIGMON, Corporal.
J. W. ROLLINSON, Corporal.
G. R. ROSS, Corporal.
L. E. STEERE, Corporal.
R. T. WADE, Corporal.

Company A.

J. W. HARRELSON, Captain.
J. E. LATHAM, First Lieutenant.
W. N. SLOAN, Second Lieutenant.
H. S. STEELE, Second Lieutenant.
T. B. SUMMERLIN, First Sergeant.
J. C. ALBRIGHT, Sergeant.
H. C. CLAY, Sergeant.
W. L. MANNING, Sergeant.
L. D. MOODY, Sergeant.
W. H. DAVIS, Corporal.
J. L. MARTIN, Corporal.
K. BRYAN, Corporal.
W. P. THURSTON, Corporal.
F. T. PEDEN, Corporal.
W. J. HALL, Corporal.

Company B.

R. A. SHOPE, Captain.
W. S. DEAN, First Lieutenant.
W. M. MILLNER, Second Lieutenant.
R. R. FAISON, Second Lieutenant.
J. F. ROBINSON, First Sergeant.
J. B. PARKS, Sergeant.
L. L. HOOD, Sergeant.
T. S. BOND, Sergeant.
M. S. MAYES, Sergeant.
J. L. SPRINGS, Sergeant.
N. R. MARTIN, Corporal.
E. JOHNSTON, Corporal.
J. P. QUINERLY, Corporal.
G. W. GILLETTE, Corporal.
T. W. THORNE, Corporal.
F. G. TUCKER, Corporal.

Company C.

J. M. PRICE, Captain.
J. W. IVEY, First Lieutenant.
J. B. CRAVEN, Second Lieutenant.
J. E. TOOMER, Second Lieutenant.
L. P. McLENDON, First Sergeant.
R. L. MORGAN, Sergeant.
R. E. GILL, Sergeant.
T. H. THOMPSON, Sergeant.
H. W. WELLES, Sergeant.
W. M. NEALE, Sergeant.
W. BAILEY, Corporal.
J. M. BEAL, Corporal.
R. S. FAIRLY, Corporal.
M. F. WYATT, Corporal.

Company D.

W. A. HORNADAY, Captain.
J. G. PASCHAL, First Lieutenant.
J. M. PARKER, Second Lieutenant.
C. R. JORDAN, First Sergeant.
E. L. WINSLOW, Sergeant.
E. A. SEIDENSPINNER, Sergeant.
R. BOWDITCH, Sergeant.
C. R. BRADLEY, Sergeant.
J. W. BUCHANAN, Corporal.
R. BOYLAN, Corporal.
R. L. MORRISON, Corporal.
S. B. PHIFER, Corporal.

NOTE.—On October 14, 1908, the Battalion held a competitive drill on the Fair Grounds track, during the State Fair, and Company C, Corps of Cadets, was selected as the best drilled organization and awarded the College pennant.

GENERAL INFORMATION.

The North Carolina College of Agriculture and Mechanic Arts owes its existence to the combined liberality of the United States Government and of R. S. Pullen, of Raleigh, together with the patriotic efforts of a few far-sighted men who saw that in the industrial life of North Carolina the time had come when trained and educated leaders were necessary. The first act of the General Assembly of this State in relation to the College was ratified in 1885, the bill, which afterwards became a law, having been introduced by A. Leazar, Esq. The Congress of the United States in 1862 passed a bill, introduced by Senator Justin S. Morrill, of Vermont, giving to each State public lands "for the endowment, support, and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The income from this grant, amounting to $7,500 annually, was appropriated in 1887 by the Legislature of the State for the establishment and yearly maintenance of this College. Sufficient land for the College site and farm was given by the late R. S. Pullen. The College was formally opened for students October 1, 1889.

Additional funds were provided afterwards by the National Congress by the "supplemental Morrill Act" of 1890 and the "Nelson Act" of 1907 and by State appropriations.

The College is beautifully located on the extension of Hillsboro Street in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects.

There is an abundant supply of water from the city mains and from twelve deep wells on the College grounds. The water is analyzed, both chemically and bacteriologically, at regular periods.

The College now owns six hundred and eighty-five acres of land. Fourteen hundred young trees and nine hundred and forty vines are growing in an orchard of sixteen acres. Seven acres are devoted to truck growing. The herd consists of thirty-eight cows, twenty-seven calves, and two pure-bred Jersey bulls. The laboratories, drawing-rooms, and workshops are well equipped for practical work.

BUILDINGS.

The Administration Building is of brick, with brownstone trimmings, and is one hundred and seventy by sixty-four feet; part four stories in height and the remainder two. The lower floors contain the offices of the President, the Registrar, and the Bursar, several recitation-rooms and the chemical and physical laboratories. The upper stories are occupied by students.

In this, as in other buildings, every precaution has been taken to secure good sanitation. The rooms are well lighted, well ventilated and conveniently arranged.

The Mechanical Engineering Building is a plain, substantial two-story brick building, with large annex. It contains the drawing-rooms, recitation-rooms, and shops of the department.

Primrose Hall is a two-story brick building used for drawing-rooms and laboratories by the Department of Civil Engineering.

The Textile Building is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement contains the dyeing department, the first floor the looms and warp preparation machinery, and the second floor the carding and spinning machinery.

Pullen Hall was named in honor of the late R. Stanhope Pullen, the greatest benefactor of the College. The basement of this building is used as a dining room and seats five hundred students. The first story is used for library, reading room and lecture rooms. The second story serves as the College auditorium. This building is commodious, comfortable and well lighted.

The Agricultural Hall is a three-story buff press-brick building with granite trimmings and is two hundred and four by seventy-four feet. The lower or basement floor contains the class rooms and laboratories for work in the Department of Animal Husbandry and Dairying. Ample provision is made for butter-making, stock judging, farm butchering, and cold-storage accommodations for the products.

The second floor contains the offices of the department, class rooms for animal husbandry and agronomy, and laboratories for soil physics and agricultural machinery.

On the top floor are the rooms devoted to botany and vegetable pathology, zoology, physiology, and veterinary medicine. There are well-equipped class rooms and large, well-lighted laboratories.

The building affords excellent accommodations for education in agriculture and allied subjects, and is especially adapted to its needs.

The Electric Laboratory is a one-story brick building. It is equipped with modern electrical apparatus to which large additions will be made.

Watauga Hall is a three-story brick building, trimmed with brownstone and containing sixty rooms for dormitories. There is also a large dormitory in the attic, and in the basement are bath-rooms, which are free for students' use.

Dormitories.—In addition to Watauga Hall, one three-story and three two-story brick buildings are used exclusively for dormitories.

The Infirmary is a two-story brick building, containing a sitting-room, seven bed-rooms, three bath-rooms, a kitchen, linen-room, College Physician's office and medicine closet. The rooms are large, well ventilated, well lighted, and heated by steam. Each room opens upon a large, pleasant portico. The furnishing and equipment of the rooms are such as are used in modern hospitals.

Foundry.—The old boiler house has been fitted up for foundry purposes. It contains a 36-inch cupola furnace, Griffin Oil Furnace for melting iron; another for brass, and a small crucible furnace for brass melting; a core oven; benches and hand tools for moulding in the course of exercises, as well as for any repair work for the College.

The Barn is a frame building carefully planned for the purposes to which it is devoted. The barn is fifty by seventy-two feet and three stories high.

The Fire Protection of the College consists of the following equipment: An Underwriter fire pump, stand-pipe and reservoir, hose and hose reels. Hydrants are conveniently located about the grounds, with attached hose nozzles, etc. The buildings are supplied with extinguishers.

The New Power Plant furnishes heat, light, and power for all the buildings. The boiler plant consists of two 75-horse-power Babcock and Wilcox Company and two 100-horse-power Atlas Water-Tube Boilers, with a working steam pressure of 150 pounds. The Engine Plant consists of a 100-horse-power Skinner Engine and Crocker-Wheeler Generator attached; a 100 K. W. De Laval Turbine Generator set with self-exciter; a 10 K. W. steam-driven Exciter Set, Steam, and Vacuum Pumps for feeding the boilers and maintaining circulation in steam-heating apparatus. The buildings are equipped with Warren Webster system of heating.

THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station is a department of the College. It was established originally as a division of the State Department of Agriculture, in accordance with an act of the

General Assembly ratified March 12, 1877. Its work was greatly promoted by act of Congress of March 2, 1887, which made a liberal donation to each State for the purpose of investigations in agriculture and for publishing the same. The bill, which subsequently became a law, was introduced by Representative William H. Hatch, of Missouri. The funds of the Experiment Station were supplemented by the act of Congress of March 16, 1906, known as the "Adams Act."

The Director's office is in the Agricultural Building and the laboratories are in the main building at the College. The experimental work in agriculture, horticulture, stock and poultry raising, and dairying is conducted on the College farm, and the investigations in plant diseases and chemistry are made in the College laboratories.

The Station is always glad to welcome visitors and to show them the work in progress. The Station conducts a large correspondence with farmers and others concerning agricultural matters. It takes pleasure in receiving and answering questions.

Publications relating to general farming matters and embodying the results of experiments are published and sent free to all citizens of the State who request them. A request addressed to the Agricultural Experiment Station, West Raleigh, N. C., will bring these publications and answers to letters.

THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy, and ambition may fit themselves for useful and honorable work in any line of industry in which training and skill are requisite to success. It is intended to train farmers, mechanics, engineers, architects, draughtsmen, machinists, electricians, miners, metallurgists, chemists, dyers, mill-workers, manufacturers, stock-raisers, fruit-growers, truckers, and dairymen, by giving them not only a liberal but also a special education, with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Horticulture, Animal Industry, Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, Metallurgy, Chemistry, Dyeing, Textile Industry, and Architecture. It also offers practical training in Carpentry, Wood-turning, Blacksmithing, Machinists' Work, Mill-work, Boiler-tending, Engine-tending, Dynamo-tending and Installation. Electric-light Wiring, Armature Winding and other subjects relating to practical electricity.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal

education are not omitted. Thorough instruction is given in English, Mathematics, History, Political Economy, Physics, Chemistry, Botany, Zoology, Physiology, and Geology.

The College is not a place for young men who desire merely a general education without manual or technical training, nor for lads lacking in physical development, mental capacity, or moral fiber, nor for those who are unable or unwilling to observe regularity, system, and order in their daily work.

WHAT THE COLLEGE EXPECTS OF ITS STUDENTS.

It is taken for granted that students in the College are here to get an education. They are expected, therefore, to attend classes, lectures, laboratories, shop-work, drills, inspections, etc., without being reminded of such duties each day, week or month.

Students cannot properly prepare for and perform these duties if they spend time in Raleigh or absent themselves from work and study. They are expected, therefore, to observe study hours in their rooms and refrain from visiting Raleigh, except when permitted by the rules of the College.

Students are also expected to keep their rooms neat and orderly; to refrain from noise during study hours, and from disorderly conduct at all times and places; in short, to live like gentlemen.

Hazing new students, cigarette-smoking, drinking, gambling, card-playing, visiting pool-rooms and all improper places, loafing on the streets, and other like vicious, idle, unhealthy and unprofitable performances are prohibited by the College rules.

A record is kept of every student in College; his failure to perform duty and his infractions of the rules. When this record shows that a young man is not in College for the purpose of getting an education, and is not using his opportunities properly, he will be required to withdraw. For scandalous and vicious offenses students will be dismissed. The rules of the College are intended solely to promote manliness, to form habits of order, punctuality, promptness and fidelity to duty, as well as simplicity, economy and healthfulness of living; and to prevent habits of idleness, disorder, extravagance, and vice.

PRIZES.

A first prize of ten dollars and a second prize of five dollars are awarded annually to the students in the Freshman Class who earn the largest and the next largest amounts of money by labor on the College farm.

The North Carolina State Fair Association offers a prize of $5 to the student preparing the best essay on the Live-stock Exhibit at the State Fair.

To the Junior Mechanical Student who has made the most progress in Mechanical Drawing the Mechanical Department gives a set of high-grade drawing instruments.

Mr. William Dunn, of New Bern, North Carolina, gives annually a twenty-five-dollar gold medal to the Senior speaker who makes the best oration on Commencement Day.

DISCIPLINE.

The discipline is intended to secure studious habits, with punctuality, system, and order in the performance of all duties. Every effort is made to develop strong, intelligent, high-toned men; and proper patience, forbearance, and sympathy are used in this great work; but the College is in no sense a reform school, and it will not retain young men who are vicious, idle, or incompetent.

HAZING.

There has been no hazing of any sort in College this year. The present sentiment of the student body is opposed to this practice in our College, and its management feels sure that there will be no hazing during the next year.

REPORTS AND SCHOLARSHIP.

Regular reports of scholarship and conduct are sent to parents and guardians at the end of each term. Special reports are made whenever necessary. Students who are persistently neglectful of duty, or manifestly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it is plain that his stay in the institution is not profitable to himself or to the College.

RELIGIOUS INFLUENCES.

All students are required to attend chapel exercises in Pullen Auditorium each morning. These services are conducted by the President, by some member of the Faculty, or by some visiting minister.

Each student is expected to attend religious service in Raleigh on Sunday morning at the church of his choice. The students are always welcomed in the Sabbath schools of Raleigh, and a large number of them attend these services.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

The Young Men's Christian Association is a voluntary organization of the students, and is entirely under student management. A general secretary is employed by the association and devotes his entire time to the work. The members of the Faculty and the Board of Trustees are interested in the work and give assistance, both financially and otherwise. Any student who is a member of an evangelical church may become an active member. Any student of good moral character or who desires to improve his moral life may become an associate member.

The College Association is a branch of the International Association.

Two regular meetings of the association are held each week: one on Sunday evening and one on Wednesday. Musicians and speakers from Raleigh and other cities frequently take part in these services.

The purpose of the association is fourfold:

First, to build up Christian character and offer a suitable field for its development.

Second, to aid in keeping up the moral life of all the students in College.

Third, to train men in definite methods of Christian work, that they may be of the greatest service to their College and subsequently to their church and their country.

Fourth, to give moral young men such amusements and such good-fellowship as they need.

Bible study is systematically taken up by the association. Six or ten men are grouped into classes and meet regularly for Bible study. The leaders of these classes are trained for their teaching, and the entire work is under the supervision of the Bible Study Committee and the general secretary. Every student in College is urged to join one of these classes.

The association is supported by gifts from the Board of Trustees, the Faculty, and citizens of the State, and by its regular membership dues. Although membership is voluntary, it is desired that all students should apply for membership and thereby aid and be aided in an upright College life.

Plans are now under consideration for a fifteen-thousand dollar building to be fitted with every convenience for the association. This building will be the social center of College life. It will contain halls for the literary societies and for the Athletic Association as well as most comfortable quarters for the association.

ATHLETICS.

The College is provided with extensive grounds, which furnish ample facilities for military drill and athletic sports.

Outdoor sports are directly managed by the Athletic Association and are under the control of a committee of the Faculty.

The Athletic Association is organized by the student body to promote physical health and manly spirit through athletic sports. Under the direction of the Athletic Committee of the Faculty it promotes practice in base-ball, foot-ball, track athletics, etc.

LIBRARY AND READING-ROOMS.

The College Library occupies the first story of Pullen Hall. The reading-room is supplied regularly with about one hundred and fifty magazines and journals of various kinds, and yearly additions are being made to this number. The library contains about six thousand volumes. There are also reference libraries in the different departments. The library is kept open from 9 A. M. to 6 P. M. The Librarian is always present to assist students in finding desired information.

The Olivia Raney Library in Raleigh, containing now about ten thousand volumes, is free to the students and they have the privilege of borrowing books from it. Students also have the privilege of consulting books in the State Library.

STATE MUSEUM.

Students have free access to the large collections of the State Museum. These collections furnish most excellent opportunities for studies in Geology, Mineralogy, Mining, Forestry, and Natural History.

COLLEGE SOCIETIES.

Such college organizations are encouraged as tend to form good character, to develop manly physical vigor, and to promote literary, scientific and technical research and training.

The Biag Society is composed of those students who have made the best record in biological and agricultural subjects. The membership is limited to ten. The Society meets monthly for the discussion of biological and agricultural questions.

Farmers' Institute.—The students in the Winter Course in Dairying and Agriculture meet every Wednesday night during the winter term for a discussion of practical agricultural problems. The meet-

ings are conducted in the manner of a Farmers' Institute and give training in conducting farmers' meetings, *ex tempore* speaking on agricultural questions, and writing and reading of reports on various farm operations.

The Rural Science Club meets semi-monthly for the discussion of agricultural subjects, review of current agricultural publications, and reports on personal experiments and the work of the College farm and Experiment Station.

The Biological Club meets semi-monthly for the discussion of biological subjects in their relation to practical agriculture. Students here present results of their own investigations and observations and reviews of the more important current publications, particularly those from the United States Department of Agriculture and the State Experiment Stations.

The Tompkins Textile Society meets every two weeks for the purpose of discussing subjects relating to the textile industry.

The Mechanical Society meets every two weeks for the discussion of mechanical subjects.

The Berzelius Chemical Society meets fortnightly for the discussion of chemical subjects and for review of the current chemical literature, with which the College is well supplied.

The Pullen and Leazar Literary Societies afford excellent opportunities for practice in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

The Alumni Association meets each year on Monday preceding Commencement Day, transacts its annual business, hears the Alumni oration and attends the annual Alumni banquet. This association purposes raising funds to erect an Alumni building at the College.

REQUISITES FOR ADMISSION.

Each applicant for admission must be at least sixteen years of age and must bring a certificate of good moral character from the school last attended.

To the Four-year Courses.—Applicants for admission to the Freshman Class of all four-year courses will be examined on the following subjects: Arithmetic (complete), Algebra (to involution), English Grammar, Analysis and Composition, and American History. No student will be admitted to the Freshman Class whose examination papers are seriously faulty in spelling, grammar, punctuation, or division into paragraphs.

To the Two-year Courses.—Applicants for admission to the two-year courses in Mechanic Arts and Textile Industry will be examined on Arithmetic (through common and decimal fractions), English Grammar and Composition, and American History.

To the One-year Course in Agriculture.—Applicants for admission to the one-year course in agriculture will be required to pass the same examination as for the two-year course.

To the Winter Courses.—No entrance examination is required of candidates for admission to the winter courses. No one under eighteen years of age will be admitted to a winter course.

ENTRANCE EXAMINATIONS.

Entrance examinations will be held by the County Superintendents of Instruction in each courthouse in the State at 10 o'clock A. M. the second Thursday in July of each year. The date for 1909 is July 8th. These examinations will save the expense of a trip to Raleigh in case the candidate should fail or if there should not be room enough for him in the College. Entrance examinations will be held also at the College at 9 o'clock A. M. on Wednesday preceding the opening day. The examinations begin with English at 9 A. M., in Room 21, Main Building, followed by Mathematics at 11, and History at 2, in the same room. The date for 1909 is September 1st.

ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to winter courses, over eighteen years of age.
2. School teachers holding teachers' certificates.
3. Graduates of those high schools and academies whose certificates are accepted by the Faculty of this College.

SESSION.

The College session lasts nine months, and opens annually the first Thursday in September and closes the last Tuesday in May, with a vacation of about two weeks at Christmas.

EXPENSE.

The total average college expense of a Freshman student is $225.00.

The total average college expense of a Freshman student having a scholarship is $180.00.

These amounts include cost of board, tuition, lodging, fuel and lights, fees and deposits, books, uniform and cap, drawing instruments, and laundry. They do not include allowance for clothing, other than for uniform and cap, nor for spending money and contingencies.

Allowance for clothing, spending money, and contingencies is a matter largely to be determined by the parent.

The amount of such allowance should be kept within reasonable bounds. From $50.00 to $100.00 per year are suggested as the minimum and maximum amounts.

This will make the total expense for all purposes of a Freshman student, without a scholarship, amount to from $275.00 to $325.00 for the entire session; or $230.00 to $280.00, if he has a scholarship.

The largest payment is made in September. A student on entering college should bring at least $60.00 to meet his various payments for the first month.

Students withdrawing from college within two weeks from date of entrance will be refunded all money paid by them to the College Bursar, except charges for board during the time here. Students withdrawing later than two weeks from date of entrance will be refunded no money except for board.

Board is $10.00 per month and is payable on the first day of each month from September to May inclusive; board for less time than one month is charged for at the rate of fifty cents a day or $3.00 per week.

The College Bursar is forbidden by the Trustees to give credit.

A more detailed statement of college fees is as follows:

The Bursar is instructed to collect from each student at the beginning of the session in September of each year the following amounts: Room rent, fuel and lights, $15.00; incidental fee, $5.00; medical fee, $3.00; lecture fee, $1.00; library fee, $1.00; furniture fee, $1.00; physical culture fee, $1.00; fee to cover damage to guns issued to cadets, $5.00; board for September, $10.00. Total $42.00.

Day students pay in full for half year on entering.

In addition to the above each student will be required to purchase a uniform, costing $18.00. Five dollars of this must be paid when measure is taken, and the balance when the uniform is delivered, which will be by the last of September.

In addition to the above, the following Department fees will be paid to the Bursar at the same time:

	Sen.	Jun.	Soph.	Fresh.	2d Year S. C.	1st Year S. C.
Agr. students..	$ 10.00	$ 1.00	$ 4.00	$ 1.00	$.....	$ 1.00
C. E. " ..	1.00	1.00	4.00	3.00	.....	.....
M. E. " ..	2.00	2.00	6.00	3.00	2.00	2.00
E. E. " ..	3.00	3.00	6.00	3.00	.....	.....
Chem. " ..	10.00	6.00	4.00	3.00	.....	.....
Tex. " ..	9.00	8.00	8.00	4.00	7.00	7.00

The Bursar will collect from each pay student by November first of each year tuition for half the session (amount $22.50).

The following are the January payments (without scholarship): room rent, fuel and lights, $15.00; tuition (half session), $22.50; furniture fee, $1.00; medical fee, $3.00; physical culture fee, $1.00; board for January, $10.00. Total, $52.50.

The amount required of students with scholarships is the same as above, less $22.50, or $30.00.

The College rooms are supplied with necessary furniture. Each student should bring with him two pairs of blankets, two pairs of sheets, two pillowcases, one pillow and two bedspreads for single bed.

UNIFORM.

The College uniform must be worn while on military duty by all students. It must be purchased at the College from the contractor. The uniform is of a strong gray cloth, and with care it will last a year. Each student is required to wear an overcoat during cold weather. Overcoats may be brought from home, or purchased in the city.

FREE TUITION.

Scholarships, one hundred and twenty in number, conferring free tuition, are given to needy boys of talent and character. As far as possible, these scholarships are distributed among the counties of the State. Appointments are made only by the President of the College upon written recommendation of members of the Legislature. The scholarships are not intended for people who have property. Certificates of inability to pay must be made by the applicant and endorsed by the person recommending him.

SELF-HELP.

Many students pay their own expenses, either wholly or partly, by doing various kinds of work. There is regular employment for a limited number, enabling them to earn from $4 to $10 a month. There is also occasional employment, paying from $2.50 to $5 a month. The work offered is mainly on the farm, in the barn, milking and feeding cattle, etc., and is for agricultural students only. There is very little work available for others, except serving in the dining-room. Young men should not rely upon material help from work the first year, as most of the work is given to students who have had a year's experience at the College. Application for work should be made before the student comes to college.

STUDENT LOAN FUND.

The Alumni Association of the College has established a small fund to be lent to needy students of talent and character. The loans are made at six per cent, and good security is required. Sufficient time for repayment is given to enable the student to earn the money himself. The amount lent to each student is limited. The purpose is to help young men who are willing to help themselves and who cannot find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, alumni, and friends of education generally. The fund is administered by the College Bursar, under the direction of the President. At present the fund amounts to $2,652.33.

BOARD AND LODGING.

All students are expected to board in the College mess-hall and to room in the College dormitories. An abundant supply of plain, nourishing food, with as large a variety as possible, is furnished absolutely at cost. The charge at present is $10 per month, payable in advance.

Rooms in the College dormitories are supplied with electric lights, steam heat, and all necessary furniture, except sheets, blankets, pillowcases, pillows, bedspreads, and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal.

CARE OF THE SICK.

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspections are made monthly by the College physician.

Each student has a regular routine of daily life, including abundant physical exercise in the shops and on the drill grounds.

In case of sickness a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing.

The College physician visits the Infirmary daily at 3 o'clock P. M., and in cases of serious illness as frequently as may be required.

A trained nurse has charge of the Infirmary at all times.

COURSES OF INSTRUCTION.

The College offers the following courses of instruction:

I. **Four-year Courses:**

1st. **Agriculture** (including Agriculture, Horticulture, Veterinary Science, Biology, and Agricultural Chemistry).

2d. **Engineering** (including Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, and Industrial Chemistry).

3d. **Textile Industry** or Cotton Manufacturing (including Carding, Spinning, Weaving, Designing, and Dyeing).

These courses offer a combination of practical and theoretical work, about half of the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, greenhouses, dairies, fields, and mills. They are intended to furnish both technical and liberal education. The degree of Bachelor of Science is conferred upon a graduate in the four-year course in Agriculture, in Chemistry, or in Dyeing, and the degree of Bachelor of Engineering upon a graduate of either of the other four-year courses.

II. **Short Courses** of one year in Agriculture, and of two years in Textile Industry, in the Mechanic Arts (including Carpentry, Wood-turning, Blacksmithing, Machine-shop Work, Drawing, and Dynamo and Engine Tending).

The short courses include nearly all the practical work of the four-year courses, with less theoretical instruction. They are intended for students who desire chiefly manual training, and do not lead to a degree.

III. **Winter Courses** in Agriculture and Dairying and in Textile Industry, beginning at the opening of College in January and lasting seven weeks. A one-week's course in Agriculture, beginning with the opening of the Winter Term.

IV. **Normal Courses** for the training of teachers along industrial lines.

V. **Graduate Courses,** extending over two years and leading to advanced degrees, are intended for students who have completed the Four-year Courses and who desire further instruction and training along special lines.

SCHOOL OF AGRICULTURE.

I. The Four-year Course in Agriculture.
Ia. The One-year Course in Agriculture.
Ib. The Seven-weeks Course in Agriculture and Dairying.
Ic. The One-week Course.

Aim and Scope.—The aim of the Agricultural Courses is to train young men in both the science and the practice of their vocation. It is believed that every young man preparing to farm needs a double education—one that is practical, to fit him for his profession; another that is cultural, to fit him to live.

In order to meet the necessities of all young men who desire instruction in Agriculture, the College offers four distinct courses:

I. The Four-year Course aims to give a training that is thoroughly practical as well as scientific in Agriculture and its various branches, such as Stock-raising, Dairying, and Horticulture. The strictly technical portion constitutes about one-third of the work. Of the remaining two-thirds of the course more than one-half is prescribed in the sciences. This is done for the training and information they give, and to prepare for the technical work of the course. Because of this, and because the subject-matter and the methods of the technical portion lie so fully within the domain of science, the course is essentially scientific rather than literary. Yet the College is mindful of the fundamental character of such studies as Mathematics, English Literature, Physics, etc., and they are not neglected in this course. *Full description of the Four-year Course begins on page* 29.

Ia. The One-year Course is designed to meet the needs of young men who are ambitious to excel in the vocation of farming, and who feel the need of better preparation for their life-work. The time which can be devoted to study is often limited, hence the topics in this course have been arranged in such a manner that the student is enabled to get the greatest amount of practical information in the time at his disposal.

Education and training pay on the farm as elsewhere. The young man who prepares himself for his life's work will make more rapid strides and will gain success much quicker than the one who does not.

The College has numerous calls for young men to manage farms and estates. It is able to fill only a limited number of them. Young men who have any talent along this line can fit themselves for this work by taking this course. *The One-year Course is described on page* 46.

Ib. The Seven-weeks Winter Course is established to meet the needs of those who can spend only the winter at the College. The important and practical subjects of Agriculture and Horticulture and Stock-raising receive principal attention. *The Seven-weeks Course is described on page* 48.

Ic. The One-week Course precedes the seven-weeks course and is devoted entirely to the study of cotton, from the preparation of the soil to the marketing of the crop. Emphasis is given soil preparation, rotation, fertilization, cultivation, seed selection, insect pests, diseases, etc.

Methods of Instruction.—Instruction is by laboratory work, supplemented by text-books, lectures, and reference readings, which are assigned from standard volumes and periodicals.

The equipment for the technical work of the course is rapidly increasing. The Dairy Department is equipped with a modern creamery for pasteurizing, separating, creaming and churning, and for investigation in dairy bacteriology.

The department makes free use of the fields, orchards, and gardens, in which the Agricultural Experiment Station conducts experiments in methods of culture, in effects of several practices on yield and on fertility, in varieties of fruit, of vegetables and of forage crops. The methods employed and the results obtained are freely used for instruction.

I. Four-year Course in Agriculture.

This course leads to the Degree of Bachelor of Agriculture.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Breeds of Live-stock, 10†	2	--	--
Dairying, 22	--	--	5
Fruit Culture, 42	5	--	--
Vegetable Gardening, 43	--	5	--
Botany, Elementary, 55	3	3	3
Animal Physiology, 33	2	4	4
Algebra, 84	3	3	--
Geometry, 85	--	2	5
English, 87	3	3	3
Military Drill, 99	3	3	2

*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Sophomore Year.

Drawing, 80	2	2	--
Woodwork, 82	--	2	2
Animal-breeding, 12	--	3	--
Stock-feeding, 14	--	--	4
Poultry Husbandry, 29	--	--	3
Plant Diseases, 57	3	--	--
Systematic Botany, 56	--	--	3
Zoology, 64	4	--	--
Economic Entomology, 65	--	3	--
Inorganic Chemistry, 70	3	3	3
Inorganic Chemistry (laboratory), 71	2	2	2
Physics, 78	2	2	2
American Literature, 88	3	3	3
Military Drill, 99	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Equipment, 1	4	--	--
Farm Crops, 3	--	2	5
Stock-judging, 11	2	--	--
Veterinary Anatomy, 34	4	--	--
Veterinary Medicine, 35	--	4	--
Veterinary Practice, 36	--	--	2
Landscape Gardening, 44	--	--	3
Bacteriology, 59	2	2	2
Agricultural Chemistry, 75	2	2	2
Geology, 69	2	3	--
Soils, 2	--	--	3
Advanced Rhetoric, 89	2	2	--
Public Speaking, 90	--	--	2
Political Economy, 97	1	1	1
Military Tactics, 100	1	1	1
Military Drill, 99	3	3	2
German (elective), 92	3	3	3

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Elect six periods of the following:			
English Literature, 91	3	3	3
German, 92	3	3	3
Military Drill, 99	3	3	2
Elect sixteen periods of the following, subject to approval of the agricultural faculty:			
Farm Management, 6	--	2	2
Special Crops, 4	5	3	--
Advanced Live-stock Judging, 15	2	--	--
Live-stock Management (beef and dairy cattle), 16	--	2	--
Live-stock Management (horses, sheep and swine), 17	--	--	2
Dairy Bacteriology, 61	3	--	--
Experimental Dairying, 25	--	--	3
Poultry Husbandry, 30	--	--	3
Veterinary Medicine, 37	3	3	3
Histology, 38	4	4	4
Forestry, 46	3	--	--
Plant-breeding, 47	3	3	--
Floriculture, 48	--	3	--
Horticulture, 49	--	--	6
Plant Diseases (advanced), 58	2	2	2
Bacteriology (advanced), 60	2	2	2
Systematic Entomology, 66	2	2	--
Bio-chemistry, 76	3	3	3
Organic Chemistry, 72	3	3	3
Analytical Chemistry (laboratory), 73 and 74	7	7	7

An acceptable thesis is prerequisite to graduation in the Four-year Agricultural Course.

FOUR-YEAR COURSE IN AGRICULTURE.

EQUIPMENT.

The College possesses the following equipment for instruction in Agriculture:

The farm includes six hundred and eighty-five acres, with two hundred and fifty acres under cultivation; a large three-story and basement barn fifty by seventy-two feet. The first floor is occupied by farm implements and machinery; the second story is occupied by horses, grain-bins, cutting implements, etc.; the third story, by hay, which is elevated by a Ricker and Montgomery hay-carrier. Just outside the barn are two 70-ton silos and one 125-ton silo. These are connected with a No. 18 Ohio feed and ensilage cutter. Power for cutting is supplied by an electric motor. The farm is supplied with all necessary machinery for the most successful and up-to-date farming.

The live-stock consists of necessary horses and mules, a herd of dairy cattle, and a herd of swine. The Poland China and Berkshire swine are pure bred, and from high-class specimens. Breeding-stock is sold as a part of the farm products.

The poultry plant has twenty-five breeding pens with necessary yards, the houses being of several different types best suited to poultry keeping in North Carolina, an incubator cellar with several different makes of incubators, and a brooder house, which is heated by hot water. Both indoor and outdoor brooders of several different makes are used.

There is also a feed-room equipped with steam engine, grist and bone mills.

The following varieties of poultry are kept: Barred, Buff and White Plymouth Rock; White and Buff Wyandotte; Rhode Island Red; White and Brown Leghorn; Buff Orpington, and Black Minorca.

AGRONOMY.

Subjects of Instruction.

1. Farm Equipment.—Lectures and recitations upon selecting, planning and equipping farms; planning and erecting farm buildings, farm vehicles, and machinery; power, water, and drainage; practical exercises in drawing plans of farms and farm buildings; leveling and laying drains, dynamometer tests of wagons and farm implements, etc. Four periods, first term. Required of Juniors. Professor NEWMAN.

2. Soils.—Lectures and recitations upon composition, formation, kinds and physical properties of soils and their improvement by cultivation, natural and artificial fertilizers, drainage and irrigation. Practical exercises in testing physical properties of several soils,

determining the relation of soils to heat, moisture, air, fertilizers, and mechanical analysis. Three periods, third term. Required of Juniors. Professor NEWMAN.

3. Farm Crops.—Lectures and recitations upon the history, production, harvesting, and marketing of farm crops. Practical exercises with growing and dried specimens of farm crops. Two periods, second, and five periods, third term. For Juniors. Professor NEWMAN.

4. Special Crops.—This course is designed for advanced work in farm crops. Corn and cotton are taken up in detail and studied in all their relations to farm economy. Other crops of importance are taken up as time permits. Five periods, first term; three periods, second term. For Seniors. Professor NEWMAN.

6. Farm Management.—Lectures upon history of agriculture; present agricultural methods in various countries, cost and relation; profits of various farm operations and systems. Two periods, second and third terms. For Seniors. Professor NEWMAN.

ANIMAL HUSBANDRY.

10. Breeds of Live Stock.—The origin, history and characteristics of the several breeds of live stock are studied by the students. Where possible actual specimens are used to show the breed characteristics, and where representative animals can be found within a reasonable distance, the student is permitted to visit such places. This enables the student to determine the breeds best adapted to the different conditions and environments. Two periods, first term. Required of Freshmen. Professor MICHELS.

11. Stock Judging.—Practical exercises are given in live-stock judging. The student is required, after familiarizing himself with the points of the score-card, to study the various classes of farm animals in relation to the purposes for which they are designed. The animals are compared and placed according to their relative merits, after which the reasons for so doing are written on blank forms furnished the student. Two periods, first term. Required of Juniors. Professor MICHELS.

12. Animal Breeding.—Upon the proper methods of breeding and management depends the success or failure in raising improved types of farm animals. To this end the student is taught the underlying principles or laws which govern the successful breeding and improvement of the various classes of live-stock. The experience and observation of our more successful husbandmen will constitute the foundation of this work. Lectures and recitations. Three periods, second term. Required of Sophomores. Professor MICHELS.

14. Stock Feeding.—The course in stock feeding includes a study of the physiology of the digestive system, also the best methods involved in raising and maturing farm animals for their respective uses. The feeding of the various classes of animals will be studied, and most profitable methods of feeding and management during the different periods of growth. The chief object of the course is to acquaint the student with the fundamental principles of stock feeding, after which the practical side of the question will be considered, enabling him to compound rations and calculate the nutritive ratios of same. Lectures and recitations. Four periods, third term. Required of Sophomores. Professor MICHELS.

15. Advanced Live-stock Judging.—This course will include advanced work in judging of live-stock. Particular stress will be laid on breed types of the different classes of farm animals. Heretofore only the dairy and beef types of cattle, fat and bacon types of swine, mutton and wool types of sheep have been considered. This advanced work will include judging of the particular breed types, classing under these general types, and will be a valuable means of fixing breed characteristics. Two periods, first term. Elective for Seniors. Professor MICHELS.

16. Live-stock Management, Beef and Dairy Cattle.—In this course the student will be taught the proper care and management of beef and dairy cattle. Lectures on the results obtained from the most prominent breeders and fitters of beef and dairy cattle will be given. Two periods, second term. Elective for Seniors. Professor MICHELS.

17. Live-stock Management, Horses, Sheep, and Swine.—This course includes lectures and recitations on the feed, care, and management of horses, sheep, and swine in relation to the respective uses for which they are grown. Two periods, third term. Elective for Seniors. Professor MICHELS.

DAIRYING.

Dairy Equipment.—The dairy laboratory occupies about four thousand square feet of floor space on the floor of the new Agricultural Building, besides the locker-rooms and the toilet and bath-rooms on the same floor and the dairy lecture-room on the second floor used by the dairy students.

The main dairy laboratory is thirty-six by fifty-seven feet and is fitted throughout with modern equipment suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for the farm dairying consists, in the main, of De Laval, Sharples, Empire, National, and Simplex hand separators,

swing and barrel hand churns of different sizes; cream vats; hand and power butter-workers; aerators and coolers; milk-testers; and other articles useful in doing farm dairy work.

Milk testing, which plays such an important part in all phases of dairy work, receives a great deal of attention. Several sizes of hand machines and a twenty-four bottle power tester are used in this work, together with all equipment necessary for testing milk, cream, butter, cheese, skim-milk, whey, and also the lactometer.

The equipment for giving instruction in commercial dairying consists of milk pump, receiving vat, tempering vat, turbine separator, continuous pasteurizer, combined churn and butter-worker, bottling outfit, and bottle washing and sterilizing outfit.

Subjects of Instruction.

22. Dairying.—Text-book and lecture course covering the fundamental principles of modern dairying. Two periods, third term. For Freshmen. Laboratory course consists of practice in the use of modern dairy equipment. Each student is required to become familiar with the construction and operation of the leading makes of separators. Proficiency is required of the students in milk testing, standardizing milk and cream, cream ripening, churning, working, packing and scoring butter. Five periods, third term. For Freshmen. Professor MICHELS.

25. Experimental Dairying.—Lecture and laboratory practice in making butter and cheese of special commercial importance, and a critical study of dairy literature. Three periods, third term. For Seniors. Professor MICHELS.

POULTRY HUSBANDRY.

The poultry plant has twenty-five breeding pens with necessary yards, the houses being of several different types best suited to poultry keeping in North Carolina, an incubator cellar with several different makes of incubators, and a brooder house, which is heated by hot water. Both indoor and outdoor brooders of several different makes are used.

There is also a feed-room equipped with steam engine, grist and bone mills.

The following varieties of poultry are kept: Barred, Buff and White Plymouth Rock; White and Buff Wyandotte; Rhode Island Red; White and Brown Leghorn; Buff Orpington, and Black Minorca.

29. Poultry Husbandry.—Classification and study of the breeds of domestic poultry; breeding, feeding, and management; construction

and location of poultry houses; production and marketing of eggs; production, killing, and marketing of poultry; capons and caponizing; incubation and brooding. Three periods, third term. For Sophomores. Three periods, third term. Mr. JEFFREY.

30. Poultry Husbandry.—Theory and practice of judging fowls by comparison and score-card; special poultry keeping for special markets; comparison of different systems of poultry keeping; a discussion of articles by best writers in poultry press. Three periods, third term. For Seniors. Mr. JEFFREY.

VETERINARY SCIENCE.

(Anatomy, Physiology, and Veterinary Medicine.)

Equipment.

For instruction in the above subjects, the department is provided with lecture-room, two laboratories, pharmacy room (for drugs and surgical instruments), and dissecting room.

The laboratories are supplied with mounted skeletons of man, horse, and cow, with specimens of tumors, tuberculous tissues, and various other diseased tissues.

The laboratory for special work has microtome for cutting sections of tissue for study with microscope; glass slides, stands, and material for making permanent mounts. The other laboratory is supplied with the necessary equipment for conducting exercises in Physiology.

In the pharmacy room are samples of a large number of drugs used in comparative medicine, and a more or less complete set of surgical instruments, including an operating table for small animals, casting harness and slings for larger animals.

The object of the teaching in this department is not to turn out veterinarians, but to more thoroughly equip the agricultural student for the breeding and management of live-stock. In addition to the work required of all students in the agricultural courses, as outlined below, the Senior students in the four-year course in Agriculture may elect to do three periods a week during the entire year. When so elected, this work will be of a more advanced nature, but supplementary to that required of all students in the agricultural courses.

33. Animal Physiology.—The first term's work will deal largely with a study of the structure of the body, the second and third terms' work with a comparative study of the bodily functions of man and of the domestic animals. The subject will be covered by lectures and recitations, with laboratory exercises illustrating principles of physiology. Two periods, first term; four periods, second and third terms. Required of Freshmen. Doctor ROBERTS and Mr. SPOON.

34. Veterinary Anatomy.—Lectures, illustrated by charts, models, skeletons, sketches, and by dissections.

Special attention will be given to the organs of digestion and locomotion and such other parts as are of particular interest to the stock farmer. Four periods, first term. Required of Juniors. Doctor ROBERTS and Mr. SPOON.

35. Veterinary Medicine.—Lectures on the actions, uses, and doses of the most common veterinary medicines, and the nature and cause of disease, with special reference to its prevention. Four periods, second term. Required of Juniors. Doctor ROBERTS.

36. Veterinary Practice.—Lectures on the most common diseases and injuries of domestic animals, with appropriate treatment for the same. When practicable, these lectures will be illustrated by clinics, which will enable the student to become more familiar with the different diseases and perform minor surgical operations under the direction of the instructor. Two periods, third term. Required of Juniors. Doctor ROBERTS.

37. Veterinary Medicine.—Advanced course in veterinary medicine and surgery. A continuation of the subject as outlined for Juniors, special attention being given to infectious diseases communicable to man, and their significance in meat and milk inspection. Three periods. For Seniors. Doctor ROBERTS.

38. Histology.—A microscopical study of the tissues of the body. Treats of the cell as the unit of structure and of its functions; of tissues, their classification and relation to the structure organs. Four periods. Elective for Seniors. Doctor ROBERTS and Mr. SPOON.

HORTICULTURE.

The Horticultural Department occupies rooms in the Agricultural Building, including class rooms, laboratory, vegetable and fruit cold-storage rooms. It also has a large laboratory connected with the greenhouses. The laboratories are used for such work as seed selection, bud studies, propagation work, budding, grafting, transplanting, study of varieties of fruits, nuts, and vegetable seeds.

The greenhouses consist of three glass structures heated by hot water. They are used for the growing of ornamentals, vegetables, and many exotic plants; a large amount of laboratory work is also carried on in these houses. The student learns the use, importance, and culture of these plants. Many of them are also used to illustrate interesting and instructive characteristics of plant life.

The department is well supplied with apparatus for laboratory work, such as apparatus for seed testing, budding knives, grafting tools, pruning shears and saws, spray pumps, seed drills, and wheel hoes.

The College campus is used in teaching ornamental gardening and a study of economic trees and shrubs. The experimental orchards are freely used for illustrative purposes.

Laboratory work accompanies every subject, always supplementing the class work given at the same time.

Subjects of Instruction.

42. **Fruit Culture.**—A course treating of the location of orchards, soil for fruits, varieties, planting, cultivation, fertilizing, pruning, harvesting, and marketing of North Carolina fruits. The laboratory work will include practices in budding, grafting, making cuttings, and a discussion of the principles underlying such practices. Also a study of varieties of fruits, fruit buds, and exercises in pruning. Five periods, first term. Required of Freshmen. Associate Professor REIMER.

43. **Vegetable Gardening.**—This course deals with the selection and preparation of soil for vegetables, construction of hot-beds and cold-frames, fertilizing, handling of seeds, irrigation, transplanting, storing, and culture of all important vegetables. Special stress is laid on the trucking industry in North Carolina. Five periods, second term. Required of Freshmen. Associate Professor REIMER.

44. **Landscape Gardening.**—This course deals with the planning, arrangement, and care of home grounds, parks, and cemeteries. Special stress is laid on home grounds. It treats especially of lawns, trees and shrubs, flowers and flower beds, and the arrangement and grouping of these. The campus, city parks, and many beautiful home grounds give exceptional opportunities for this. Three periods, third term. Required of Juniors. Associate Professor REIMER.

46. **Forestry.**—This course consists of a study of the fundamentals of forestry. It deals especially with the need, influence, formation, care, and improvement of forests. Also the cutting, use, and handling of forest products. A study is made of the forest trees of greatest importance in America. Three periods, first term. Elective for Seniors. Associate Professor REIMER.

47. **Plant Breeding.**—This course includes a brief review of what has been accomplished in plant breeding and a discussion of the most important problems at the present time. It deals with the principles of plant breeding, as laws of breeding, variation and mutation, heredity,

Mendelian laws, crossing, selection, origination and improvement of varieties. The subject is treated from the horticulturist's viewpoint, dealing with fruits, vegetables, and flowers. Lectures, text-book and laboratory work. Three periods, first and second terms. More work can be taken by special arrangement if desired. Elective for Seniors. Associate Professor REIMER.

48. Floriculture.—In this course the important subject of forcing flowers and vegetables is taken up. It deals with the construction, heating, and ventilation of forcing-houses. Also the culture of the leading flowers and vegetables in such houses. Lectures and text-book. Three periods, second term. Elective for Seniors. Associate Professor REIMER.

49. Horticulture.—The last term of the Senior year the student makes a thorough study of modern experimental Horticulture. The leading horticultural investigations of the past and present are studied. A study is also made of all important literature of some horticultural subject. The latter will be chosen with reference to the student's future work. Six periods, third term. Elective for Seniors. Associate Professor REIMER.

BOTANY AND VEGETABLE PATHOLOGY.

Equipment.

Three commodious laboratories and a large recitation and lecture room are devoted to Botany, Bacteriology, and Vegetable Pathology. A research-room is provided for the use of advanced students. There are also offices for the professor and instructors; a store-room, a dark-room, an incubator-room, and a cold-room. All rooms are supplied with electricity, gas, hot and cold water, and the bacteriological laboratory is, in addition, provided with steam under 80 pounds pressure for purposes of sterilizing. The laboratories are supplied with wall-cases, shelves, herbarium cases, specimen boxes, sterilizers, incubators, microscopes, microtomes, a liberal supply of glassware, and such small utensils as are needed in the prosecution of the work. The incubator-room is fireproof and is provided with a Weisnegg regulator capable of keeping the temperature of the room practically invariable. The excellent herbarium has been mounted and is now accessible for class use. There is an extensive collection of seeds, both of weeds and cultivated plants, and the most important plant diseases are represented by herbarium and alcoholic specimens. The greenhouse is of great utility as a source of material for seed-testing and for conducting experiments in plant physiology and pathology.

55. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed plants. The principles of plant-breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field work and simple independent investigations. Three periods. Required of Freshmen. Professor STEVENS.

56. Systematic Botany.—The student becomes acquainted with the principal orders and families of plants of North Carolina, as well as with the general problems of plant classification. Attention is given to the grouping of plants into societies and to the study of plant variation and adaptation. Three periods, third term. Required of Sophomores. Professor STEVENS.

57. Plant Diseases.—Lectures and laboratory study of the principal types of plant diseases produced by bacteria, fungi, or physiological derangement, with specific consideration of the methods of treatment. This course emphasizes the principles of plant disease and places the student in a position to employ prophylactic and remedial methods rationally. Three periods, first term. Required of Sophomores. Professor STEVENS.

58. Plant Diseases (Advanced).—Methods of culture and investigation of plant diseases. This course is intended to prepare the student for original investigation in plant diseases. Two periods. Elective for Seniors. Professor STEVENS.

59. Bacteriology.—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors. Professor STEVENS and Mr. GAINEY.

60. Bacteriology (Advanced).—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made to fit the requirements of those students electing it. Two periods. For Seniors. Professor STEVENS and Mr. HALL.

61. Dairy Bacteriology.—Lecture and text-book course covering the more important facts in the relation of bacteria to dairying. Two periods, first term. For Seniors. Laboratory course consists in

demonstrating and supplementing the lecture course. Practice is given in pasteurizing milk and cream for market; making and using starters in butter and cheese-making. Three periods, first term. For Seniors. Mr. GAINEY.

ZOOLOGY.

64. Zoology.—The fundamental principles of animal life, together with a knowledge of the structure and classification of animals, are developed by lectures, laboratory work, and text-book. One term is devoted to vertebrates and invertebrates, with only a very brief study of insects, but including some of the common parasites infecting man and the domestic animals. This course is intended to present a general view of the animal kingdom, and to lay a foundation for the more special subjects that are to follow. Four periods, first term. Required of Sophomores. Mr. SMITH.

ENTOMOLOGY.

65. Economic Entomology.—Elements of insect structure and classification. Injurious insects and remedies: *a*, of orchards; *b*, of small fruits; *c*, of truck and garden crops; *d*, of cotton, corn, tobacco, grains, and grasses; *e*, of forest, shade and ornamental plants; *f*, of barn, mill, and household. Lectures and demonstrations. Three periods, second term. Required of Sophomores. Mr. SMITH.

66. Systematic Entomology.—Systematic study of orders and families of insects, with special reference to structure, classification, life-history, and habits. Lecture and laboratory practice. Two periods, first and second terms. For Seniors. Mr. SMITH.

GEOLOGY.

69. Geology.—Scott's *Introduction to Geology*. In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of those forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Two periods, first term; three periods, second term. Required of Juniors.

CHEMISTRY.*

70. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor WILLIAMS.

71. Inorganic Chemistry.—Laboratory work. Remsen's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class room. He records in a notebook his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. HILL.

72. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Three periods. Elective for Seniors. Professor WITHERS.

73. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work in qualitative analysis. The student is taught to detect the presence of the common metallic elements, as well as of the acids in unknown substances. A considerable portion of the time is given to lectures and recitations upon the principles involved in the different tests, writing reactions, etc. Seven periods, first term. Elective for Seniors. Doctor WILLIAMS.

74. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Introductory work in gravimetric and volumetric analysis, followed by analyses of the substances most closely related to agriculture, as fertilizers, feeding stuffs, milk, butter, etc. A considerable portion of the time is given to the discussion of the principles involved in the different analytical methods. Seven periods, second and third terms. Elective for Seniors who have taken Course 73. Doctor WILLIAMS.

75. Agricultural Chemistry.—Snyder's *Soils and Fertilizers* and Jordan's *Feeding of Animals.* A study of the facts obtained by the application of chemistry and chemical methods of investigation to agriculture. The laws of plant and animal nutrition, the economical feeding of plants and animals, and the maintenance of the fertility of the soil are considered from the chemical standpoint. Two periods. Required of Juniors. Professor WITHERS.

76. Bio-Chemistry.—Lectures and recitations. A discussion of the carbohydrates, fats and proteins. Three periods. Elective for Seniors. Professor WITHERS.

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*For further information, see course in Chemistry.

PHYSICS.*

78. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat, sound; introduction to the study of light. Two periods. Required of Sophomores. Mr. TRUITT.

DRAWING.†

80. Elementary Mechanical Drawing.—Use of instruments; geometric drawing; elementary projection; isometric and cabinet drawing; drawings made to scale from working sketches of pieces of a machine. Two periods, first and second terms. Required of Sophomores. Mr. VAUGHAN.

SHOPWORK.†

82. Woodwork.—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood; elementary exercises in wood-turning. Two periods, second and third terms. Required of Sophomores. Mr. CLAY.

MATHEMATICS.

84. Algebra.—Wells' *New Higher Algebra.* Begin with quadratic equations and complete compound interest and annuities, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients and logarithms. Five periods, first term; three periods, second term. Required of Freshmen. Professor YATES, Mr. RICHARDSON and Mr. J. A. PARK.

85. Geometry.—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Two periods, second term; five periods, third term. Required of Freshmen. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

ENGLISH.

87. Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor HARRISON, Doctor SUMMEY, Mr. BONN.

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*For full information in regard to the Department of Physics, see course in Electrical Engineering.

†For full information in regard to shopwork, drawing and other Mechanical Engineering subjects, see course in Mechanical Engineering.

88. American Literature.—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor HARRISON, Doctor SUMMEY, Mr. BONN.

89. Advanced Rhetoric.—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Two periods, first and second terms. Required of Juniors. Professor HARRISON.

90. Public Speaking.—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Two periods, third term. Required of Juniors. Professor HARRISON.

91. English Literature.—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Three periods. Elective for Seniors. Professor HARRISON.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences, without idiomatic expressions or difficult constructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions, without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, frequent repetitions, and a strict adherence to the rule that

Gamble, James Alexander, 1882–

... Cooling milk & cream on the farm. [By J. A. Gamble] [Issued May 1918; rev. October 1922] [Washington, Govt. print. off., 1922]

16 p. illus., map, diagr. 23cm. (U. S. Dept. of agriculture. Farmers' bulletin 976)

Contribution from the Bureau of animal industry.

1. Milk—[Refrigeration] I. Title.

Agr 22-1213

Library, U. S. Dept. of Agriculture 1Ag84F no. 976

[6]

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answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language, and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week.

Students may take any one or all of the modern languages during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

92. German.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Three periods. Elective for Juniors and Seniors. Doctor RUDY.

POLITICAL ECONOMY AND GOVERNMENT.

97. Political Economy.—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Required of Juniors. Doctor SUMMEY.

MILITARY SCIENCE.

99. Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three periods, first and second terms; two periods, third term. Required of all classes except Seniors. Seniors are to either take drill or three extra hours in some other subject instead. Commandant and Officers of the Battalion.

100. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Juniors. Lieutenant YOUNG.

ONE-YEAR COURSE IN AGRICULTURE.

This course is offered for the benefit of young men who cannot afford to take the more complete four-years course. The class-room instruction and practical work is largely a condensation of the four-years course, made appropriate to the needs of young men who are unable to remain longer than one year at the College.

Students taking this course, and under twenty-one years of age, are required to pass the entrance examination for Freshman Class.

Agriculture (Elementary).—The course in Elementary Agriculture will consist of lectures and recitations from text-book on soils, crops, fertilizers, farm equipment, and farm machinery. One period per week will be devoted to practical exercises, taking up the analysis and classification of soils; identification and habit of growth of farm crops; drawing plans of farms and farm buildings. The work will be made practical and will be suited to the needs of the student. Five periods. Professor NEWMAN.

Animal Husbandry.—Study of breeds, live-stock judging and their management, animal breeding and stock feeding. Lectures will begin on all the above subjects, which will be supplemented with practical work as far as possible. Three periods. Professor MICHELS.

Dairying.—This course is designed to give a good working knowledge of farm dairy operations.

The student while in the dairy laboratory uses the leading makes of separators, churns, butter-workers, Babcock testers, etc., until he is familiar with their construction and until he becomes proficient in operating them.

The laboratory course is supplemented with lectures of a practical nature, covering the most important features of dairying. It is a course of study which should meet the requirements of the farmer and dairyman who handle dairy products, whether for home use or for commercial purposes. Five periods, first term. Professor MICHELS.

Diseases of Live-stock.—The lectures on this subject treat of elementary veterinary anatomy and physiology, the care of live-stock to prevent diseases, and the treatment of some of the most common diseases. Five periods, second term. Doctor ROBERTS.

Poultry Husbandry.—Classification and study of the breeds of domestic poultry; breeding, feeding, and management; construction and location of poultry houses; production and marketing of eggs; production, killing, and marketing of poultry; capons and caponizing; incubation and brooding. Three periods, second and third terms. Mr. JEFFREY.

Fruit Culture.—This course includes a discussion of the fruit sections of the State, and the possibilities of fruit-growing in each section. This is followed by lectures on the culture of the leading fruits. These deal with the kind of soil; preparation of soils for fruits; varieties; origination of new varieties; planting; cultivation; fertilizing; pruning; harvesting, and marketing. Emphasis is laid on the home fruit garden. Three periods, first term. Associate Professor REIMER.

Vegetable Gardening.—This course discusses the great trucking industry in the State, and the possibilities of the industry. This is followed by lectures on the best methods of growing the leading vegetables. Three periods, second and third terms.

Laboratory Work.—This includes practices in plant propagation, as budding, grafting, top-grafting, cutting; pruning of fruit and ornamental trees; fruit-bud studies; planting trees; transplanting, and construction of cold-frames and hot-beds. Associate Professor REIMER.

Diseases of Plants, Fungous and Insect.—Practical instruction will be given concerning the chief fungous or bacterial diseases, and the injurious insects attacking farm crops, fruit trees, etc.; how to recognize them and how to prevent them, including instruction concerning the preparation of spraying mixtures, the selection of spraying machinery and kindred subjects. Two periods. Fungous Diseases, Professor STEVENS. Insect Pests, Mr. SMITH.

Animal and Plant Life.—The structure of the leading types of lower animals and insects and of plants is studied and the general principles of nutrition, growth, reproduction, are discussed in an elementary and practical way. Three periods, first term. Professor STEVENS and Mr. SMITH.

Entomology.—This is a short course in which the more noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course. Three periods, third term. Mr. SMITH.

Military Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms. Two hours, third term. Commandant and Officers of the Battalion.

WINTER SHORT COURSES IN AGRICULTURE.

ONE-WEEK COTTON COURSE.

BEGINS JANUARY 4 AND ENDS JANUARY 10, 1910.

This course is to be made strictly practical and will embrace the preparation of the soil; fertilizers for cotton; home mixing of fertilizers and manures; manner and time of applying; varieties; planting; cultivation; gathering and preparing for market; cotton judging for both breeding purposes and for market; insect, fungous and bacterial diseases affecting cotton, and the remedies for such diseases.

The main object of this cotton course is to aid those who attempt to grow more cotton and better cotton on less land; to grow it at less cost and sell it at a greater profit.

Those taking this course will have no expenses other than board and lodging. Board may be had in the mess hall at $2.50 per week.

SEVEN-WEEKS COURSE IN GENERAL AGRICULTURE.

BEGINS JANUARY 11 AND ENDS MARCH 1, 1910.

The regular course of agricultural instruction requires four years for its completion. Many young men cannot afford to take this complete course, and for their benefit the shorter courses are offered.

No examinations are required for entrance to the seven-weeks course. Any person over sixteen years of age may enter and enjoy the full privileges of the instruction. The greater part of the instruction is given in the form of lectures and laboratory work, and the full time of the student is provided for. Some of the evenings will be taken up by lectures on important subjects and others by student meetings for their mutual improvement.

The regular work of the seven-weeks course begins January 11th, and all should arrive the day before, in order that their board and room may be arranged for, so that each man may be ready for the work when it begins.

The College is frequently called upon to supply young men to take charge of farms of wealthy owners, to operate dairies, fruit farms, truck and market gardens. The National Department of Agriculture, the State Experiment Stations, the Agricultural and Mechanical Colleges and the hundreds of commercial industries requiring scientifically trained men are eagerly seeking young men of such force and

training as is given in the Agricultural and Mechanical Colleges. The demand is greater than the supply. The teaching of agriculture in the public schools and the organization of agricultural high schools, with agricultural instruction as an important feature, have met with a serious check for no other reason than that there are not enough trained teachers to supply the demand.

EQUIPMENT.

The Agricultural Building is devoted entirely to agriculture, and contains laboratories and class rooms built and furnished especially for the purposes for which they are used. Equipment is constantly being added and facilities for instruction become better every year. The professors in each division of the Agricultural Department are specialists in their chosen work and are devoting their lives to study and to methods of improving rural life.

EXPENSES.

No tuition is charged for the seven-weeks course, and board may be had in the mess hall for $2.50 per week. Students who expect to room in the dormitories should be provided with bedcover, sheets, pillowcases, and towels.

While engaged in work in the dairy laboratory, students are required to wear white suits. These suits may be had at $1 apiece. The total expense of the course need not exceed $25 over and above railroad fare.

OUTLINE OF SEVEN-WEEKS COURSE.

GENERAL AGRICULTURE.

Professor Newman.

Soils.—Study of origin, formation and classes of the soils of the State; their physical properties, natural, and induced fertility; the tillage treatment of the different classes of soils and special tillage practice for the leading crops of the State; principles and practices of farm drainage.

Farm Equipment.—Selection and laying out of farm; building of farm fences, roads, houses; tools and machinery and their economic use.

Fertilizers.—Commercial fertilizers, farm manures, green manures; composition of fertilizers and the time and method of application; special composition for special crops; mixing of commercial fertilizers.

Farm Crops.—Selection of crops to be grown and their economic relationship in farm operations; preparation and cultivation; methods of planting; seed selection and plant breeding; studies of the staple crops; corn and cotton judging.

AGRICULTURAL BOTANY.

Dr. Stevens.

This course will consist of the practical study of the diseases of plants, how to recognize them and how to prevent them; bacteria, their nature, their effects for good or harm in the farm home, and how to control them, their function in the soil as nitrogen gatherers; the cross-breeding of plants; how to accomplish it, its object, and the benefits to be derived therefrom.

FEEDS AND FEEDING AND STOCK RAISING. *24 periods.*

Professor Michels.

Lectures on this subject will treat of the composition and digestibility of home-grown and commercial feeds; methods of calculating rations for different classes of farm animals, with suggestions as to the best and the most economical feeds for the different classes of live-stock.

An outline will also be given of the characteristics, care and management of the most prominent breeds of live-stock.

BREEDS OF LIVE-STOCK AND STOCK JUDGING. *24 periods.*

Professor Michels.

Lectures on this subject will treat of the characteristics of the different breeds of dairy cattle.

The practical part of the work will be given in the judging room, where the student is required to score the animals and pass upon their respective merits.

DAIRY FARMING. *Lectures, 12 periods. Laboratory, 24 periods.*

Professor Michels.

Lectures are given on the nature, composition, and secretion of milk, its uses and value as a food; the production and care of sanitary milk, management of dairy herd, details in the production of high-grade cream and butter; the marketing of dairy products, and their value when sold as milk, cream, butter and cheese.

The dairy laboratory course, given in connection with the farm dairy lecture course, consists of twenty-four periods of two hours each and comprises every detail of dairy work, butter-making, retail-

ing milk, making cottage cheese and skimmed milk, buttermilk, pasteurizing milk and cream, making and using starters, and making tests of all sorts of dairy products and standardizing milk and cream.

DAIRY EQUIPMENT.

The dairy laboratories occupy about four thousand square feet of floor space on the ground floor of the Agricultural Building, besides the locker-rooms, toilet and bath-rooms on same floor, and the dairy lecture-room on first floor, used by the dairy students.

The main dairy laboratory is thirty-six by fifty-seven feet and is fitted throughout with modern equipment, suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for farm dairying consists in the main of De Laval, Sharples, Empire, National, and Simplex hand separators, swing and barrel hand churns of different sizes, cream vats, hand and power butter-workers, aerators and coolers, milk-testers, and other articles useful in doing farm dairy work.

DISEASES OF LIVE-STOCK. *21 periods.*

Dr. Roberts.

The lectures on this subject will deal principally with the care and management of live-stock with a view to the prevention of diseases, but the nature, causes, and treatment of the more common diseases and injuries will also be given attention. One period each week will be devoted to a clinic, and a practical demonstration of the tuberculin test upon the dairy herd will be given during the course.

HORTICULTURE. *21 periods.*

Associate Professor Reimer.

The work in Horticulture for the winter-course students will be just as practical as it is possible to make it. Lectures will be given on fruit-growing, including preparation of soil for fruits, planting, varieties, best methods of cultivation, cover crops, fertilizers and manures, and pruning.

Lectures will also be given on soils and their preparation for vegetables, fertilizers and manures for vegetables; the home vegetable garden, early and late vegetables, planting and transplanting, hot-beds and cold-frames, cultivation of vegetables.

The laboratory work will include work in budding and grafting fruit trees, planting, pruning, treatment of injured trees; and starting of vegetables in hot-beds and cold-frames.

POULTRY RAISING. *21 periods.*

Mr. Jeffrey.

The subject of poultry raising will be considered from the farm standpoint and will include poultry-house construction, the breeds of fowls most suited to the farm and their breeding, feeding, and management, egg production, market poultry, including capons and caponizing, incubation and brooding, both natural and artificial.

Those wanting more poultry work than is provided in the regular work can, in the last half of the course, have additional work of this kind, taking care of a pen of fowls, running the incubator, raising chickens in a brooder and keeping all the records necessary in poultry work.

The poultry department is equipped with twenty-five houses, a good incubator cellar with several different makes of incubators, a brooder-house, and both indoor and outdoor brooders, a feed room with steam engine and grist and bone mills. Good specimens of ten varieties of poultry best suited to farm requirements are kept, so that students may get familiar with the requirements of the different breeds.

SHORT COURSE IN ENTOMOLOGY. *21 periods.*

Mr. Smith.

Insect injury to farm crops, fruit, and vegetables amounts annually to thousands and even millions of dollars. A conservative estimate has shown that fully ten per cent. of the value of all agricultural products is destroyed each year, and yet there are many farmers who know very little of the habits and life-history of the most common insects. We should know how insects pass the winter, when they are most easily destroyed or prevented, and the best methods of combating them.

The short course in Entomology will consist of a number of lectures, illustrated by specimens, photographs, and charts, relative to insects affecting the principal crops and fruits; field observations of insects that may be studied in January and February; practical work in making and applying mixtures for destroying insects. The use of different forms of spraying apparatus will be demonstrated by practical field work performed by the students.

A little time will be given to a study of the best methods for preventing or destroying household insects.

ENGINEERING COURSES.

Four-year Courses in

II. Civil Engineering.
III. Mechanical Engineering.
IV. Electrical Engineering.
V. Mining Engineering.
VI. Chemistry.

Two-year Course in

IIIa. Mechanic Arts.

COURSE IN CIVIL ENGINEERING.

The aim of the course in Civil Engineering is to give such training as will enable our young men to take an active part in the work of advancing our State along material lines—developing its water-power, building railroads and public highways, constructing water supply and sewerage systems for our towns, etc. The student is given a large amount of practical work in the field and draughting-room, and acquires a fair degree of efficiency in the use of the various surveying instruments, and in draughting. At the same time it is recognized that a successful engineer requires a well-trained mind—one that reasons logically, accurately, and quickly. Therefore a thorough course is given in all those branches of Applied Mathematics which are involved in the solution of engineering problems.

The aim has been to make this pre-eminently a technical course, yet subjects of general culture are included in order to give the student a broader mental training and better preparation for social and business life.

II. The Four-year Course in Civil Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 136†	2	2	2
Woodwork, 146	2	2	2
Forge-work, 147	2	2	--
Foundry, 148	--	--	2
Algebra, 263	5	3	--
Geometry, 264	--	2	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Composition and Rhetoric, 272	3	3	3
Military Drill, 299	3	3	2

Sophomore Year.

Architecture, 125	2	--	--
Architectural Drawing, 126	2	2	2
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
Descriptive Geometry, 101	--	2	2
Electricity and Magnetism, 177	2	2	2
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
American Literature, 273	3	3	3
Military Drill, 299	3	3	2

*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Surveying, 103 and 106	2	2	2
Surveying (field work), 107	2	2	2
Construction, 105	2	--	--
Descriptive Geometry, 101	2	2	2
Graphic Statics, 102	--	2	2
Mechanics, 104	2	2	2
Analytical Geometry, 268	5	5	--
Calculus, 269	--	--	5
Advanced Rhetoric, 274	2	2	--
Public Speaking, 275	--	--	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	3	2
Spanish (elective), 279	3	3	3

Senior Year.

Mechanics of Materials, 115	3	--	--
Construction, 105	--	2	2
Road-building, 112	2	--	--
Roofs and Bridges, 109	3	--	--
Bridge Design, 110	--	4	4
Municipal Engineering, 111	--	2	2
Surveying (field work), 108	2	1	1
Hydraulics, 116		2	2
Calculus, 269	2	--	--
Railroad Engineering, 106	2	2	2
Reinforced Concrete, 114	--	2	2
Astronomy, 113	--	2	2
Mechanics, 104	3	--	--
Elect two subjects from the following:			
English Literature, 276	3	3	3
Military Drill, 299	3	3	2
Spanish, 279	3	3	3

CIVIL ENGINEERING.

Equipment.

There is a complete equipment of all instruments necessary to civil engineering field work.

Subjects of Instruction.

101. Descriptive Geometry, Stereotomy.—Text-book, lectures, problems, and completed drawings. Two periods, second and third terms. Required of Sophomores in Civil Engineering. Two periods. Required of Juniors in Civil and in Mining Engineering. Mr. MANN.

102. Graphic Statics.—Determination of stresses in frame structures by graphical methods. Lectures and original problems. Two periods, second and third terms. Required of Juniors in Civil and in Mining Engineering. Professor RIDDICK and Mr. MANN.

103. Surveying.—Land surveying, leveling, elements of triangulation, topographical surveying, roadmaking. Merriman's *Land Surveying*. Two periods, first term. Required of Juniors in Civil and in Mining Engineering. Mr. VON GLAHN.

104. Mechanics.—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Two periods. Required of Juniors in Civil and in Mining Engineering. Three periods, first term. Required of Seniors. Mr. MANN.

105. Construction.—Masonry, foundations, railroads, dams, retaining walls, arches, etc. Baker's *Masonry Construction*. Lectures. Two periods, first term. Required of Juniors in Civil and in Mining Engineering. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

106. Railroad Engineering.—Reconnaissance, preliminary and location surveys, cross-sections, compound curves, spirals, etc. Searles' *Field Engineering*. Two periods, second and third terms. Required of Juniors in Civil and in Mining Engineering. Two periods. Required of Seniors in Civil Engineering. Mr. MANN.

107. Surveying.—Field work. Use of instruments, compass, level, transit, and plane table. Practical work in land surveying, topography, leveling, railroad surveying, working up notes, and platting. Two periods. Required of Juniors in Civil and in Mining Engineering. Mr. VON GLAHN and Mr. SYKES.

108. Surveying.—Field work. Triangulation and topography, surveys for sewers, waterworks, etc. Two periods, first term; one period, second and third terms. Required of Seniors in Civil Engineering. Mr. MANN, Mr. SYKES and Mr. VON GLAHN.

109. Roofs and Bridges.—Determination of stresses in roof and bridge trusses by the analytical method. Merriman's *Roofs and Bridges*. Original problems. Three periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

110. Bridge Design.—Calculation of stresses, design, specifications, and estimate of cost of a wooden roof truss and a steel highway bridge. Four periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

111. Municipal Engineering.—Text-books, lectures. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

112. Road Building.—Text-book on construction of roads, streets, and pavements. Lectures on practical roadmaking in North Carolina. Two periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

113. Astronomy.—Determination of Azimuth, Latitude and Longitude, Time. Comstock's *Astronomy for Civil Engineers*. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

114. Reinforced Concrete.—Turneaure & Maurer's *General Theory of Concrete and Steel Construction*. Problems in beams, columns, retaining walls, etc. Two periods, second and third terms. Required of Seniors in Civil Engineering. Mr. MANN.

115. Mechanics of Materials.—Study of stresses in beams, columns, etc. Merriman's *Mechanics of Materials*. Three periods, first term. Required of Seniors in Civil and in Mechanical Engineering. Professor RIDDICK.

116. Hydraulics.—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water power in streams, testing of hydraulic motors. Text-book, Merriman's *Hydraulics*. Two periods, second and third terms. Required of Seniors in Engineering. Professor RIDDICK.

ARCHITECTURE.

125. Architecture.—Building materials, methods of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of buildings. Lectures. Two periods, first term. Required of Sophomores in Civil Engineering. Professor RIDDICK.

126. Architectural Drawing.—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings. Two periods. Required of Sophomores in Civil Engineering. Mr. MANN and Mr. VON GLAHN.

COURSE IN MECHANICAL ENGINEERING.

The regular four-year course in Mechanical Engineering is intended to train the student for positions of trust and responsibility in engineering work, and also to furnish him with a basis for carrying on of more advanced engineering studies. The course treats of the development and transmission of power, the design and construction of machines, and the calibration and efficiency tests of machinery, boilers, and engines.

The two-year course is offered to students who wish to become machinists, draughtsmen, or stationary engineers. For entrance to this course a less degree of academic preparation is required than for entrance to the four-year Engineering Course.

III. The Four-year Course in Mechanical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 136	2	2	2
Woodwork, 146	2	2	2
Forge-work, 147	2	2	--
Foundry, 148	--	--	2
Algebra, 263	5	3	--
Geometry, 264	--	2	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Composition and Rhetoric, 272	3	3	3
Military Drill, 299	3	3	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 139	2	2	2
Foundry, 148	2	--	--
Pattern-making, 149	--	2	2
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
American Literature, 273	3	3	3
Military Drill, 299	3	3	2

Junior Year.

Steam Engines and Boilers, 158	2	2	2
Mechanics, 169	2	2	2
Machine Design, 140	2	2	2
Machine-shop Work, 150	2	2	2
Electrical Engineering, 183	2	2	2
Analytical Geometry, 268	5	5	--
Calculus, 269	--	--	5
Advanced Rhetoric, 274	2	2	--
Public Speaking, 275	--	--	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	3	2
German (elective), 277	3	3	3

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Applied Mechanics, 170	3	3	2
Machine Design, 141	3	3	3
Machine-shop Work, 151	2	2	2
Power Plants, 161	3	--	--
Gas Engines, 162	3	--	--
Power Transmission, 160	--	--	2
Refrigeration, 163	--	3	--
Pumping Machinery, 165	--	1	--
Heating and Ventilation, 166	--	--	3
Structural Engineering, 167	--	2	2
Steam Engineering Laboratory, 168	2	2	2
Calculus, 269	2	--	--
Hydraulics, 116	--	2	2
Elect two subjects from the following:			
English Literature, 276	3	3	3
Military Drill, 299	3	3	2
German, 277	3	3	3

MECHANICAL ENGINEERING.

Equipment.

The drawing and recitation rooms and shops of the Department of Mechanical Engineering are in the Engineering Building. They are of ample size and well lighted, and are arranged to be heated either by the exhaust steam from the engine or by live steam. On the first floor are the steam laboratory, machine shop, forge shop, wood-turning and carpenter shop, office, and library. On the second floor are the recitation room and two drawing-rooms. In the office are kept on file various scientific and technical journals, the trade circulars of prominent engineering firms, drawings and photographs of machinery, and tabulated data, as well as a large number of engineering books available for the use of students.

The department is provided with the necessary apparatus for making boiler and engine tests and for other work of an experimental character. The equipment consists of a two-horse-power engine, a ten-horse-power engine, a one-horse-power gasoline engine (all of which were built by students), a two-horse-power International gasoline engine, a two-horse-power McVicker automatic gasoline engine, a twenty-five-horse-power Woodbury engine, a Wheeler surface condenser, connected with a 4½x6x6 Blake air pump, an Ericsson hot-air pumping engine, apparatus for making analyses of flue gases, a fuel calorimeter, a water motor, a Worthington water meter, a complete Westinghouse airbrake equipment, a New York airbrake equipment in section, friction brakes, weirs, indicators, planimeters, slide rules, thermometers, calorimeters, gauges, tanks, scales, a Crosby gauge tester, two hydraulic rams, a 15,000-pound Olsen testing machine, and other apparatus for making tests.

The shops are equipped as follows:

The woodworking equipment consists of fifteen double carpenters' benches, which accommodate thirty students, and all necessary tools for each bench; thirty 12-inch turning lathes, each lathe being fully equipped with turning tools; a rip and a cut-off saw bench, foot-feed, with dado attachment; a double revolving rip and cut-off saw bench, with dado attachment; a 20-inch surface planer; a 12-inch hand-jointer or buzz planer; a universal boring machine; a 6½-inch tenoning machine with cope heads; a 6-inch sash and blind sticker; a 34-inch band saw; a jig saw; a shaper or edge-moulding machine, with a very complete set of moulding cutters; a chain-mortiser; a dovetailing machine; a 38-inch grindstone; a wood trimmer; an adjustable miter box; a steam glue-heater, and a large assortment of screw and bar clamps, both iron and wooden.

The forge shop is a well-lighted and ventilated, neatly-paved room, thirty by forty feet. It is equipped with twenty-eight forges, blast being furnished from a Sturtevant blower; two emery and two buffing wheels; a Buffalo Forge Company's hand drill; an overhead exhaust system, operated by a 60-inch Sturtevant exhaust fan, for removing smoke from the fires; anvils and all necessary hand tools.

The machine shop contains a 16-inch Davis & Eagan lathe with 10-foot bed, 14-inch Windsor lathe with 5-foot bed, a 13-inch Barnes lathe with 5-foot bed, a 14-inch Putnam lathe with a 4-foot bed, a 14-inch Flather lathe with 6-foot bed, three 14-inch lathes with 6-foot bed (built in the College shops by students), a 26-inch by 44-inch by 12-foot bed McCabe double-spindle lathe, an 18-inch Prentiss shaper, a 24-inch upright Bickford drill press, 32-inch American drill press, a

Brown & Sharpe universal milling machine with all attachments, a 20-inch by 5-foot Pease planer, one large and one small emery tool-grinding machine, a 6-inch Curtis & Curtis pipe-threading and cutting machine, a Greenwich arbor press and an electric center grinder, a Whiton centering machine, and a Twist drill grinder. The machines have full equipment of chucks, rests, and tools. The benches are well provided with vises.

The foundry occupies a separate building 30x60 feet and is of capacity to accommodate about 30 students. It contains two Griffin oil-burning furnaces, one for cast iron, one for brass, a No. 0 Sturtevant high-pressure blower for furnishing air, and a small triplex pump for furnishing oil under pressure. There is also a crucible brass furnace, a cadet core oven, and all necessary tools for bench and floor work. A 36-inch cupola is being installed, which will add greatly to the benefit to be received from foundry work. The power for the shops is furnished by electric motors.

Subjects of Instruction.

136. Mechanical Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine; use of instruments, and tracing. Geometric drawing, isometric and cabinet drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Elementary principles of Descriptive Geometry, cylinders, cones, and prisms, intersections, development of surfaces. Miscellaneous problems. Two periods. Required of Freshmen. Mr. VAUGHAN.

139. Mechanical Drawing.—Working sketches and drawings of machine parts from the model. Tracing and blueprinting. Elementary machine design. Cam design. Two periods. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. ELLIS.

140. Machine Design.—Study of the communication of motion by gear wheels, belts, and link work; automatic feed, parallel and quick return motions. Calculations and working drawings of machine parts, such as fastenings, hangers, couplings, and bearings. Boiler design. Estimating and checking of working drawings. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. ELLIS.

141. Machine Design.—Estimating, checking of working drawing, original design. Calculations and working drawings of types of steam engines, gas engines, gas producers, pumps, condensers, shafting, etc. Three periods. Required of Seniors in Mechanical Engineering. Mr. ELLIS.

146. Woodwork.—Use of bench tools, working from drawings, lining, sawing, planing. Practice in making simple exercises in wood. Elementary exercises in woodturning. Two periods. Required of Freshmen. Mr. CLAY.

147. Forge-work.—Exercises in working with iron and steel. Welding, tempering and casehardening. Uses and care of forge tools and fires. Two periods, first and second terms. Required of Freshmen. Mr. WHEELER.

148. Foundry.—Recitations and exercises in foundry work; including molding, core-making, the management of the cupola furnace and the crucible furnace in iron and brass melting. Two periods. Required of all Freshmen third term, and of Sophomores in Mechanical and Electrical Engineering first term. Mr. WHEELER.

149. Pattern Making.—Exercises in making patterns and moulds of machine parts. Two periods, second and third terms. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. CLAY.

150. Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. PARK.

151. Machine-shop Work.—Making the parts of some machine, or of an engine. Making tools, such as taps and reamers. Laying out work. Working from drawings, duplicate and interchangeable parts. Working to standard gauges. Two periods. Required of Seniors in Mechanical Engineering. Mr. PARK.

In all practical courses the student's attention is directed to cost of production and its principal elements—time and method.

158. Steam Engines and Boilers.—A study of the structural details of modern steam engines; the slide valve, both in its simple form and when used in combination with independent cut-off valves; link motion and other reversing gears; and the Zeuner diagram. Attention is given to the effect of the reciprocating parts and a study of inertia and tangential pressures; also a study of the steam engine indicator, of indicator rigging, and of steam distribution as disclosed by the indicator.

The various forms of steam boilers are studied, and the methods employed in their construction noted. The number and size of tubes and flues, the thickness of plates, strength of different styles of riveting, kinds of bracing, amount of grate and heating surface, different kinds of steam and water gauges, safety valves and injectors; the causes and methods of preventing foaming, incrustation and corrosion; the manner of setting boilers, and of operating them with safety and economy; feed water heaters; mechanical stokers; smoke con-

sumers and chimneys are studied in detail. Two periods. Required of Juniors in Mechanical and Textile, and Seniors in Electrical and Mining Engineering. Professor SATTERFIELD.

160. Transmission of Power.—This work includes a study of the methods employed for the transmission and measurements of power in machine shops and factories, and review of experiments which have been made to determine the efficiency of various systems of power-transmission machinery. Two periods, third term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

161. Power Plants.—Mechanical Engineering of power plants. Selection and arrangement of machinery, appliances, piping. Three periods, first term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

162. Gas Engines.—Theory of the gas engine. Various types of gas, gasoline, and oil engines. Brake and indicated horse-power; efficiency. Gas producers. Three periods, first term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

163. Refrigeration.—Various types of ice-making machinery. Compression and absorption systems. Carbon dioxide and compressed-air machines. Three periods, second term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

165. Pumping Machinery.—Direct acting, fly-wheel and duplex and centrifugal pumps. Pumping engines. Waterworks machinery. Duty and efficiency. Hydraulic engines. One period, second term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

166. Heating and Ventilation.—Steam, hot water, furnace and blower systems of heating. Heating boilers. Ventilation. Design of heating and ventilating system. Three periods, third term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

167. Structural Engineering.—The manufacture and uses of different metals—rolled sections used in bridge, structural work, and general engineering. Two periods, second and third terms. Required of Seniors in Mechanical Engineering. Mr. ELLIS.

168. Steam Engineering Laboratory.—Practice in engine running; valve-setting; calibration of instruments; testing gauges and lubricants. Use of indicators and calorimeters. Boiler tests; engine tests. Two periods; required of Seniors in Mechanical Engineering. One period; required of Seniors in Electrical Engineering. A brief course in Surveying is given, so as to enable a student to locate buildings, foundations, line up shafting, engines, and machinery by the use of transit and level. Professor SATTERFIELD and Mr. ELLIS, Mr. VAUGHAN and Mr. CLAY.

169. Mechanics.—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a right body, momentum and impact, work, power, friction, application of principles to various engineering problems. Preparatory to Applied Mechanics in Senior year. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. VAUGHAN and Mr. ELLIS.

170. Applied Mechanics.—A study of the laws of equilibrium and motion as applied to a particle and to rigid bodies; analytic treatment of stresses in framed structures, center of gravity, moment of inertia, work and energy, and friction; mechanics of materials, including stresses and deformations in tension, compression, shearing, torsion, and flexure; stresses and deformation in long columns, continuous girders, arch ribs, and reinforced concrete, and the elements of the theory of elasticity. Three periods, first and second terms; two periods, third term. Required of Seniors in Mechanical and Electrical Engineering. Mr. ELLIS and Mr. VAUGHAN.

COURSE IN ELECTRICAL ENGINEERING.

Object.—The four-year course is designed for those who wish a thorough and practical training in Electrical Engineering. Only a most thorough training in the fundamental facts and principles of the science of electricity and magnetism will be satisfactory for a branch of engineering which is advancing so rapidly. A great deal of attention is, therefore, paid to good text-book work, and as soon as the first principles of the science are mastered by the student he is given a series of experiments in which careful measurements with exact instruments are made.

The department, as can be seen from the list of apparatus, is well equipped with dynamos, electric motors, and testing instruments for experimental work and for investigation of problems in electrotechnics. During the Senior and Junior years a course in designing the various electrical machines is given.

IV. The Four-year Course in Electrical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Elementary Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Mechanical Drawing, 136	2	2	2
Woodwork, 146	2	2	2
Forge-work, 147	2	2	--
Foundry, 148	--	--	2
Algebra, 263	5	3	--
Geometry, 264	--	2	5
Composition and Rhetoric, 272	3	3	3
Military Drill, 299	3	3	2

Sophomore Year.

Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Mechanical Drawing, 139	2	2	2
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Foundry, 148	2	--	--
Pattern-making, 149	--	2	2
American Literature, 273	3	3	3
Military Drill, 299	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Electrical Engineering, 183	2	2	2
Electrical Engineering Laboratory, 186	2	2	2
Electrical Design, 191	2	2	2
Machine-shop Work, 150	2	2	2
Machine Design, 140	2	2	2
Mechanics, 169	2	2	2
Analytical Geometry, 268	5	5	-
Calculus, 269	--	--	5
Advanced Rhetoric, 274	2	2	--
Public Speaking, 275	--	--	2
Political Economy, 297	1	1	1
Military, Tactics, 309	1	1	1
Military Drill, 299	3	3	2
Spanish (elective), 279	3	3	3

Senior Year.

Electrical Engineering, 184	3	3	3
Electrical Engineering, 185	2	2	2
Electrical Engineering Laboratory, 190	2	2	2
Electrical Design, 192	2	2	2
Electrical Engineering Seminary, 193	1	1	1
Steam Engines and Boilers, 158	2	2	2
Applied Mechanics, 172	3	3	2
Steam Engineering (laboratory), 168	1	1	1
Calculus, 269	2	--	-
Hydraulics, 116	--	2	2
Elect two subjects from the following:			
English Literature, 276	3	3	3
Military Drill, 299	3	3	2
Spanish, 279	3	3	3

PHYSICS.

Equipment.

The recitation-rooms and laboratories of the Department of Physics are situated in the basement of the principal building. They are spacious and well lighted.

The equipment consists of apparatus for illustrating the principles of physical science and for instruction and practice in experiments, measurements, and tests.

Subjects of Instruction.

176. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound, and light. Text-book used: Milliken & Gale's *First Course in Physics.* Four periods. Required of Freshmen in Engineering courses. Mr. SPRAGUE and Mr. TRUITT.

177. Elementary Lessons in Electricity and Magnetism.—Text-book used: *Elementary Electricity and Magnetism,* by D. C. & J. P. Jackson. Two periods. Required of Sophomores. Professor BROWNE.

178. Physical Laboratory.—Practice in handling units in British and metric systems. Experiments in mechanics, illustrating addition and composition of forces, the lever, the inclined plane, the pendulum, density, and specific gravity, and Boyle's law. Experiments in heat, sound, and light, covering the following subjects: Thermometer calibration, calorimetry, hygrometry, expansion, wave lengths of sounds, laws of strings, laws of lenses and mirrors, refraction, photometry, and spectroscope. Text-book used: Cheston-Dean-Timmerman's *Laboratory Course in Physics.* One period. Mr. SPRAGUE and Mr. TRUITT.

179. Physical Laboratory.—Continuation of Course 178. Elementary experiments in magnetism. The electric circuit. Primary batteries. Measurement of electro-motive force, current, and resistance. Telegraph and telephone circuits. One period. Required of Sophomores in Electrical, Mining, and Mechanical Engineering, and in Chemistry. Mr. SPRAGUE.

ELECTRICAL ENGINEERING.

Equipment.

For this course two laboratories are equipped: one known as the instrument laboratory, in which measuring instruments and apparatus are kept, and the other as the dynamo laboratory, containing generators, motors, transformers, switchboards, etc. The instrument lab-

oratory is provided with direct and alternating current voltmeters, ammeters, and wattmeters, Wheatstone bridges, galvanometers, condensers, etc. It is supplied from the central power-house with direct and alternating currents of any voltage, phase, or frequency for use in checking instruments and making measurements. The dynamo laboratory is a small one-story brick building 30 x 50 feet, and is equipped with a 3-phase synchronous motor coupled directly to a line shaft arranged to drive small generators, an 11.5 k. w. 110-volt Westinghouse d. c. generator, 20 k. w. 2-phase 110-volt Lincoln alternator, one 6-light T. H. arc-lighting generator, one 1-horse-power Sprague motor, one 8 k. w. 110-volt Siemens & Halske generator, one 2-horse-power 3-phase 110-volt G. E. induction motor, one 2 k. w. 110-volt LaRoche single-phase alternator, two 2½ k. w. 110-volt 3-phase generators, two 2½ k. w. 125-volt compound wound d. c. generators with series coils for use as series motors or generators, one 2½ k. w. 110-volt a. c. rotary converter. The laboratory also contains constant potential and constant current transformers, condensers, circuit-breakers, etc., and a switchboard well equipped with voltmeters, ammeters, frequency indicators, etc.

The central power station is also available for student use, the equipment consisting of a 75 k. w. 600-volt 3-phase Crocker-Wheeler generator coupled to a Skinner engine, two 50 k. w. 300-volt 3-phase Crocker-Wheeler generators coupled to a 150-horse-power De Laval steam turbine, one 9.5 k. w. 125-volt Westinghouse d. c. exciting generator, and switchboard provided with meters, instrument transformers, oil circuit-breakers, wattmeters, synchroscope, etc.

The department possesses a small library of standard books on all branches of Physics and Electrical Engineering.

183. Electrical Engineering.—The magnetic circuit. Electrical measurements. Electro-magnetic induction. Storage batteries. Arc-lighting. Incandescent lighting. Interior wiring. Dynamos and dynamo design. Direct current motors. Management and operation of dynamos and motors. Text-books used: Franklin & Esty's *Elements of Electrical Engineering* and Hay's *Continuous Current Engineering*. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Professor BROWNE and Professor WALTER.

184. Electrical Engineering.—Practice in calculating circuits containing resistance, inductance, and capacity. Alternators. Theory of transformers, induction motors, a. c. series motors, and repulsion motors. Power transformation and measurement. Text-book used: Franklin & Esty's *Alternating Currents*. Three periods. Required of Seniors in Electrical Engineering. Professor BROWNE and Professor WALTER.

185. Electrical Engineering.—Line construction. Switchboards and appliances. Electric power stations. Illumination. Electric car equipment. Motors and controllers. Line and track. Line calculations. Multiple unit systems. Text-book used: *Standard Handbook for Electrical Engineers.* Two periods. Required of Seniors in Electrical Engineering. Professor BROWNE and Mr. DORSEY.

186. Electrical Engineering Laboratory.—Practice in varying the ranges of ammeters and voltmeters. Various methods of measuring resistance. Permeability and hysteresis tests. Practice with direct current generators and motors. Characteristic curves. Efficiency tests. Two periods. Required of Juniors in Electrical Engineering. Mr. DORSEY.

190. Electrical Engineering Laboratory.—Senior year. Coupling d. c. generators for parallel, series and three-wire operation. Stray power tests. Kapp's pumping-back method. Heat test of a d. c. dynamo. Series and parallel a. c. circuits. Platting vector diagrams. Experiments with a. c. generators, induction and synchronous motors, transformers, etc. Text-book used: Sever & Townsend's *Laboratory and Factory Tests.* Two periods. Required of Seniors in Electrical Engineering. Mr. DORSEY.

191. Electrical Design.—Design of Rheostats, Heating Devices, Controllers and Electro-magnets. Two periods. Required of Juniors in Electrical Engineering. Professor WALTER.

192. Electrical Design.—Design of Transformers, Direct Current Generators, Alternators, Induction Motors, and Rotary Converters. Two periods. Required of Seniors in Electrical Engineering. Professor WALTER.

193. Electrical Engineering Seminary.—Review of the current electrical engineering periodicals. One period. Required of Seniors in Electrical Engineering. Professor BROWNE.

COURSE IN MINING ENGINEERING.

The course in Mining Engineering is intended to give the student the preliminary training necessary to enable him to enter upon a career in mining. To this end he is given instruction in English, History, Political Economy, and Mathematics, which are fundamental to the more technical studies and to the greatest usefulness as a citizen. Instruction in Physics and Chemistry, Mineralogy and Geology, Surveying, Shop-work, Drawing, Machinery, and Steam affords the scientific and engineering knowledge upon which the successful work of the miner must depend. The more technical portion of the instruction includes ore dressing, metal-working, ventilation, drainage, and illumination of mines.

V. The Four-year Course in Mining Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 136	2	2	2
Woodwork, 146	2	2	2
Forge-work, 147	2	2	--
Algebra, 263	5	3	--
Geometry, 264	--	2	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Composition and Rhetoric, 272	3	3	3
Military Drill, 299	3	3	2

Sophomore Year.

Mechanical Drawing, 139	2	2	2
Foundry, 148	2	--	--
Pattern-making, 149	--	2	2
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
American Literature, 273	3	3	3
Military Drill, 299	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Construction, 105	2	--	--
Graphic Statics, 102	--	2	2
Surveying, 103 and 106	2	2	2
Surveying (field work), 107	2	2	2
Descriptive Geometry, 101	2	2	2
Mechanics, 104	2	2	2
Analytical Geometry, 268	5	5	--
Calculus, 269	--	--	5
Advanced Rhetoric, 274	2	2	--
Public Speaking, 275	--	--	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	3	2
German (elective), 277	3	3	3

Senior Year.

Mining, 206	--	4	4
Ore Dressing, 207	4	--	--
Geology, 211	2	2	2
Metallurgy, 208	--	2	2
Mineralogy, 212	4	--	--
Assaying, 209	--	2	2
Steam Engines and Boilers, 158	2	2	2
Hydraulics, 116	--	2	2
Calculus, 269	2	--	--
Elect two subjects from the following:			
English Literature, 276	3	3	3
Military Drill, 299	3	3	2
German (elective), 277	3	3	3

MINING AND METALLURGY.

206. Mining.—Lectures on methods of mining, including prospecting, sinking, sloping, hoisting, pumping, and ventilating; the location of mining claims, mine fires, fire-damp and dust explosions; inundations; rescue and relief of men. Four periods, second and third terms. Required of Seniors in Mining.

207. Ore Dressing.—Furnishing products for metallurgical treatment. Lectures on concentrating machinery and concentrating and enriching ores by mechanical means. Four periods, first term. Required of Seniors in Mining.

208. Metallurgy.—Introductory: combustion, calorific calculations, fuels, refractory materials, furnaces, etc. Iron and steel: the various iron and steel processes, metallography, heat treatment, mechanical treatment, chemistry. Copper: roasting, smelting, refining, wet and electrolytic processes. Gold: stamp milling, amalgamation, cyanide and chlorination processes. The metallurgy of lead and the lesser metals. Two periods, second and third terms. Required of Seniors in Mining.

209. Assaying.—Ricketts & Miller's *Notes on Assaying.* Lectures and laboratory practice in the crushing and sampling of ores; the assaying of gold, silver, lead, and other ores; corrected assays; bullion assays; extraction tests. Two periods, second and third terms. Required of Seniors in Mining.

GEOLOGY AND MINERALOGY.

211. Geology.—Scott's *Introduction to Geology.* In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of these forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Two periods. Required of Seniors in Mining.

212. Mineralogy.—Moses & Parsons' *Mineralogy.* Descriptive and determinative mineralogy; blowpipe analysis and the study of the more important minerals, their properties, uses, and methods of determination. Recitations and laboratory practice. Four periods, first term. Required of Seniors in Mining.

COURSE IN CHEMISTRY.

In harmony with the general purposes for which the College was founded, the course in Chemistry is arranged to prepare young men for careers in that department. To this end the training given in general, organic, and analytical chemistry is supplemented by instruction in technical chemical analysis and in applied chemical subjects. The kindred scientific subjects of Biology and Physics and the fundamental principles of engineering, are taught, together with the cultural studies included in the other courses.

The chemical laboratories of the North Carolina Department of Agriculture and of the North Carolina Agricultural Experiment Station afford the student an opportunity to keep in touch with the methods of research in this department of agricultural science.

The State Museum is open to the public each day, and among other things contains a very excellent collection of the State's minerals, ores, and building stones.

There are in the city of Raleigh and its vicinity several manufacturing plants to which, through the courtesy of the owners, the students in chemistry, in company with the teaching staff of the department, make visits each year. These include plants for the manufacture of illuminating gas, sulphuric acid, fertilizers, and ice; for the extraction of cotton-seed oil; and for the dyeing of cotton goods.

CHEMICAL EQUIPMENT.

The laboratories of general and analytical chemistry are located in the main building of the College, and are well furnished. The tables are of yellow heart-pine with oak tops. Each student is provided with water, gas, all necessary reagents, ample working space, together with lockers for the storage of apparatus, etc. The quantitative laboratory is located on the first floor and will accommodate thirty-two students. The laboratory for introductory chemical work is in the basement and will accommodate one hundred and eighteen students.

The chemical library is well supplied with reference books. It receives the leading chemical journals and owns complete sets of many of the most important of them.

VI. The Four-year Course in Chemistry, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 136	2	2	2
Woodwork, 146	2	2	2
Forge-work, 147	2	2	--
Foundry	--	--	2
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Algebra, 263	5	3	--
Geometry, 264	--	2	5
Composition and Rhetoric, 272	3	3	3
Military Drill, 299	3	3	2

Sophomore Year.

Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Elementary Botany, 241	3	3	3
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
American Literature, 273	3	3	3
Military Drill, 299	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Organic Chemistry, 218	3	3	3
Analytical Chemistry, 220 and 226	7	7	7
Bacteriology, 251	2	2	2
German, 277	3	3	3
Advanced Rhetoric, 274	2	2	--
Public Speaking, 275	--	--	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	3	2

Senior Year.

Bio-Chemistry, 233	3	3	3
Analytical Chemistry, 226	7	7	7
Organic Chemistry (laboratory), 228	4	4	4
Advanced Bacteriology, 252	2	2	2
German, 277	3	3	3
Elect one subject from the following:			
English Literature, 276	3	3	3
Military Drill, 299	3	3	2

CHEMISTRY.

216. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor WILLIAMS.

217. Inorganic Chemistry.—Laboratory work. Remsen's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. HILL.

218. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Three periods. Required of Juniors in Chemistry. Professor WITHERS and Doctor WILLIAMS.

220. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common elements in unknown substances. Seven periods, first term. Required of Juniors in Chemistry. Doctor WILLIAMS.

226. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of agricultural and technical importance. Seven periods, second and third terms. Required of Juniors in Chemistry. Seven periods. Required of Seniors in Chemistry. Doctor WILLIAMS.

228. Organic Chemistry.—Laboratory work. Orndorff's *Laboratory Manual* and Gattermann's *Practical Methods of Organic Chemistry,* translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. Four periods. Required of Seniors in Chemistry. Doctor SYME.

233. Bio-Chemistry.—Lectures and recitations. A discussion of the carbohydrates, fats and proteins. Three periods. Required of Seniors in Chemistry. Professor WITHERS.

BOTANY.

241. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading, regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed-plants. The principles of plant breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field work and simple independent investigations. Three periods. Required of Sophomores in Chemistry. Professor STEVENS.

BACTERIOLOGY.

251. General Bacteriology.—Lectures and laboratory work on the nature, physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of

bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors in Chemistry. Professor STEVENS and Mr. GAINEY.

252. **Bacteriology, Advanced.**—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made flexible to fit the requirements of those students taking it. Two periods. Required of Seniors in Chemistry. Professor STEVENS and Mr. HALL.

MATHEMATICS.

While the subject of mathematics is presented in such a manner that the student obtains a thorough working knowledge of those principles which he needs in his Engineering Courses, yet, at the same time, it is not the purpose to subordinate the general theory of Mathematics to the practical side. The work consists of recitations, written exercises and lectures, the scope being quite sufficient for the needs of the institution.

263. **Algebra.**—Wells's *New Higher Algebra.* Begin with quadratic equations and complete compound interest and annuities, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients and logarithms. Five periods, first term; three periods, second term. Required of Freshmen. Professor YATES, Mr. RICHARDSON and Mr. J. A. PARK.

264. **Geometry.**—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Two periods, second term; five periods, third term. Required of all Freshmen. Professor YATES, Mr. RICHARDSON, and Mr. J. A. PARK.

265. **Solid Geometry.**—Required of Sophomores. Five periods, first term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

266. **Advanced Algebra.**—Wells's *New Higher Algebra.* Permutations, combinations, continued fractions, summation of series, general theory of equations, and the solution of higher equations, etc. Required of Sophomores. Three periods, second term. Professor YATES and Mr. RICHARDSON.

267. **Trigonometry.**—Wells's *Plane and Spherical Trigonometry.* Plane Trigonometry. Solution of plane triangles, triangulation, etc. Spherical Trigonometry. Solution of spherical triangles. Required of Sophomores. Two periods, second term; five periods, third term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

268. Analytical Geometry.—Nichols's *Analytical Geometry.* Loci of equations, straight line, circle, parabola, ellipse, hyperbola, a discussion of the general equation of the second degree, higher plane curves and geometry of three dimensions. Five periods, first and second terms. Required of Juniors in Engineering. Professor YATES.

269. Differential and Integral Calculus.—Osborne's *Elements of Calculus.* A thorough treatment of the fundamental principles and derivation of formulæ; applications to various problems, such as expansion into series, evaluation of undeterminate forms, maxima and minima, radius of curvature, lengths of curves, areas, volumes, etc. Five periods, third term. Required of Juniors. Two periods, first term. Required of Seniors. Professor YATES.

ENGLISH.

272. Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor HARRISON, Doctor SUMMEY, Mr. BONN.

273. American Literature.—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor HARRISON, Doctor SUMMEY, Mr. BONN.

274. Advanced Rhetoric.—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Two periods, first and second terms. Required of Juniors. Professor HARRISON.

275. Public Speaking.—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Two periods, third term. Required of Juniors. Professor HARRISON.

276. English Literature.—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a

text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Three periods. Elective for Seniors. Professor HARRISON.

MODERN LANGUAGES.

The aim of the department is to enable one *(a)* to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and *(b)* to read scientific works and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions and gradually progressing to more advanced ones, frequent repetitions, and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German for students of Chemistry and Mechanical Engineering, and Spanish for Civil and Electrical Engineering students.

277. German.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Elective for Juniors or Seniors. Doctor RUDY.

278. French.—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Francaise;* selected short stories of French literature, and scientific readers. This subject may be taken by special petition to the Faculty. Doctor RUDY.

279. Spanish.—Worman's *Modern Languages*, first and second Spanish books; *Introduccion a la Lengua Castellana*, Marion y Des Garrenes; a *Spanish Grammar* to be selected; Fontaine's *Flores de Espana*, and other short stories of Spanish literature; *Modelos para Cartas*. Elective for Juniors and Seniors in Civil and Electrical Engineering. Doctor RUDY.

POLITICAL ECONOMY.

297. This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Required of Juniors. One period. Doctor SUMMEY.

MILITARY SCIENCE.

299. Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; two hours, third term. Required of all classes except Seniors. Seniors are either to take drill or three extra hours in some other subject instead. Commandant and Officers of the Battalion.

300. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, and Guard Duty. One period. Required of Juniors. Lieutenant YOUNG.

THE TWO-YEAR COURSE IN MECHANIC ARTS.

This is largely a practical course intended for those who are not prepared, academically, to enter the four-year course. On the completion of this course a young man is fitted for a position as machinist, draughtsman, stationary engineer, or to fill similar positions.

SUBJECTS OF INSTRUCTION.

First Year.

Mechanical Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine; use of instruments, and tracing; geometric drawing, isometric and cabinet drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Elementary principles of descriptive geometry, cylinders, cones, and prisms, intersections, development of surfaces. Miscellaneous problems. Four periods. Mr. VAUGHAN.

Woodwork.—Use of bench tools, working from drawings, lining, sawing, planing. Practice in making simple exercises in wood. Elementary exercises in wood-turning. Three periods. Mr. CLAY.

Forge-work.—Exercises in working with iron. Welding. Uses and care of forge tools and fires. Two periods. Mr. WHEELER.

Foundry.—Recitations and exercises in foundry work, including molding, core-making, the management of the cupola furnace and the crucible furnace in iron and brass melting. Two periods. Mr. WHEELER.

Mechanical Technology.—Classification and uses of woodworking and forging tools and machines. Methods of woodworking and forging. Arrangement, sizes, and care of belting and shafting. One period. Professor SATTERFIELD.

Arithmetic.—Milne's *Standard Arithmetic.* Begin with decimal fractions and complete the subject. Five periods, first term. Mr. RICHARDSON and Mr. SYKES.

Algebra.—Wells' *New Higher Algebra* to quadratic equations. Five periods, second and third terms. Mr. RICHARDSON and Mr. SYKES.

Preparatory English.—The forms of the language, the spelling and definition of words, the classification and punctuation of sentences, are taught in text-book, in much class-reading and in daily written exercises. The object of this course is to impart the power of interpreting the written page and of expressing ideas in both the spoken and the written word. Three periods. Dr. SUMMEY and Mr. BONN.

Military Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; two periods, third term. Commandant and Officers of the Battalion.

Second Year.

Mechanical Drawing.—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blueprinting. Two periods. Mr. ELLIS.

Machine-shop work may be elected instead. Five additional periods of Mechanical Drawing may be elected.

Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe-work, boring, reaming, drilling, planing, milling, and shaper-work. Two periods. Mr. PARK.

Elective Work.—Five additional periods of shop work, either wood shop, machine shop or foundry, may be elected.

Steam and Steam Machinery.—Descriptive study of the machinery of steam power plants—engines, boilers, condensers, pumps, piping. Care and management. Combustion of fuels. Indicators; indicated, brake and boiler horse-power problems. Three periods. Professor SATTERFIELD.

Algebra.—Wells' *New Higher Algebra.* Begin with quadratic equations and complete logarithms, embracing ratio and proportion, variation, the progressions, the binomial theorem, series and partial fractions. Five periods, first term; two periods, second term. Mr. RICHARDSON and Mr. J. A. PARK.

Geometry.—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Two periods, second term; five periods, third term. Professor YATES, Mr. RICHARDSON, and Mr. J. A. PARK.

Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; two hours, third term. Commandant and Officers of the Battalion.

TEXTILE COURSES.

VIII. The Four-year Course in Textile Industry.
VIIIa. The Two-year Course in Textile Industry.

THE TEXTILE DEPARTMENT.

The Textile Department, which is a typical cotton mill, is fully equipped with all the necessary machinery for instruction in manufacturing cotton yarns and fabrics from the bale to the finished product. The student is taught the theory of cotton spinning, weaving, designing, and dyeing. In connection with the theory, he learns the practical operation of the cotton machinery used in carrying on the different processes. Further, he learns such essential practical details as enable him to adjust and fix the machinery so as to produce the proper results. As a result of this training, each student produces for himself cotton yarns of different numbers, cotton fabrics of different kinds from his own designs and choice of colors.

TEXTILE INSTRUCTION.

In this department two courses of instruction are offered, the four-year course leading to the degree of Bachelor of Engineering, and the two-year course in carding and spinning, weaving, designing, and dyeing.

Four-year Course.

The four-year course offers complete facilities for full instruction in all branches of cotton-mill work. Practical training in textile work begins in the Freshman year and forms a part of the work in each of the following years. The combination of practical with theoretical training is begun in the Sophomore year and continues in the Junior and Senior years. The theoretical work is directly related to the practical work going on, and this combination offers the best means for studying cotton-mill work and its operations.

Two-year Course.

The two-year course is offered to students who cannot spend the time required for the four-year course, or who have had practical experience in the mill and wish to avail themselves of our facilities for giving special instruction in textile work.

TEXTILE BUILDING AND EQUIPMENT.

The Textile Building is located on the west campus. It is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Throughout, its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement is fitted up with a laboratory and class-room for instruction in dyeing and with dyeing machinery. On the first floor are located the hand and power looms and the necessary warp-preparation machinery. The carding and spinning machinery is located on the second floor. Electricity is used as motive power, the machinery of each department in the building being driven by a separate motor. The machinery equipment consists of the latest types of cotton-mill machinery manufactured by American builders. The following is a list of the machines and their makers:

Carding Department.

Opening Room.—One combination opener and breaker lapper, made by Kitson Machine Co., Lowell, Mass. One 40-inch single beater finisher lapper, with patent carding beater, made by Kitson Machine Co., Lowell, Mass.

Carding Room.—One 40-inch revolving flat card, 112 flats, with coiler, made by Mason Machine Works, Taunton, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Whitin Machine Works, Whitinsville, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One single railway head, with coiler, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One drawing frame, four deliveries, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One railway head, with coiler, metallic rolls, and improved evener motion, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One drawing frame, four deliveries, metallic rolls, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One sliver lap machine, one ribbon lap machine and one six-head combing machine, made by Whitin Machine Works, Whitinsville, Mass. One 36-spindle slubber for 11x5½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 48-spindle intermediate roving frame for 9x4½-inch bobbin, made by Saco and Pettee Machine Shops, Biddeford, Me. One 64-spindle fine roving frame for 7x3½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 80-spindle jack roving frame for 6x2½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I.

Spinning Department.

Spinning Room.—One 64-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Whitin Machine Works, Whitinsville, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Mason Machine Works, Taunton, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 64-spindle spinning frame for warp, one 64-spindle spinning frame for filling, made by Saco and Pettee Machine Shops, Biddeford, Me. One 48-spindle spinning frame, combination build, made by D. A. Tompkins Co., Charlotte, N. C. One 240-spindle mule spinning frame, 1½-inch gauge, made by Asa Lees & Co., Oldham, England.

Spooling, Twisting, and Winding.—One 40-spindle spooler, made by Draper Company, Hopedale, Mass. One 40-spindle spooler, made by Whitin Machine Works, Whitinsville, Mass. One 32-spindle spooler, made by Easton & Burnham, Pawtucket, R. I. One 40-spindle spooler, made by D. A. Tompkins Co., Charlotte, N. C. One 48-spindle twister, made by Whitin Machine Works, Whitinsville, Mass. One 100-spindle wet twister, made by Draper Company, Hopedale, Mass. One 48-spindle twister, one-half for wet, one-half for dry twisting, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 50-spindle reel, one-half live, one-half dead spindles, made by D. A. Tompkins Co., Charlotte, N. C. One 40-spindle reel, made by Draper Company, Hopedale, Mass. One 6-spindle universal winding machine, made by Universal Winding Co., Boston, Mass. One section warper, 400 ends, made by Draper Company, Hopedale, Mass.

Weaving Department.

Warp Preparation.—One 12-spindle bobbin-winding machine, made by Jacob K. Altemus, Philadelphia, Pa. One beaming machine, made by Lewiston Machine Co., Lewiston, Me. One beaming machine, complete, made by the T. C. Entwistle Co., Lowell, Mass.

Looms.—One Northrop-Draper print-cloth loom; two Northrop-Draper sateen looms; one Northrop-Draper loom with 20-harness dobby, made by Draper Company, Hopedale, Mass. Three high-speed sheeting looms, made by Kilburn, Lincoln & Co., Fall River, Mass. One sheeting loom, one 12-harness dobby loom and one 24-harness dobby loom, made by Whitin Machine Works, Whitinsville, Mass. One print-cloth loom, one 2x1 box loom, one 24-harness dobby loom, made by Mason Machine Works, Taunton, Mass. One 4-harness twill loom, made by Lowell Machine Shop, Lowell, Mass. One Crompton

4x1 box gingham loom, one Crompton 4x1 box loom with 20-harness dobby, one Crompton 2 and 1-box loom with 400-hook Jacquard machine, one Knowles Gem loom with 4x4 box, one Stafford single-box loom with 20-harness dobby, made by Crompton & Knowles Loom Works, Worcester, Mass. One single-box loom with 200-hook table-napkin Jacquard machine. One 4 x 1 box table-cover loom with 624-hook Halton Jacquard machine, made by Crompton-Thayer Loom Co., Worcester, Mass. Ten 4 x 4 box hand looms with 30-harness witch-heads for narrow fabrics. Two 4 x 4 box hand looms with 400-hook and 600-hook Jacquard machines, from Thos. Halton's Sons, Philadelphia, Pa.

Knitting.—One full automatic knitting machine, made by George D. Mayo Machine Company, Laconia, N. H. One ribber, made by Scott & Williams, Philadelphia, Pa. One looper, made by Beattie Manufacturing Company, Cohoes, N. Y.

Dyeing Department.

The Dyeing Department is located in the basement of the Textile Building, and consists of an experimental dyeing laboratory with desk room sufficient for thirty students, a lecture-room, a stock-room, an office, and a room seventy by fifty feet which is fitted up to give instruction in practical dye-house work.

The dyeing laboratory is well fitted up with appropriate work tables, and all the necessary apparatus for doing experimental dyeing, dye-testing, color-matching, the testing of dyed samples to light, acids, alkalies, etc., as well as carrying out the various chemical operations necessary in dyeing. The dye-house is equipped with the proper dyeing machinery needed in the dyeing of large quantities of material, and the giving of practical instruction in boiling out, bleaching, dyeing of raw stock, cops, skeins, warps, and piece goods.

The department has a large collection of dyestuffs and color cards. Through the kindness of the various dyestuff dealers and manufacturers the department is regularly supplied with all new dyestuffs and color cards as soon as they are put on the market, thus affording the student ample opportunity to become familiar with the latest methods and products for commercial work. The department is indebted to the following firms for donations of dyestuffs and chemicals:

H. A. Metz & Co., New York.
Badische Company, New York.
Farbenfabriken of Elberfield Co., New York.
Danker & Marston, Boston, Mass.
Berlin Aniline Works, New York.
Cassella & Co., New York.

Dye-house Equipment.—Seven dye vats; one Roessler & Hasslacher bleaching vat; one Jefferson high-pressure boiling-out kier; one hand-dyeing jigger; one 15-gallon steam jacketed copper kettle; one steam aging box; one Fairmount warp dyeing machine; one Textile Finishing Co.'s warp dyeing machine; one Textile Finishing Co.'s warp sizing machine; one 5-can upright dryer; one small Lightfoot raw stock dyeing machine; one Tolhurst Machine Works hydro-extractor; one Schaum & Uhlinger hydro-extractor; one Mather & Platt cloth printing machine; one Fries warp dyeing machine; one dry closet.

A full equipment of analytical balances and other necessary apparatus for experiment work.

Power and Power Transmission.

One 30-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving carding and spinning machinery.

One 15-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving weaving machinery.

One 10-horse-power 3-phase 550-volt motor, made by Fairbanks-Morse Co., for driving dyeing machinery.

Pulleys, shaftings, hangers, and couplings, made by Jones & Laughlin Co., Ltd., Pittsburg, Pa.

Belting, made by Fayerweather & Ladew, New York City, and Maloney-Bennett Belting Co., Chicago, Ill.

THE FOUR-YEAR COURSE.

VIII. The Four-year Course in Textile Industry, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301†	1	1	1
Weaving, 302	2	2	2
Mechanical Drawing, 317	2	2	2
Woodwork, 320	2	2	2
Forge-work, 321	2	2	--
Foundry, 322	--	--	2
Algebra, 335	5	3	--
Geometry, 336	--	2	5
Elementary Physics, 331	2	2	2
Composition and Rhetoric, 341	3	3	3
Military Drill, 359	3	3	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Textile Designing, 303	2	1	1
Cloth Analysis, 304	..	1	1
Inorganic Chemistry, 309	3	3	3
Inorganic Chemistry (laboratory), 310	2	2	2
Geometry, 337	5	..	..
Advanced Algebra, 338	..	3	..
Trigonometry, 339	..	2	5
American Literature, 342	3	3	3
Military Drill, 359	3	3	2

Junior Year.

Carding and Spinning, 301	4	4	4
Weaving, 302	3	3	3
Textile Designing, 303	2	1	1
Cloth Analysis, 304	..	1	1
Dyeing, 306	2	2	2
Dyeing (laboratory), 307	2	2	2
Steam Engines and Boilers, 326	2	2	2
Advanced Rhetoric, 343	2	2	..
Public Speaking, 344	..	..	2
Political Economy, 353	1	1	1
Military Tactics, 360	1	1	1
Military Drill, 359	3	3	2
German, 348	3	3	3

*The lecture and recitation periods are one hour; the laboratory, shop and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	4	4	4
Weaving, 302	4	4	4
Textile Designing, 303	2	2	2
Cloth Analysis, 304	1	1	1
Dyeing, 306	1	1	1
Dyeing (laboratory), 307	2	2	2
Machine-shop Work, 324	2	2	2
Elect two subjects from the following:			
English Literature, 345	3	3	3
Military Drill, 359	3	3	2
German, 348	3	3	3

DESCRIPTION OF SUBJECTS.

301. Carding and Spinning.—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant; its growth; varieties; ginning; baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers: cards, sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Text-books: *Cotton Mill Processes and Calculations*, by Tompkins; *Cotton Spinning*, by Nasmith. Required of Freshmen, Sophomores, Juniors, and Seniors. Assistant Professor PARKER.

302. Weaving.—Lectures and practice in warp preparation, operating and fixing looms, cloth-finishing machinery. Warp preparation: pin frame warper; section warper; beam warper; construction of beam warper, stop motion, measuring motion, creel; pattern warp making; long and short chain beamers. Slashing: steam cylinder slasher; hot-air slasher; construction of slasher; creel; cylinder;

immersion roll; squeeze rolls; drying fan; separator rolls; winding yarn on beam; cone drive; slow motion; measuring and cut marking motion. Sizing: construction of size kettle; size mixing and boiling; division of sizing; ingredients; value of ingredients; sizing receipts for light, medium, and heavy sizing. Loom-mounting: reeds and harnesses; drawing in, and putting warps in loom. Looms: hand looms and power looms; construction of plain loom; principal movements in weaving; let-off and take-up motions; filling stop motion; warp stop motion. Cams and their construction. Magazine looms, construction and advantages. Drop box looms: chain building for box looms; changing boxes to have easy-running looms; construction and value of multipliers; timing and fixing box motions. Pick and pick-looms. Box-chain, and multiplier-chain building, arrangement of colors in boxes to give easy-running loom. Ball and shoe-pick motion. Construction and fixing of head motion. Dobby, single and double index; construction and fixing of dobby; extra appliances necessary for weaving leno, towel, and other pile fabrics. Value of easers; half motion; and jumper attachment for leno. Springs and spring-boxes. Pattern chain building. Jacquard: single and double lift; construction and tie-up. Weave-room calculations; speed and production calculations; relative speed of looms; counts of cotton harness. Finishing: inspection of cloth; singeing and brushing; calendering, tentering; folding and packing for the market. Equipment necessary for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Text-book: *Weaving, Plain and Fancy*, by Nelson. Required of Freshmen, Sophomores, Juniors, and Seniors in the Four-year Course and of first and second year students in the Short Course. Professor NELSON and Mr. STEED.

303. Textile Designing.—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves: plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honeycomb weaves. Bedford cords and combination with other weaves. Wave designs; pointed twills; diamond effects. Plain and fancy piqués. Double plain; figured double plain. Double cloths. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra

warp; cloths ornamented with extra filling. Cotton velvet. Corduroy. Matelasse. Leno weaves with one, two, and more sets of doups. Principles of working both top and bottom doups. Combination of plain and fancy weaves with leno. Methods of obtaining leno patterns. Jacquards. Distribution and setting out of figures for geometrical and floral effects. Distributing figures to prevent lines. Areas of patterns. Preparation of sketches. Transfer of sketches to design paper. Painting in the design with different weaves according to sketch. Shading of patterns. Card cutting and lacing. Required of Sophomores, Juniors, and Seniors. Professor NELSON and Mr. STEED.

304. Cloth Analysis and Fabric Structure.—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of Sophomores, Juniors, Seniors. Professor NELSON and Mr. STEED.

DYEING COURSE.

As the textile industries of the State increase, the need of young men who have been trained in the principles as well as the practice of the different factory operations becomes apparent. In the course in dyeing the student is taught the different practical methods of the dye-house; the chemistry of the dye stuffs, some of each class of which he actually makes; the chemical changes brought about by mordants, assistants, etc. He also learns color matching, dye testing, and the methods for the analysis of the different chemicals used in the dye-house. He carries on the study of carding, spinning, weaving, designing, cloth analysis, etc., to the end of the Sophomore year, with the other textile students, and with them devotes attention to shop-work, drawing, engines, boilers, etc., together with the general studies of English, History, Mathematics, Physics, and General Chemistry, which are required in all the Four-year Courses.

VII. The Four-year Course in Dyeing, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	1	1	1
Weaving, 302	2	2	2
Mechanical Drawing, 317	2	2	2
Woodwork, 320	2	2	2
Forge-work, 321	2	2	--
Foundry, 322	--	--	2
Algebra, 335	5	3	--
Geometry, 336	--	2	5
Elementary Physics, 331	2	2	2
Composition and Rhetoric, 341	3	3	3
Military Drill, 359	3	3	2

Sophomore Year.

Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Textile Designing, 303	2	1	1
Cloth Analysis, 304	--	1	1
Inorganic Chemistry, 309	3	3	3
Inorganic Chemistry (laboratory), 310	2	2	2
Geometry, 337	5	--	--
Advanced Algebra, 338	--	3	--
Trigonometry, 339	--	2	5
American Literature, 342	3	3	3
Military Drill, 359	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Dyeing, 306	2	2	2
Dyeing (laboratory), 307	2	2	2
Organic Chemistry, 311	3	3	3
Analytical Chemistry, 312 and 313	7	7	7
Advanced Rhetoric, 343	2	2	--
Public Speaking, 344	--	--	2
Political Economy, 353	1	1	1
Military Tactics, 360	1	1	1
Military Drill, 359	3	3	2
German, 348	3	3	3

Senior Year.

Dyeing, 306	3	3	3
Industrial Chemistry, 315	2	2	2
Analytical Chemistry, 313	7	7	7
Organic Chemistry (laboratory), 314	4	4	4
Elect two subjects from the following:			
English Literature, 345	3	3	3
Military Drill, 359	3	3	2
German, 348	3	3	3

DESCRIPTION OF SUBJECTS.

306. Dyeing.—With the microscope and other testing apparatus the student makes a careful study of the various fibers used in the textile industry. He also studies the chemical and physical properties of these fibers; the action of acids, alkalies, heat, moisture, and the various other agencies to which fibers are liable to be subjected. He next takes up the study of the fundamental principles which underlie the arts of bleaching and dyeing, such as the boiling out and bleaching of cotton, and the chemical reactions involving each step. The adaptability of water for bleaching and dyeing, followed by the theories of dyeing. Substantive dyestuffs and their application to cotton. After-treatment of direct dyestuffs, including diazotising and developing

and the topping with basic dyestuffs. The application to cotton of basic dyestuffs, acid dyestuffs, mordant dyestuffs, including a study of the various mordants and their fixation with metallic salts. Dyeing with sulphur dyestuffs, indanthrenes, indigo, natural and artificial, aniline black, turkey red, and the insoluble azo colors developed on the fiber. The methods of bleaching and dyeing of linen, jute, ramie, and other vegetable fibers. The scouring and bleaching of wool. The carbonization and chlorination of wool. The application of basic, acid, chrome, eosine, and direct colors to wool. Dyeing wool with logwood, fustic, and other natural dyewoods. Methods of the making and dyeing of artificial silk. The boiling off, bleaching and dyeing of natural silk. Study of the chemical and physical changes which take place during mercerization; also the methods of dyeing mercerized goods. The use of the various kinds of machines used in bleaching and dyeing. The dyeing of raw-stock, skeins, cops, warps, piece goods, hosiery, underwear, and unions. The science of color-mixing. Color-matching on textiles. The use of the tintometer and colorimeter. Calico printing, including the various methods of preparing the various pastes, thickening agents, mordants and assistants used in printing. Quantitative analysis of mixed yarns, and fabrics composed of cotton, wool, and silk. The testing of dyestuffs for their shade, tinctorial power, and leveling properties. Comparative dye trials to determine money value. Testing for mixtures. The reactions of acids, alkalies and reducing agents on several samples taken from the different classes of dyestuffs.

The course of lectures, as outlined above, will include the consideration of many difficult problems that arise in the dye-house, with especial reference to the dyeing, mercerizing, and finishing of cotton yarns and pieces. Required of Juniors and Seniors in Textile Industry. Mr. HALSTEAD.

307. Dyeing Laboratory.—A series of experiments is performed which covers all the subjects taken up in the lecture course, and includes a large amount of work done in the laboratory and dye-house. Special stress is put on the matching of colors and the dyeing of sulphur and indanthrene dyestuffs. Each student is required to bleach and dye a large number of samples of yarn and cloth on a small scale, and is required to mount specimens of his work in a scrap-book. At the discretion of the instructor in charge, the class bleaches and dyes larger quantities of raw-stock, cloth, and yarn in the dye-house, as well as prints samples on the laboratory printing machine. This work will be supplemented by visits to the mills which do dyeing in the city of Raleigh. Required of Juniors and Seniors in Textile Industry. Mr. HALSTEAD.

CHEMISTRY.*

309. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor WILLIAMS.

310. Inorganic Chemistry.—Laboratory work. Remsen's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. HILL.

311. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Three periods. Required of Juniors in Dyeing. Professor WITHERS.

312. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common metallic elements, as well as that of the acids, in unknown substances. Seven periods, first term. Required of Juniors in Dyeing. Doctor WILLIAMS.

313. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of technical importance. Seven periods, second and third terms. Required of Juniors in Dyeing. Seven periods. Required of Seniors in Dyeing. Doctor WILLIAMS.

314. Organic Chemistry.—Laboratory work. Gattermann's *Practical Methods of Organic Chemistry,* translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. One of each of the more important classes of dyestuffs is prepared and the properties studied. Four periods. Required of Seniors in Dyeing. Doctor SYME.

315. Industrial Chemistry.—Thorpe's *Outlines of Industrial Chemistry.* A discussion of the processes and principles involved in the more important chemical industries. A discussion of the materials of engineering. Three periods. Required of Seniors in Dyeing. Professor WITHERS.

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*For further information, see course in Chemistry.

MECHANICAL ENGINEERING.*

317. Mechanical Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Geometric drawing; isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine; elementary principles of descriptive geometry; cylinders, cones, and prisms; intersection and development of surfaces; miscellaneous problems. Two periods. Required of Freshmen. Mr. VAUGHAN.

320. Woodwork.—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood-turning. Two periods. Required of Freshmen. Mr. CLAY.

321. Forge-work.—Exercises in working with iron, welding; use and care of forge tools and fires. Two periods, first and second terms. Required of Freshmen. Mr. WHEELER.

322. Foundry.—Recitations and exercises in foundry work, including molding, core making, the management of the cupola furnace and the crucible furnace in iron and brass melting. Two periods. Required of Freshmen, third term. Mr. WHEELER.

324. Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of Textile Seniors. Mr. PARK.

326. Steam Engines and Boilers.—A study of the structural details of modern steam engines; the slide valve, both in its simple form and when used in combination with independent cut-off valves; link motion and other reversing gears; and the Zeuner diagram. Attention is given to the effect of the reciprocating parts and a study of inertia and tangential pressures; also a study of the steam-engine indicator, of indicator rigging, and of steam distribution as disclosed by the indicator.

The various forms of steam boilers are studied, and the methods employed in their construction noted. The number and size of tubes and flues, the thickness of plates, strength of different styles of riveting, kinds of bracing, amount of grate and heating surface, different kinds of steam and water gauges, safety valves and injectors; the causes and methods of preventing foaming, incrustation and corrosion; the manner of setting boilers, and of operating them with safety and economy; feed-water heaters; mechanical stokers; smoke-consumers and chimneys are studied in detail. Two periods. Required of Juniors in Textile Industry. Professor SATTERFIELD.

*For full information, see course in Mechanical Engineering.

PHYSICS.†

331. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Mr. TRUITT.

MATHEMATICS.

335. Algebra (Continued).—Wells' *New Higher Algebra.* Begin with quadratic equations and complete compound interest and annuities, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients and logarithms. Five periods, first term; three periods, second term. Required of Freshmen. Professor YATES, Mr. RICHARDSON, and Mr. J. A. PARK.

336. Geometry.—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Two periods, second term; five periods, third term. Required of Freshmen. Professor YATES, Mr. RICHARDSON, and Mr. J. A. PARK.

337. Solid Geometry.—Required of Sophomores. Five periods, first term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

338. Advanced Algebra.—Wells' *New Higher Algebra.* Permutations, combinations, continued fractions, summation of series, general theory of equation, and the solution of higher equations, etc. Required of Sophomores. Three periods, second term. Professor YATES and Mr. RICHARDSON.

339. Trigonometry.—Wells' *Plane and Spherical Trigonometry.* Plane Trigonometry. Solution of plane triangles, triangulation, etc. Spherical Trigonometry. Solution of Spherical triangles. Required of Sophomores. Two periods, second term; five periods, third term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

ENGLISH.

341. Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor HARRISON, Doctor SUMMEY, and Mr. BONN.

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†For full information, see course in Electrical Engineering.

342. American Literature.—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor HARRISON, Doctor SUMMEY, and Mr. BONN.

343. Advanced Rhetoric.—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Two periods, first and second terms. Required of Juniors. Professor HARRISON.

344. Public Speaking.—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Two periods, third term. Required of Juniors. Professor HARRISON.

345. English Literature.—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Three periods. Elective for Seniors. Professor HARRISON.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English. The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, frequent repetitions and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lessons are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week.

Students may elect German during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German and French.

348. **German.**—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Elective for Juniors and Seniors. Doctor RUDY.

349. **French.**—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Francaise;* selected short stories of French literature, and scientific readers. Doctor RUDY.

This subject may be taken by special petition to the Faculty.

POLITICAL ECONOMY.

353. This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Required of Juniors. Doctor SUMMEY.

MILITARY SCIENCE.

359. **Drill.**—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; and two periods, third term. Required of all classes except Seniors. Seniors are to either take drill or three extra hours in some other subject instead. Commandant and Officers of the Battalion.

360. **Tactics.**—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Juniors. Lieutenant YOUNG.

TWO-YEAR COURSE.

The two-year course is offered to students who cannot spend the time required for the four-year course, or who have had practical experience in the mill and wish to avail themselves of our facilities for giving instruction in textile work.

VIIIa. The Two-year Course in Textile Industry.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning	2	2	2
Weaving	3	3	3
Textile Designing	2	1	1
Cloth Analysis	--	1	1
Mechanical Drawing	2	2	2
Forge-work	2	2	--
Foundry	--	--	2
Arithmetic	5	--	--
Algebra	--	5	5
English	3	3	3
Military Drill	3	3	2

Second Year.

Carding and Spinning	5	5	5
Warp Preparation	--	--	1
Weaving	4	4	3
Textile Designing	2	1	1
Cloth Analysis	--	1	1
Dyeing	3	3	3
Machine-shop Work	2	2	2
English	3	3	3
Military Drill	3	3	2

DESCRIPTION OF SUBJECTS.

Carding and Spinning.—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant; its growth; varieties; ginning, baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers: cards; sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks.

Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Text-books: *Cotton Mill Processes and Calculations*, by Tompkins; *Cotton Spinning*, by Nasmith. Required of first and second year students. Assistant Professor PARKER.

Weaving.—Lectures on construction of plain, twill, sateen, gingham, pick, and pick looms are given, also construction of dobbies and jacquards.

Lectures begin with the construction of plain loom, first taking up the principal movements in weaving, then the various secondary or auxiliary movements, and the relation and timing of one movement to another. Additional motions and parts required to be added to a plain loom in order to weave twill and sateen cloths. Magazine looms; construction and advantages. Drop box looms; construction of the various motions; arranging colors in boxes; methods of building box chains. Dobby: construction of single and double index; setting, and starting up dobby on loom; fixing dobby. Pick and pick looms: construction of loom; construction of head motion; building box chains to have easy-running loom. Jacquard: single and double lift; construction and tie-up. Weave-room calculations for speed and production; counts of reed and cotton harness. Finishing; cotton fabrics. Necessary equipment for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Text-book: *Weaving, Plain and Fancy*, by Nelson. Required of first and second-year students. Professor NELSON and Mr. STEED.

Textile Designing.—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves; plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Fancy satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honeycomb weaves. Bedford cords and combination with other weaves. Wave designs; pointed twills; diamond effects. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp. Cloths ornamented with extra filling. Combination of plain and fancy weaves. Practical application of weaves to fabrics. Advanced designs. Required of first and second year students. Professor NELSON and Mr. STEED.

Cloth Analysis and Fabric Structure.—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Draughting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of first and second-year students. Professor NELSON and Mr. STEED.

MECHANICAL ENGINEERING.*

Mechanical Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Geometric drawing; isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine. Elementary principles of descriptive geometry; cylinders, cones, and prisms; intersection and development of surfaces; miscellaneous problems. Two periods. Required of first-year students. Mr. VAUGHAN.

Forge-work.—Exercises in working with iron, welding; use and care of forge tools and fires. Two periods. Required of first-year students.

MATHEMATICS.*

Arithmetic.—Milne's *Standard Arithmetic.* Begin with decimal fractions and complete the subject. Five periods, first term. Required of first-year students. Mr. RICHARDSON and Mr. SYKES.

Algebra.—Wells' *New Higher Algebra.* Up to quadratic equations. Five periods, second and third terms. Required of first-year students. Mr. RICHARDSON and Mr. SYKES.

Preparatory English.—The forms of the language, the spelling and definition of words, the classification and punctuation of sentences, are taught in text-book, in much class reading and in daily written exercises. The object of this course is to impart the power of interpreting the written page and of expressing ideas in both the spoken and the written word. Required of first-year students. Three periods. Doctor SUMMEY and Mr. BONN.

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*For full information, see course in Engineering.

Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours for first and second terms; two hours, third term. Required of first and second year students. Commandant and Officers of the Battalion.

ADDITIONAL SUBJECTS IN THE SECOND YEAR.

Warp Preparation.—Lectures on construction of warp preparation machinery, spooler; section warper, ball warper; size kettle; slasher. Practice in operating machines. Laying out pattern warps for long and short chain beaming. Size mixing and boiling; value of ingredients used in sizing; sizing receipts for light, medium, and heavy sizing. One period, third term. Required of second-year students.

Dyeing.—The object of this course is to give the student a sound practical knowledge of the fundamental principles which underlie the arts of bleaching, dyeing, mercerizing, etc., of cotton yarns and fabrics. The manipulation of the various machines used in bleaching, dyeing and mercerizing is carefully explained. The physical and chemical properties of the material to be dyed receive first consideration, followed by a study of the adaptability of water for bleaching, dyeing, mordanting, etc. The practical application of the dyestuffs themselves is treated in the most thorough and detailed manner, *e. g.*, the substantive dyestuffs dyed direct, diazotised and developed, after-treated with metallic salts, topped with basic dyes, etc., the basic dyestuffs, sulphur dyestuffs, indanthrene dyestuffs, etc. Practice in color-mixing and matching is given. The student in this way acquires a collection of several hundred dyed samples which, when mounted in his pattern book, serve as a valuable reference. The course is supplemented by lectures, which will include the consideration of many difficult problems that arise in the dye-house. Three periods. Required of second-year students. Mr. HALSTEAD.

Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of second-year students. Mr. PARK.

Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of second-year students. Professor HARRISON, Doctor SUMMEY, and Mr. BONN.

NORMAL COURSES.

I. For Rural Teachers:
   (a) Two-year Course.
   (b) One-year Course.
   (c) A Two-weeks Spring Course.

II. For City Teachers:
   (a) Two-year Course.
   (b) One-year Course.
   (c) A Two-weeks Spring Course.

The Normal Courses are intended for the education of teachers, both men and women, chiefly along industrial lines. Industrial education, particularly in agriculture, is being introduced into our public schools, and the College has a constant demand for teachers well trained in these subjects. It is hoped by means of the Normal Courses to help supply this demand. Our School Law already requires agriculture to be taught in the public schools, and manual work will doubtless be added.

The Courses for Rural Teachers are devoted largely to agriculture and nature study; the Courses for City Teachers, to drawing and manual training. Each of these courses also includes a review of other public-school studies.

Persons already engaged in teaching may, at slight expense of time and money, by means of the short course, or May School, make themselves proficient in one or more industrial lines. Persons preparing to teach may take the full courses, and thus become proficient not only along industrial lines, but also in the other public-school branches and in one or more sciences, or in higher mathematics and English. The industrial training given is both practical and theoretical, and is arranged with reference to the present needs of the public schools in North Carolina. The exercises in the Normal Courses are the same as in the other courses of the College, except in the May School.

The Normal Courses are as follows:

I. Courses for Rural Teachers.

(a) TWO-YEAR COURSE.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture	3	3	3
Nature Study { Plants	3	3	3
Nature Study { Animals	3	3	3
English	3	3	3
Mathematics	5	5	5
Military Drill	3	3	2

Second Year.

Farm Equipment	4	--	--
Soils	--	4	--
Crops	--	--	4
Plant Diseases	3	--	--
Physics	--	3	--
Botany	--	--	3
Mathematics	4	4	4
English	3	3	3
Drawing	2	2	2
History	2	2	2
Military Drill	3	3	2

(*b*) ONE-YEAR COURSE.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Methods of Teaching Agriculture	2	2	2
Agriculture (general)	3	3	3
Horticulture	3	3	3
Animal Husbandry	3	3	3
Dairying	5	--	--
Diseases of Live-stock	--	5	--
Botany	3	--	--
Poultry	--	3	3
Entomology	--	--	3
Diseases of Plants	--	--	2
Agricultural Literature	1	1	1

Elective in any College department, *e. g.*, Agricultural Chemistry, Land Surveying, Physics and Physical Laboratory, Drawing, and others.

II. Courses for City Teachers.

(*a*) TWO-YEAR COURSE.

First Year.

Drawing	2	2	2
Woodwork	1	1	1
Forge-work	1	1	1
Mechanical Technology	1	1	1
Algebra and Geometry	5	5	5
English	3	3	3
History	2	2	2
Drill	3	3	2

Elective, 3 periods required: Physics 2, Nature Study (Plants) 3, Nature Study (Animals) 3.

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Drawing	2	2	2
Woodwork	4	4	4
Forge-work	1	1	1
English	2	2	2
Architecture and Descriptive Geometry	2	2	2
Architectural Drawing	2	2	2
Geometry and Trigonometry	5	5	5
Military Drill	3	3	2

Elective, at least 2 periods required: Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Descriptive Geometry 2, Plant Diseases, Human Physiology, 3, Physiological Botany 3.

(*b*) ONE-YEAR COURSE.

Drawing	3	4	4
Woodwork	4	5	5
Forge-work	2	2	2
Architecture	2	--	--
Architectural Drawing	2	2	2
Algebra and Geometry	5	5	5
Military Drill	3	3	2

Elective: Physics 2, English (132) 3, English (133 and 135) 2, History 2, Nature Study (Plants) 3, Nature Study (Animals) 3, Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Plant Diseases 3, Human Physiology 3, Physiological Botany 3, Geometry and Trigonometry 4, Descriptive Geometry 2.

THE MAY SCHOOL FOR TEACHERS.

May 3 to 15, 1909.

Agriculture, Nature Study and Common Branches.—This course is designed to meet the needs of teachers of the public, common and high schools who desire more preparation in Nature Study and Agriculture. Attention is also given to school gardens. The common branches are reviewed. Attendance here meets the legal requirement of attendance at an institute once in each two years.

The laboratories, library, specimens and all other equipment of the College are at the service of students of this course, affording an excellent opportunity for instruction.

The work is so arranged that teachers desiring to devote all of their time to Agriculture and Nature Study can do so, while those teachers wishing to devote part of their time to Agriculture and Nature Study and part to the common branches can pursue this course.

Instruction will be offered in the following subjects, from which election may be made to best meet particular needs:

Elementary Agriculture and Nature Study, Prof. F. L. Stevens.
School Management, Supt. Z. V. Judd.
School Gardens, Supt. F. M. Harper.
Farm Crops, Prof. C. L. Newman.
Farm Animals, Prof. John Michels.
Horticulture, Prof. F. C. Reimer.
Insects, Mr. R. I. Smith.
Poultry, Mr. J. S. Jeffrey.

Arithmetic, English, History, etc., will be taught by the regular instructors of the College.

No fees are charged for this course. Board may be had at $2.50 a week and lodging at about $1 a week.

Only a limited number can be accommodated. Rooms must be engaged in advance.

For particulars and reservation, write to

F. L. STEVENS, *Superintendent,*
WEST RALEIGH.

DONATIONS.

To the Chemistry Department.

Standard Oil Company of New York.—A dozen samples representing crude petroleum and the products obtained.

Armour & Co., of Chicago, Ill.—Some samples of fertilizing materials.

To the Textile Department.

George D. Mayo Machine Company, Laconia, N. H.—One full automatic knitting machine.

Scott & Williams, Philadelphia, Pa.—One ribber.

Beattie Manufacturing Company, Cohoes, N. Y.—One looper.

Wildman Manufacturing Company, Norristown, Pa.—One ribber.

Textile Machinery Company, Boston, Mass.—Dunn flyers for roving frame.

To the Department of Entomology.

The Deming Company, Salem, Ohio.—Two Simplex spray nozzles, one triple spraying attachment.

Dayton Supply Company, Dayton, Ohio.—One "Economy" bucket spray pump, with hose, extension rod and nozzles.

Goulds Manufacturing Company, Seneca Falls, N. Y.—One Goulds brass sprayer and bucket, fitted with hose and spray nozzles.

Friend Manufacturing Company, Gasport, N. Y.—Two "Friend" spray nozzles.

F. E. Myers & Bro., Ashland, Ohio.—One "Little Giant" bucket spray pump, with hose and nozzles; four spray nozzles, different patterns.

Bowker Insecticide Company, Boston, Mass.—One glass jar of "Disparene" (Arsenate of Lead); one glass jar of Bowker's tree soap; one glass jar of "Pyrox" (insect and fungus combination treatment); one can of Bowker's insect emulsion.

American Horticultural Distributing Company, Martinsburg, W. Va. One glass jar "Target Brand" scale destroyer; one glass jar "Target Brand" arsenate of lead; one glass jar "Target Brand" Kree Olio; one 10-pound package "Target Brand" Quick Bordeaux.

Mr. Ervin G. Holt.—The following works of Orison Swett Marden: Success Nuggets; Peace, Power and Plenty; Secret of Achievement; Pushing to the Front; Rising in the World, or Architect of Fate; The Optimistic Life; Every Man a King; He Can Who Thinks He Can.

To the Poultry Department.

Cyphers Incubator Company, Buffalo, N. Y.—Electric incubator and brooder, incubator and colony brooder.

Chas. A. Cyphers, Buffalo, N. Y.—Incubator with automatic moisture regulator.

1908 - 1909

CATALOGUE OF STUDENTS.

GRADUATES.

Name.	*Post Office.*	*Course.*
WILEY THEODORE CLAY, B.E.,	Hickory,	M. E.
PERCY LEIGH GAINEY, B.AGR.,	Fayetteville, R. 7,	Agr.
JAMES KEMP PLUMMER, B.S.,	West Raleigh,	Chem.
JESSE PAGE SPOON, B.AGR.,	Hartshorn,	Agr.
JOHN SNIPES STROUD, B.E.,	Bynum,	Tex.
VANCE SYKES, B.E.,	Efland, R. 2,	C. E.
JAMES CLARENCE TEMPLE, B.AGR.,	Sanford,	Mod. Lang
WILLIAM BROOKS TRUITT, B.E.,	Greensboro,	E. E.
LILLIAN LEE VAUGHAN, B.E.,	Franklin, Va.,	M. E.
JOHN LAWRENCE VON GLAHN, B.E.,	Wilmington,	C. E.

SENIOR CLASS.

JOHN ALLEN AREY,	Elmwood,	Agr.
WILLIAM HERBERT DOUGHTY BANCK,	Wilmington,	C. E.
JOHN WILLIAM BARRETT, JR.,	Rocky Mount,	Agr.
CECIL DEWITT BROTHERS,	Goldsboro,	C. E.
THORNE MCKENZIE CLARK,	Raleigh,	C. E.
WALTER MILLER COWLES,	Charlotte,	M. E.
JOHN BENNETT CRAVEN,	Charlotte,	Chem.
JOSEPH FRANK DAVIDSON,	Statesville,	E. E.
WILLIAM SAMUEL DEAN,	Oxford,	Tex.
CARLTON O'NEAL DOUGHERTY,	North, S. C.,	Tex.
FRED ATHA DUKE,	Raleigh,	C. E.
WILLIAM HUNT EATON,	Cleveland,	Agr.
RALPH RINGGOLD FAISON,	Goldsboro,	Agr.
WILLIAM ALEXANDER FAISON,	Goldsboro,	M. E.
FRANK LINDSAY FOARD,	Winston-Salem,	Agr.
ROSCOE LOOMIS FOX,	Waynesboro, Va.,	Tex.
LEWIS PRICE GATTIS,	Raleigh,	C. E.
ALBERT SIDNEY JOHNSTON GOSS,	Union, S. C.,	C. E.
CHARLIE POOL GRAY,	Buxton,	C. E.
ANDREW HARTSFIELD GREEN,	Raleigh,	Agr.
THOMAS DELAWARE GRIMSHAWE,	Montvale,	C. E.
WILLIAM ROY HAMPTON,	Plymouth,	Chem.
JOHN WILLIAM HARRELSON,	Lawndale,	M. E.

Name.	*Post Office.*	*Course.*
GORDON HARRIS,	Raleigh,	E. E.
THOMAS FREDERICK HAYWOOD,	Trenton,	C. E.
LEONARD HENDERSON,	Salisbury,	M. E.
BASCOMBE BRITT HIGGINS,	Leicester, R. 2,	Agr.
DANIEL HARVEY HILL, JR.,	West Raleigh,	Chem.
WAYNE ARINGTON HORNADAY,	Burlington,	Agr.
JOHN WILLIAM IVEY,	LaGrange,	M. E.
WILLIAM FLADGER R. JOHNSON,	Marion, S. C.,	C. E.
FREDERICK JOHN JONES,	New Bern,	C. E.
JAMES EDWARD LATHAM,	Washington,	Agr.
RALPH LONG,	Graham,	Agr.
SAMUEL HUXLEY MCNEELY,	Waxhaw,	E. E.
SAMUEL MACON MALLISON,	Washington,	C. E.
WILLIAM ROYDEN MARSHALL,	Rocky Mount,	M. E.
RALPH CECIL MASON,	Edenton,	Agr.
ARTHUR BALLARD MASSEY,	Salisbury, Md.,	Agr.
WALKER MOREHEAD MILLNER,	Leaksville,	Tex.
BENJAMIN FRANKLIN MONTAGUE,	Winston-Salem,	C. E.
WILLIAM FLAUD MORRIS,	Ashboro,	M. E.
SAMUEL LOFTIN OLIVER,	Mt. Olive,	E. E.
JULIUS MONROE PARKER,	Hunting Creek,	C. E.
JOHN GILBERT PASCHAL,	Goldston,	E. E.
PETER PENICK PIERCE,	Pelham,	C. E.
PAUL MILLER PITTS,	Concord,	M. E.
JAMES ALEXANDER POWELL,	Raleigh,	M. E.
JOHN MOIR PRICE,	Leaksville,	M. E.
ROBERT RICHARD REINHARDT,	Stanley Creek,	Agr.
ALFRED PRATTE RIGGS,	Wanchese,	C. E.
JOSEPH HENRY ROBERTSON,	Burlington,	E. E.
JAMES OLIN SADLER,	Charlotte, R. 12,	C. E.
FRANCIS WEBBER SHERWOOD,	Raleigh,	Chem.
ROBERT ARNOLD SHOPE,	Weaverville,	C. E.
GEORGE GRAY SIMPSON,	Norfolk, Va.,	Tex.
WILLIAM NEVILLE SLOAN,	Franklin,	C. E.
HUGH STUART STEELE,	Yadkin Valley,	C. E.
SAMUEL FATIO STEPHENS,	Norfolk, Va.,	C. E.
HENRY NEWBOLD SUMNER,	Hertford,	C. E.
CLAUDE STRATTON TATE,	Littleton,	M. E.
MALVERN HILL TERRELL,	Old Fort,	E. E.
FRANK MARTIN THOMPSON,	Raleigh,	Tex.

Name.	*Post Office.*	*Course.*
JAMES EDWIN TOOMER,	Wilmington,	Chem.
JOSEPH SLAUGHTER WHITEHURST,	Elizabeth City,	C. E.
JOHN SPICER WILSON,	Winston,	E. E.
PAUL ADAMS WITHERSPOON,	Mooresville,	C. E.
ROBERT JOB WYATT,	Raleigh,	M. E.

JUNIOR CLASS.

JAMES CICERO ALBRIGHT,	Rock Creek,	E. E.
ALFRED SCALES ARMFIELD,	Statesville,	Tex.
ROBERT KENNETH BABINGTON,	Gastonia,	E. E.
FRED MCCULLOUGH BLACK,	Mooresville,	E. E.
THOMAS SAWYER BOND,	Windsor,	C. E.
ROY BOWDITCH,	Bakersville,	E. E.
CARL RAY BRADLEY,	Old Fort,	E. E.
JOHN BENJAMIN BRAY,	Sligo,	C. E.
THOMAS JOHNSON BREVARD,	Fairview,	Agr.
ELTON ELROY BUCK,	Hampton, Va.,	C. E.
JOHN MONROE COUNCIL,	Wananish,	E. E.
WILLIAM HENRY CROW,	Monroe,	E. E.
WILLIAM EARLE DAVIS,	Hiddenite,	E. E.
THOMAS THEODORE DAWSON,	Grifton,	C. E.
JAMES LEONIDAS DUNN,	Scotland Neck,	Agr.
WALTER FREDERICK ELLER,	Berlin,	M. E.
RUFUS EUGENE FORBIS,	West Raleigh,	M. E.
ELMO VERNON FREEMAN,	Wake Forest,	E. E.
RANSOM EATON GILL,	Raleigh,	E. E.
JAMES MILLER GRAY,	Cullasaja,	Agr.
THOMAS DEVIN HARRIS,	Oxford,	C. E.
FRANK HAWKS,	Kinston,	M. E.
ERNEST ALBERT HAYNES,	Raleigh,	C. E.
EDMUND BURKE HAYWOOD,	Raleigh,	C. E.
ALBERT ROLAND HICKS,	Faison,	E. E.
RUFUS WILLIAMS HICKS, JR.,	Wilmington,	M. E.
LYDA ALEXANDER HIGGINS,	Leicester, R. 2,	Agr.
CLINTON WHITE HINSHAW,	Winston-Salem,	M. E.
LOUIE LEE HOOD,	Asheville,	C. E.
ROBERT FRANK JONES,	Washington,	C. E.
CLYDE RAYMOND JORDAN,	Gulf,	E. E.
LUTHER HILL KIRBY,	Lenoir,	C. E.
MARK CLINTON LASITTER,	Snow Hill,	C. E.

Name.	*Post Office.*	*Course.*
EUGENE TALMAGE LEE,	Dunn,	C. E.
ULPHIAN CARR LOFTIN,	West Raleigh,	Agr.
FRANK NEELY MCDOWELL,	Charlotte,	Agr.
LENNOX POLK MCLENDON,	Wadesboro,	Agr.
WILLIAM LEAKE MANNING,	Henderson,	E. E.
MELVIN SOLOMON MAYES,	Stem,	M. E.
LEON DAVIS MOODY,	East Laporte,	M. E.
EUGENE BOISE MOORE,	Morven,	E. E.
ROBERT LEE MORGAN,	Wilson,	M. E.
HARRY YOMANS MOTT,	Mooresville,	Agr.
WILLIAM MCCORMICK NEALE,	Greensboro,	M. E.
JOE BAXTER PARKS,	Concord,	E. E.
WILLIAM CASPER PENNINGTON,	Thomasville,	M. E.
WILLIAM RANSOME PHILLIPS,	Dunn,	E. E.
JAMES BRUCE PRICE,	Leaksville,	E. E.
JAY FREDERICK ROBINSON,	Hampton, Va.,	C. E.
CARL COLLINS SADLER,	Charlotte,	C. E.
EARLE ALOYSIUS SEIDENSPINNER,	Washington, D. C.,	Chem.
JOHN WALDORF SEXTON,	Salem Church,	C. E.
EDWIN HARRISON SMITH,	Weldon,	C. E.
JOHN FRANCIS SPEIGHT,	Whitakers,	C. E.
ST. JULIAN LACHICOTTE SPRINGS,	Georgetown, S. C.,	Agr.
CHARLES BURT STAINBACK,	Henderson,	E. E.
HARRIS INGRAM STANBACK,	Mt. Gilead,	E. E.
THOMAS BARNES STANSEL,	Allenton,	Chem.
WILLIAM CLARK STYRON,	Washington,	M. E.
THOMAS BRYAN SUMMERLIN,	Mt. Olive,	Tex.
LLOYD HURST SWINDELL,	Raleigh,	Tex.
THOMAS HAMPTON THOMPSON,	Thomasville,	M. E.
ISAAC NORRIS TULL,	Kinston,	E. E.
CHARLES EMMETTE WALTON,	Hamilton, Ga.,	E. E.
HOWARD W. WELLES, JR.,	Poughkeepsie, N. Y.,	E. E.
JOHN STAFFORD WILSON,	Charlotte,	Tex.
EDWARD LEIGH WINSLOW,	Hertford,	C. E.

SOPHOMORE CLASS.

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HARVEY DURWARD ABERNETHY,	Hickory,	E. E.
JOHN ERSKINE ARDREY,	Pineville,	C. E.
WILLIAM BAILEY,	Raleigh,	E. E.
AUBREY LELAND BAKER,	Raleigh,	Tex.

Name.	*Post Office.*	*Course.*
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TOLLIE CHESTER BARBER,	Pinnacle,	Tex.
JOHN MANN BEAL,	Rocky Mount, R. 3,	Agr.
CHARLES EDWARD BELL,	Kinston,	Chem.
HINTON QUINERLY BEST,	Grifton,	Chem.
JOHN BINGHAM BOOTHE,	Oxford,	E. E.
RUFUS TUCKER BOYLAN,	Raleigh,	Agr.
JOSEPH MALCOLM BRADFIELD,	Charlotte,	E. E.
JOEL EDWARD BROWN,	Pendleton, S. C.,	Agr.
JAMES HOWARD BROWN,	Charlotte, R. 4,	Agr.
GUY KEDAR BRYAN,	Tampa, Fla.,	C. E.
KIT BRYAN,	Catherine Lake, R. 1,	C. E.
HENRY CARL BUCHAN,	Manly,	Agr.
VON PORTER BYRUM,	Charlotte,	M. E.
HENRY CALEB CLAY,	Hickory,	M. E.
RALPH CLEMENT,	Mocksville,	C. E.
WILLIAM HURD DAVIS,	Marshville, R. 1,	E. E.
EDWIN GRAY DEANS,	Wilson,	Tex.
EDWIN SEXTON DEWAR,	Raleigh,	M. E.
CLIFTON ABRAHAM DUKES,	Branchville, S. C.,	Agr.
JOHN IVEY EASON,	Stantonsburg, R. 1,	Agr.
EARL MONTIER EVANS,	Raleigh,	M. E.
ROBERT STACKHOUSE FAIRLY,	Laurinburg,	Agr.
JAMES GREY FENNELL,	Wilmington,	E. E.
MALTHUS REAMER FREEMAN,	Taylor,	Agr.
GEORGE WINBURY GILLETTE,	Marines,	E. E.
ROBERT WALTER GRAEBER,	Concord,	Agr.
CHARLES GANZER HALL,	Wilmington,	Tex.
WILLIAM JAMES HALL,	Clemmons,	M. E.
GROVER CLEVELAND HARDESTY,	Morehead City,	Agr.
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EUGENE RICHARD MCCRACKEN,	Graham,	Tex.
SIDNEY MCDONALD,	Wilmington,	C. E.
JOSEPH JENKINS MACKAY,	Raleigh,	E. E.
CHARLES MCKIMMON,	Raleigh,	Chem.

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JACOB LEE MARTIN,	Graham,	C. E.
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JOEL WILLIAM MOYE,	Farmville,	Agr.
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JOHN TAYLOR PEDEN, JR.,	Wilkesboro,	E. E.
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JOSEPHUS PLUMMER QUINERLY,	Grifton,	Agr.
JOHN WESLEY ROLLINSON,	Elizabeth City,	E. E.
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GRAEME WILLIAM ROSS,	Charlotte,	E. E.
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JOHN MORGAN SHERMAN,	Ash Grove, Va.,	Agr.
ORIN MORROW SIGMON,	Hickory,	M. E.
ERNEST LYTCH SMITH,	Laurinburg,	Agr.
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EARL PITTMAN BRUTON,	Kinston,	E. E.

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RALPH CAMPBELL DEAL,	Concord,	E. E.
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ROBERT MCKENZIE HARDISON,	Morven,	C. E.
HARRY HARTSELL,	Asheville,	E. E.
JAMES MURPHEY HINES,	Kinston,	Tex.
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SIDNEY WILLARD HOLMAN,	Raleigh,	E. E.
SAMUEL BENJAMIN HOWARD,	Morganton,	C. E.
RALPH WILKINSON HOWELL,	Belhaven,	Agr.
JOHN RAY IVEY,	New London,	E. E.
WILLIAM LEE JENKINS,	Aulander,	C. E.
JOHN GORDON KELLOGG,	Sunbury,	Agr.
JOHN RAYMOND KIKER,	Polkton,	Agr.
SAM JONES KIRBY,	Selma, R. 1,	Agr.
MARION BRYAN KOONCE,	Kinston,	M. E.
JOHN SMEDES KNOX,	Raleigh,	Chem.
CARL JOSHUA LAMBETH,	Thomasville,	M. E.
WINSTON ELIJAH LAWRENCE,	Raleigh, R. 4,	Agr.
CURTIS WILLIAMS LEE,	Monroe,	M. E.
LAWRENCE TYSON LEE,	Raleigh,	E. E.
EDWIN PAYNE LORE,	Concord,	E. E.
JAMES EDWARD MCGEE,	Mt. Olive,	Tex.
THOMAS HUNT MACKIE,	Yadkinville,	E. E.
ARTHUR MCKIMMON,	Raleigh,	M. E.
NEILL MCQUEEN,	Fayetteville,	Tex.
JOHN GIDEON MATTHEWS,	Blackville, S. C.,	Agr.
HENRY BASCOM MERCER,	Wilmington,	E. E.
RONALD EARL MEWBORN,	Kinston,	M. E.
SIMON TURNER MITCHINER,	Garner,	M. E.

Name.	*Post Office.*	*Course.*
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GEORGE FRANK MOORE,	Scotland Neck,	Tex.
JOHN ISHAM MOORE,	Statesville,	C. E.
JAMES RICHARD MULLEN,	Charlotte,	E. E.
HARRY PEACHEY MURRAY,	Charlotte,	E. E.
WILLIAM ROBERT MURRAY,	Charlotte,	C. E.
CHARLES MCKEE NEWCOMB,	Raleigh,	C. E.
LEONARD OETTINGER,	Kinston,	Tex.
CHARLIE WASHINGTON OWENS,	Saratoga, R. 1,	C. E.
MILLARD LAFAYETTE PARKER,	Raleigh,	E. E.
ALEXANDER HOLLADAY PICKEL,	Raleigh,	E. E.
BRYANT MONROE POTTER,	Southport,	C. E.
WADE HAMPTON REINHARDT,	Stanley,	Agr.
LOUIS NAPOLEON RIGGAN,	Raleigh,	C. E.
JOHN CALHOUN RIDDICK,	Scotland Neck,	Tex.
IVEY GOODMAN RIDDICK,	Youngsville,	C. E.
SAMUEL EDWARD SANDERS,	Raleigh,	Tex.
WILLIAM BERNSTEIN SCHWARTZ,	Raleigh,	C. E.
DAVID WALTER SEIFERT,	New Bern,	C. E.
MURRAY MANSFIELD SESSOMS,	Windsor,	E. E.
FLEMING BATES SHERWOOD,	Raleigh,	Chem.
WILLIAM TALMAGE SHULL,	Beaufort,	C. E.
FENNER SMITH,	Wilson,	E. E.
JAMES MCCREE SMITH,	Rutherfordton,	C. E.
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NEEDHAM BRYAN STEVENS,	Goldsboro,	Agr.
GORDON BENNETT STEWART,	Charlotte,	Tex.
DAVID BRUCE STURGILL,	Piney Creek,	C. E.
MORGAN FRANKLIN SUGG,	Kinston,	Tex.
WILLIAM PERRY SUGG,	Princeton,	C. E.
ARTHUR WILLIS TAYLOR,	Raleigh,	M. E.
CULVER MURAT TAYLOR,	Tarboro,	E. E.
JOHN SAM THOMPSON,	Lewiston,	Agr.
GROVER CLEVELAND TILLEY,	Rougemont,	M. E.
GEORGE REID TROTTER,	Charlotte,	C. E.
DAVID WALTER TURNER,	Statesville,	Agr.

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CHARLES J. VALAER,	Winston-Salem,	C. E.
ROBERT TERRY WADE,	Morehead City,	C. E.
ARCHIE WAKEFIELD,	Charlotte,	E. E.
HARRY MOORE WALTON,	Morganton,	E. E.
EARLE LAMPLEY WATSON,	Cheraw, S. C.,	Agr.
HUGH POWELL WHITTED,	Efland, R. 1,	C. E.
MILTON ASHLEY WILDER,	Method,	Agr.
WALLACE WOODSON WILLIAMS,	Raleigh,	Chem.
WILFRED T. WILLSON,	Gold Hill,	E. E.

TWO-YEAR COURSES. 1908-1909

First Year.

DERBIN LINWOOD ALLEN,	Wake Forest,	M. A.
MALVERN HILL BELL,	Wilmington,	M. A.
ROBERT BENCINI,	High Point,	Tex.
TURNER BOND COOPER,	Windsor,	M. A.
JOHN C. COSBY,	Asheville,	Tex.
LISTON LLOYD DAIL,	Chinquepin,	M. A.
ARTHUR CRAFORD DEITS,	Mexico City, Mex.,	M. A.
ARTHUR LEROY FAULKNER,	Smithfield,	Tex.
DANIEL BURNIE FLOYD,	Fairmont,	M. A.
PELHAM AGNEW FOX,	Greenville, Tenn.,	Tex.
ECKIE HAYWOOD GATTIS,	Raleigh,	M. A.
JOHN MEANS HARDEN, JR.,	Winnsboro, S. C.,	M. A.
WILLIAM WALDO HARTNESS,	Statesville,	M. A.
LEO DARNEY HEARTT, JR.,	Raleigh,	M. A.
FRANK HENRY HOUCK,	Raleigh,	M. A.
THOMAS JONES HOSKINS,	Edenton,	M. A.
HENRY FRANKLIN JONES,	Kinston,	Tex.
JOHN H. JONES,	Timberlake,	M. A.
BOARDMAN ALLSTON LIDE,	Rockingham,	M. A.
THOMAS STOCKTON LUCAS,	Plymouth,	M. A.
JAMES DOUGLAS LYTCH,	Laurinburg,	M. A.
JAMES EDISON LYTCH,	Rowland,	Tex.
HENRY CLAY MCKENZIE,	Laurinburg,	M. A.
BENJAMIN HARVEY PARKER,	Lasker,	M. A.
JAMES MARCUS PARKER,	Lasker,	M. A.
EDGAR BRAGG PRICE,	Bath,	M. A.
JACOB BOYD ROSS,	Blacksburg, S. C.,	M. A.

Name.	*Post Office.*	*Course.*
ZEB ROSCOE SAINE,	Lincolnton,	M. A.
CHARLES WAYLAND SPRUILL, JR.,	Quitsna,	Tex.
ROBERT GRIFFIN STEPHENS,	Atlanta, Ga.,	M. A.
HENRY BATTLE TICE,	Wadesboro,	M. A.
ROBERT GRADY WHITE,	Concord,	Tex.
TOM BREM WILLIAMS,	Mooresville,	M. A.
GEORGE EDWARD WYATT,	Burlington,	M. A.
JOHN WILLIAM WYATT,	Burlington,	M. A.

TWO-YEAR COURSES.

Second Year.

JOE WINDLEY BUCHANAN,	Roper,	M. A.
FAY ALLEN DESPORTES,	Winnsboro, S. C.,	M. A.
HARRY MEAD HODGES,	LaGrange,	M. A.
JOHN EMSLEY LEE,	Monroe,	Tex.
NATHANIEL RAYBORN MARTIN,	Danbury,	M. A.
GORMAN MCPHAIL,	Clinton, R. 5,	M. A.
ROBERT WILLIAM POWELL,	Goldsboro,	M. A.

ONE-YEAR COURSE IN AGRICULTURE.

CHARLES KEENE BOONE,	Lumberton.
RUDOLPH RICHARD CARLYLE,	Lumberton.
JOHN STANLY DIXON,	Grimesland.
JOSEPH OSCAR GREEN,	Franklinton.
WILLIAM HENRY KERN,	Salisbury.
LEON HENRY LAMB,	Garland.
LEWIS LESLY PITT,	Rocky Mount.
ERNEST LINWOOD SHERLOCK,	Elizabeth City.
JAMES CHARLES SMALL,	Elizabeth City.
ROBERT W. SMALL,	Washington.
HUGH KEMP SULLIVAN,	Lincolnton.
ELBERT MOYE TYSON,	Greenville.
EDNY WILLIS,	Lawndale, R. 1.
ARTHUR WILLIAM WINECOFF,	Concord.
MATT RANSOM YARBROUGH,	Monroe.

SPECIAL STUDENTS.

Name.	*Post Office.*	*Course.*
THOMAS WILLIAM ADICKES,	Raleigh,	Zoology.
OTHAR ALVIN BARRINGER,	Mt. Pleasant,	Tex.
HENRY FLOURNOY MORTON,	Rocky Mount,	C. E.
RALPH INGRAM SMITH,	Raleigh,	Mod. Lang.
HERBERT NATHANIEL STEED,	Steeds,	Tex.

IRREGULAR STUDENTS.

THOMAS KINCAID BRUNER,	Raleigh,	Tex.
SHARPE IRELAND,	Winston-Salem,	M. E.
FRED BARNET WHEELER,	Archdale,	M. E.

WINTER SHORT-COURSE STUDENTS, 1909.

Name.	*Town.*	*County.*	*State.*
JOHN ARMSTRONG,	McRae,	White,	Ark.
SAMUEL ELIJAH BAKER,	China Grove,	Rowan,	N. C.
RALPH GRAVES BRYANT,	Matthews,	Mecklenburg,	N. C.
JUNIUS P. CHAMBLEE,	Spring Hope, R. 4,	Nash,	N. C.
WALTER GASTON CALLIHAN,	Bladenboro,	Bladen,	N. C.
CHARLES TALMAGE COBB,	Tryon,	Polk,	N. C.
ERNEST LENWOOD DEANS,	Gatesville,	Gates,	N. C.
EUGENE T. FERRILL,	Raleigh,	Wake,	N. C.
CHARLES C. FORTENBERRY,	Cleveland Mills,	Cleveland,	N. C.
JOHN AUSTIN FRANS,	Brim,	Surry,	N. C.
JAMES THOMAS GARVEY,	Beaver Creek,	Ashe,	N. C.
JAMES FLOYD GILLESPIE,	China Grove,	Rowan,	N. C.
CLARENCE MCLEOD GILLEAN,	Woodleaf,	Rowan,	N. C.
SILAS MARTIN GORDON,	Pinnacle,	Stokes,	N. C.
LAWRENCE GWYNN,	Locust Hill,	Caswell,	N. C.
LEONARD PARKS HARDY,	Seven Springs,	Wayne,	N. C.
ANDREW HAYES,	Wilson,	Wilson,	N. C.
NATHAN HAYES,	Wilson,	Wilson,	N. C.
EDWARD VERLIN HILL,	Westfield,	Surry,	N. C.
JAMES ALFRED JONES,	Southern Pines,	Moore,	N. C.
ALLEN HENRY ALEXANDER LEE,	Dunn,	Sampson,	N. C.
WILLIAM TALMAGE LINNEY,	Hiddenite,	Alexander,	N. C.
NEB MCCALLUM,	Summerfield,	Rockingham,	N. C.
THOMAS J. MCCALLUM,	Summerfield,	Rockingham,	N. C.
HERMAN MCLAWHORN,	Winterville,	Pitt,	N. C.
ANGUS MCNEIL,	Laurinburg,	Scotland,	N. C.
ALBERT GANNAWAY MASSIE,	Roseland,	Nelson,	Va.
MARSHALL PAULUS MASSIE,	Bryant,	Nelson,	Va.

Name.	*Town.*	*County.*	*State.*
ADAM OSCAR TALMAGE NESBIT,	Woodleaf,	Rowan,	N. C.
FRANK WILLARD PULVER,	Chatham,	Columbia,	N. Y.
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GEORGE A. SIKES,	Greensboro,	Guilford,	N. C.
FLOY MICHAEL SPOON,	Hartshorn,	Alamance,	N. C.
MARVIN W. TAYLOR,	Grifton,	Lenoir,	N. C.
ITIMOUS THAD VALENTINE,	Spring Hope,	Nash,	N. C.
MARION DARE WETMORE,	Woodleaf,	Rowan,	N. C.
WILLIAM CARL WHITAKER,	Letha,	Franklin,	N. C.
E. O. YOUNG,	Kittrell,	Vance,	N. C.

MAY SCHOOL FOR TEACHERS.

Name.	*Post Office.*
IRENE JOHNSON COOK (MRS.),	Raleigh.
MAGGIE IRMA ELLIS,	Cary.
ANNIE ELIZABETH GRADY,	Mount Olive.
LEATA MARIE HARTGE,	Raleigh.
MYRA LEWIS HUNTER,	Raleigh.
KENNETH H. MCINTYRE,	Cary.
DORA BRENT OVERTON,	Franklinton, R. 1.
VERA RAY,	Raleigh, R. 7.
EMILY SANDERS SMITH,	Smithfield, R. 1.
LINA PEGRAM STEPHENSON,	Carl.
DORA ELIZABETH TUTTLE,	Lenoir.
LESSIE BEULAH WEATHERS,	Knightdale, R. 1.
LYDIA ESTELLE YATES,	Cary.
MARY STELLA YONTS,	Lexington.

SHORT-TERM NIGHT SCHOOL FOR TEXTILE WORKERS.

J. H. ALLEN,	Raleigh.
M. T. BENNETT,	Raleigh.
N. T. BROWN,	Raleigh.
ALBERT CAMPBELL,	Raleigh.
L. M. CAMPBELL,	Raleigh.
J. N. COX,	Raleigh.
S. A. CRUTCHFIELD,	Raleigh.
W. J. DAVIS,	Raleigh.
M. L. MCLEAN,	Raleigh.
E. M. MURRAY,	Raleigh.
W. N. MURRAY,	Raleigh.
A. C. WEST,	Raleigh.

NINETEENTH ANNUAL COMMENCEMENT.

MAY 27, 1908.

DEGREES CONFERRED.

BACHELORS OF AGRICULTURE.

FRANK HAMILTON BROWN,
MINNIC LUTHER EARGLE,
BENJAMIN TROY FERGUSON,
PERCY LEIGH GAINEY,
JOHN DAVID GRADY,
DAVID JOHN MIDDLETON,
JESSE PAGE SPOON.

BACHELORS OF SCIENCE.

JOHN CAMILLUS APP,
FRANK OSCAR BALDWIN,

BACHELORS OF ENGINEERING.

In Civil Engineering.

JOHN LELAND BECTON,
HARWOOD BEEBE,
ASA GRAY BOYNTON,
ALVIN DEANS DUPREE,
RAYMOND ROWE EAGLE,
ISAAC HENRY FARMER,
JUNIUS TALMAGE GARDNER,
SETH MANN GIBBS,
MOSES HENRY GOLD,
DORSEY YATES HAGAN,
HERBERT WILLIAM KUEFFNER,
CLAUDE MILTON LAMBE,
CLARENCE TALMAGE MARSH,
LAWRENCE LYON PITTMAN,
RUBLE ISAAC POOLE,
THOMAS MILTON POYNER,
EDGAR ENGLISH SMITH,
JAMES LAWRENCE SMITH,
JOHN LAWRENCE VON GLAHN,
ROYALL EDWARD WHITE,
JOHN C. WILLIAMS,
JOHN FRANKLIN ZIGLAR.

In Electrical Engineering.

GEORGE FRANCIS BASON,
WILLIAM LAMAR BLACK,
WILLIAM BRYANT BURGESS,
LEWELLYN HILL COUCH,
MAURICE MORDECAI GLASSER,
JOHN HENRY LITTLE,
GEORGE LAFAYETTE LYERLY,
BENJAMIN FRANKLIN PITTMAN,
WOODFIN BRADSHER YARBROUGH.

In Mechanical Engineering.

JOHN HARVEY BRYAN,
JAMES ALEXANDER POWELL.

In Textile Industry.

CLAUD COUNCIL DAWSON,
MAURICE HENDRICK,
CHARLES EDWARD LATTA,
DAVID LINDSAY,
HARRY ALEXANDER POWELL,
JOHN SNIPES STROUD.

WELDON THOMPSON ELLIS, Course in Mechanical Engineering, Mechanical Engineer.

WILLIAM CARLYLE ETHERIDGE, Course in Agriculture, Master of Science.

THOMAS FRANKLIN PARKER, Course in Agriculture, Master of Science.

JAMES CLARENCE TEMPLE, Course in Agriculture, Master of Science.

ARTHUR JOHN WILSON, Course in Chemistry, Master of Science.

HONORS.

HONORS IN SCHOLARSHIP.

For Four Years.

F. H. BROWN,
R. R. EAGLE,
M. L. EARGLE,
H. W. KUEFFNER,
E. E. SMITH.

FOR 1907-08.

Senior Class.

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F. H. BROWN,
J. H. BRYAN,
R. R. EAGLE,
M. L. EARGLE,
H. W. KUEFFNER,
C. T. MARSH,
T. M. POYNER,
E. E. SMITH,
J. L. VON GLAHN,
J. C. WILLIAMS.

Junior Class.

J. W. HARRELSON,
J. M. PARKER,
W. N. SLOAN,
H. N. SUMNER.

Sophomore Class.

T. D. HARRIS,
H. P. MOSELEY,
C. E. WALTON.

Freshman Class.

C. E. BELL,
J. H. BROWN,
R. W. GRAEBER,
J. P. QUINERLY,
W. P. THURSTON.

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J. L. Becton,
W. B. Burgess,
E. E. Fulp,
Paul Hendren,
C. M. Lambe,
A. W. Moody,
J. M. Parker,
P. P. Pierce,
R. I. Poole.

FRESHMAN PRIZES FOR AGRICULTURAL LABOR.

First Prize, $10.00, ... J. W. Moye.
Second Prize, $5.00, ... R. W. Graeber.

MEDALS AWARDED.

National Assn. of Cotton Manufacturers, . . Maurice Hendrick.
Lowenstein Chemical Medal, ... T. D. Harris.

REGISTER OF ALUMNI.

CLASS OF 1893.

Name.	*Degree.*	*Address.*
ROBERT WILSON ALLEN,	B. E.,	Sanford, N. C.
Superintendent of Graded School and County Superintendent.		
SAMUEL ERSON ASBURY,	B. S.,	College Station, Tex.
M. S. 1896. First Assistant State Chemist. On nine months' leave at Harvard University, Cambridge, Mass.		
HENRY EMIL BONITZ,	B. E.,	Wilmington, N. C.
Architect.		
FRANK FULLER FLOYD,	B. E.,	Knoxville, Tenn.
Vice President and Sales Manager Jellico Coal Mining Co.		
CHARLES DUFFY FRANCKS,	B. E.,	Richlands, N. C.
Superintendent of Graded Schools.		
EDWARD MOORE GIBBON,	B. E.,	Jacksonville, Fla.
William W. Lyon Engineering Co.		
GEORGE PENDER GRAY,	B. S.,	Tarboro, N. C.
Commercial Traveler Read Phosphate Co., of Nashville, Tenn.		
CHARLES BOLLING HOLLADAY,	B. E.,	Wilmington, Del.
The Dupont Co.		
WILLIAM MCNEIL LYTCH,	B. E.,	Laurinburg, N. C.
Superintendent Laurinburg Oil Co.		
JAMES WILLIAM MCKOY,	B. E.,	Black Mountain, N. C.
Civil Engineer and Merchant.		
WALTER JEROME MATHEWS,	B. E.,	Goldsboro, N. C.
Chief Engineer for the Eastern N. C. Asylum for Insane.		
FRANK THEOPHILUS MEACHAM,	B. S.,	Statesville, N. C.
M. S. 1894. Superintendent State Test Farm.		
CARL DEWITT SELLARS,	B. E.,	Greensboro, N. C.
Cone Export and Commission Co.		
CHARLES EDGAR SEYMOUR,*	B. S.,	Raleigh, N. C.
BUXTON WILLIAMS THORNE,	B. E.,	Holly Springs, Miss.
Cashier Peoples Bank.		
WILLIAM HARRISON TURNER,	B. E.,	Winston-Salem, N. C.
Wholesale Dealer in Mill Feed and Grain.		
CHARLES BURGESS WILLIAMS,	B. S.,	West Raleigh, N. C.
M. S. 1896. Director of N. C. Experiment Station.		
LOUIS THOMAS YARBROUGH,	B. E.,	Raleigh, N. C.
Despatching Clerk Raleigh Post Office.		
SAMUEL MARVIN YOUNG,	B. E.,	Raleigh, N. C.
Salesman Richmond Hardware Co.		

*Deceased.

It is the purpose of the College to keep in touch with the Alumni. Please notify the Registrar promptly of any change of address.

CLASS OF 1894.

Name.	*Degree.*	*Address.*
CHARLES EDWARD CORPENING,	B. E.,	Lenoir, N. C., R. F. D. 3.
Farmer and Dealer in Lumber.		
DAVID COX,	B. E.,	Hertford, N. C.
Surveyor; Farmer; Lumberman; also in employ of Yeopim Lumber Co.		
ROBERT DONNELL PATTERSON,	B. S.,	Chase City, Va.
M. S. 1898. Cashier First State Bank.		
CHARLES PEARSON,	B. E.,	New York, N. Y.
General Contracting and Engineering Co. Home Address, Raleigh, N. C.		
ZEBBIE GEORGE ROGERS,	B. E.,	Washington, D. C.
Resident Engineer Baltimore and Ohio Railroad.		
JOHN HYER SAUNDERS,	B. E.,	Rocky Mount, N. C.
Locomotive Engineer Atlantic Coast Line Railway.		
BENJAMIN FRANKLIN WALTON,	B. S.,	Raleigh, N. C., R. F. D. 1.
Farmer.		
JOHN MCCAMY WILSON,	B. E.,	Spartanburg, S. C.
Secretary and General Manager of Russel-Compton Co., Founders and Machinists.		

CLASS OF 1895.

THOMAS MARTIN ASHE,*	B. E.,	Raleigh, N. C.
JAMES ADRIAN BIZZELL,	B. S.,	Ithaca, N. Y.
M. S. 1900. Ph.D. Cornell University. Assistant Professor. Soil Investigations N. Y. State College of Agriculture.		
JOHN ISHAM BLOUNT,	B. E.,	Birmingham, Ala.
C. E. 1897. M. E. Cornell University. Proprietor J. I. Blount & Co., Machinery Merchants.		
JAMES WASHINGTON BRAWLEY,	B. S.,	Greensboro, N. C.
Superintendent of Agents Southern Life and Trust Co.		
WILLIAM AUSTIN BULLOCK,	B. S.,	Amsterdam, Ga.
Superintendent of Tobacco Plantation A. Cohn & Co.		
DAVID CLARK,	B. E.,	Charlotte, N. C.
M. E. 1896. C. E. 1897. M. E. Cornell University 1898. Editor American Textile Manufacturer.		
GEORGE WASHINGTON CORBETT, JR.,	B. E.,	Currie, N. C., R. F. D. 2.
Corbett & Corbett, Manufacturers of Lumber.		
EDWIN SPEIGHT DARDEN,	B. S.,	Wilson, N. C.
Warehouseman and Farmer.		
WILLIAM KEARNEY DAVIS, JR.,	B. E.,	Marion, S. C.
Superintendent Marion Manufacturing Co.		

* Deceased.

Name.	*Degree.*	*Address.*
JOSEPH CHARLES DEY,	B. S.,	Norfolk, Va.
Produce Broker.		
LEE BORDEN ENNETT,	B. S.,	Cedar Point, N. C.
Farmer and County Superintendent of Schools.		
ISAAC HENRY FAUST,	B. E.,	Ramseur, N. C.
Contractor and Farmer.		
CHARLES WILLIS GOLD,	B. S.,	Raleigh, N. C.
Secretary and Superintendent of Agencies Jefferson Standard Life Insurance Co.		
WILLIAM HENRY HARRIS,	B. E.,	Pawtucket, R. I.
M. E. 1896. Treasurer and Agent Slater Manufacturing Co.		
CHRISTOPHER MILLER HUGHES,	B. E.,	Fayetteville, N. C.
B. S. 1899. Vice President Cumberland Savings and Trust Co.		
MALCOLM BEALL HUNTER,	B. E.,	Not heard from.
Home address, Charlotte, N. C.		
SAMUEL CHRISTOPHER MCKEOWN,	B. E.,	Sumter, S. C.
Sumter Telephone Manufacturing Co.		
MANN CABE PATTERSON,	B. E.,	Durham, N. C.
Die Maker Byrd Manufacturing Co.		
ABRAM HINMAN PRINCE,	B. S.,	San Augustine, Tex.
Tobacco Farmer.		
CHARLES MARCELLUS PRITCHETT,	B. E.,	Manila, P. I.
C. E. 1896. Engineer U. S. Engineer's Office, Department of Highway Construction.		
VICTOR VASHTI PRIVOTT,	B. E.,	Suffolk, Va.
Merchant.		
HOWARD WISWALL, JR.,	B. E.,	Charleston, S. C.
Engineer and Timberman Midland Timber Co.		
CHARLES GARRETT YARBROUGH,	B. E.,	Chicago, Ill.
Construction and Electrical Engineer Western Electric and Manufacturing Co.		

CLASS OF 1896.

DANIEL ALLEN,	B. S.,	Raleigh, N. C.
Traveling Salesman.		
GEORGE STRONACH FRAPS,	B. S.,	College Station, Tex.
Ph. D. Johns Hopkins University. State Chemist and Chemist Texas Experiment Station.		
MARION JACKSON GREEN,	B. S.,	Charlotte, N. C.
Pattern Maker Cole Manufacturing Co.		
JOHN HOWARD,	B. S.,	Middleboro, Ky.
Lawyer and Engineer.		
WILLIAM COLBERT JACKSON,	B. S.,	Middlesex, N. C.
Merchant and Farmer.		

Name.	*Degree.*	*Address.*
ROBERT GRAHAM MEWBORNE,	B. S.,	Louisville, Ky.
Chemist Kentucky Tobacco Product Co.		
LEVI ROMULUS WHITTED,	B. S.,	Washington, D. C.
C. E. 1897. Assistant Chief Structural Engineer U. S. Treasury Department.		
HENRY LLOYD WILLIAMS,	B. S.,	Cofield, N. C.
Manager of Sawmill, Cofield Manufacturing Co.		

CLASS OF 1897.

JOSEPH SAMUEL BUFFALOE,	B. S.,	Garner, N. C.
M. D. Baltimore Medical College. Physician.		
JOHN WILLIAM CARROLL,	B. S.,	Wallace, N. C.
M. D. University of Maryland 1903. Physician.		
CHARLES EDWARD CLARK,	B. S.,	Charlotte, N. C
Superintendent of Demonstration Work in Mecklenburg County, U. S. Department of Agriculture.		
WM. ALEXANDER GRAHAM CLARK,	B. S.,	Raleigh, N. C.
M. E. 1899. M. E. Cornell University. Special Agent Department of Commerce and Labor, U. S. A.		
NICHOLAS LOUIS GIBBON,	B. S.,	Biddeford, Me.
Mill Engineer Saco and Pettee Machine Shops.		
CEBURN DODD HARRIS,	B. S.,	Louisville, Ky.
A. M. Cornell University. Strater Bros. Tobacco Co.		
JERE EUSTIS HIGHSMITH,	B. S.,	Parkersburg, N. C.
Farmer.		
CLYDE BENNETT KENDALL,	B. S.,	Washington, D. C.
Assistant Topographer U. S. Geological Survey.		
SYDNEY GUSTAVUS KENNEDY,	B. S.,	Sanford, Fla.
Round House Foreman Atlantic Coast Line Railroad Co.		
JOSEPH LAWRENCE KNIGHT,	B. S.,	Dewey, Fla.
Pas Manufacturing Co., Naval Stores.		
WALTER JONES MCLENDON, JR.,	B. S.,	Marshall, N. C.
President and General Manager Capitola Manufacturing Co.		
REPTON HALL MERRITT,	B. S.,	Raleigh, N. C.
Secretary and Treasurer Powell & Powell (Incorporated).		
ALBERT HICKS OLIVER,	B. S.,	Eastover, S. C.
Farmer and Plantation Manager H. S. Clarke.		
HUGH WILLIAMS PRIMROSE,*	B. S.,	Raleigh, N. C.
M. S. 1900.		
WILLIS HUNTER SANDERS,	B. S.,	Roanoke Rapids, N. C.
Superintendent of Power Plant Roanoke Navigation and Water Power Co.		

*Deceased.

Name.	*Degree.*	*Address.*
THOMAS JEHU SMITHWICK,		Mt. Airy, N. C.
Chief Engineer and Electrician N. C. Granite Corporation.		
JORDAN LEA WATSON.	B. S.,	Atlanta, Ga.
Southern Manager Allis-Chalmers Co.		
BRADLEY JEWETT WOOTTEN,*	B. S.,	Wilmington, N. C.

CLASS OF 1898.

DORSEY FROST ASBURY, B. S., Washington, D. C.
Draftsman Naval Gun Factory.

SIDNEY HAMILTON BECK, B. S., Washington, D. C.
Marine Engine and Boiler Draftsman Navy Department.

ANSON ELIKEM COHOON, B. S., Eugene, Ore.
Forest Supervisor U. S. Department of Agriculture.

HUGH MCCULLOM CURRAN, B. S., Manila, P. I.
Forest Service. Home address, Westboro, Mass.

BENJAMIN CAREY FENNELL, B. S., Atlanta, Ga.
M. E. 1900. Manager Southern Office American Blower Co.

ALPHEUS ROUNTREE KENNEDY, B. S., Quincy, Mass.
Draftsman Fore River Shipbuilding Co.

FREDERICK CREECY LAMB, B. S., El Paso, Tex.
City Chemist and Bacteriologist. Home address, Elizabeth City, N. C.

EDWIN BENTLEY OWEN, B. S., West Raleigh, N. C.
Registrar N. C. College of Agriculture and Mechanic Arts.

B. MOORE PARKER, B. S., West Raleigh, N. C.
Assistant Professor of Textile Industry North Carolina College of Agriculture and Mechanic Arts.

NUMA REID STANSEL, B. S., Washington, D. C.
Engineering Inspector U. S. Treasury Department.

TEISAKU SUGISHITA, B. S., Kokufu, Japan.
Civil Engineer. Not heard from.

GEORGE FREDERICK SYME, B. S., Dante, Va.
C. E. 1907. Resident Engineer Carolina, Clinchfield and Ohio Railway.

CLASS OF 1899.

WM. DAVIDSON ALEXANDER, JR., B. S., High Point, N. C.
Superintendent City Water and Public Works of High Point.

IRA WILSON BARBER, B. S., Mt. Airy, N. C.
Superintendent Light and Power Plant and Water Works.

* Deceased.

Name.	*Degree.*	*Address.*
JOHN HENDERSON BIRDSONG,	B. S.,	Chicago, Ill.
Chemist The National Malleable Castings Co.		
FRANCIS MARION FOY,*	B. S.,	Scott's Hill, N. C.
ALBERT SIDNEY LYON,	B. S.,	Rocky Mount, N. C.
Superintendent Public Works City of Rocky Mount.		
CARROLL LAMB MANN,	B. S., C. E.,	West Raleigh, N. C.
Civil Engineer and Instructor in Civil Engineering N. C. College of Agriculture and Mechanic Arts.		
O'KELLY W. MYERS,	B. S.,	Mantazilla, P. I.
Civil Service. Home address, Washington, N. C.		
EUGENE LEROY PARKER,	B. S.,	Mt. Pleasant, Tenn.
Manager E. L. Parker & Co. Laboratory.		
EUGENE GRAY PERSON,	B. S.,	Macon, Ga.
Train Despatcher Central of Georgia Railway.		
FREDERICK ERASTUS SLOAN,	B. S.,	Raleigh, N. C.
District Agent The Security Life and Annuity Co. of Greensboro, N. C.		
ANDREW THOMAS SMITH,	B. S.,	Camden, N. J.
Draftsman in charge New York Shipbuilding Co.		
ALEXIS PRESTON STEELE,	B. S.,	Statesville, N. C.
Mechanical Engineer J. C. Steele & Sons.		
WILLIAM ANDERSON SYME,	B. S.,	Raleigh, N. C.
M. S. 1903. Ph. D. Johns Hopkins 1906. State Oil Chemist.		
HUGH WARE,	B. S.,	Birmingham, Ala.
Chemist Decatur Car Wheel and Manufacturing Co.		
CLAUDE B. WILLIAMS,	B. S.,	Elizabeth City, N. C.
Physician.		

CLASS OF 1900.

KEMP ALEXANDER,	B. E.,	Marion, N. C.
Superintendent Marion Knitting Mills.		
LESLIE LYLE ALLEN,	B. E.,	Spartanburg, S. C.
Cotton Broker Firm of Cooke & Allen.		
ROBERT LINN BERNHARDT,	B. S.,	Salisbury, N. C.
Salisbury Hardware and Furniture Co.		
LESLIE GRAHAM BERRY,	B. E.,	Des Moines, Ia.
Contracting Engineer Des Moines Bridge and Iron Works.		
JAMES HARRY BUNN,	B. E.,	Henderson, N. C.
Assistant Secretary Henderson Cotton Mills.		
SAMUEL MERRILL HANFF,	B. S.,	Duke, N. C.
Episcopal Minister.		
GEORGE ROLAND HARRELL,	B. S.,	Grasselli, N. J.
Manufacturing Foreman The Graselli Chemical Co.		

* Deceased.

Name.	*Degree.*	*Address.*
HENRY ALLEN HUGGINS,	B. S.,	Wilmington, N. C.
Bookkeeper George W. Huggins, Jeweler.		
GARLAND JONES, JR.,	B. S.,	Fort Worth, Tex.
Chemist Armour & Co.		
LOUIS HENRY MANN,	B. E.,	Washington, N. C.
D. D. S. University of Maryland 1904. Dentist.		
ROBERT HALL MORRISON,	B. E.,	Stanley, N. C.
President Mariposa Cotton Mills.		
WILLIAM MONTGOMERY PERSON,	B. E.,	Sparrow's Pt., Baltimore, Md.
Maryland Steel Company.		
JUNIUS EDWARD PORTER,	B. E.,	Washington, N. C.
General Contractor.		
ROGER FRANCIS RICHARDSON,	B. E.,	Ensley, Ala.
Construction Engineer Tennessee Coal, Iron and Railroad Co.		
WILLIAM EDWIN ROSE,	B. E.,	Newport News, Va.
Newport News Shipbuilding and Dry Dock Co.		
FLOYD DEROSS,	B. E.,	Charlotte, N. C.
Salesman Fostoria Incandescent Lamp Co.		
IRA OBED SCHAUB,	B. S.,	Raleigh, N. C.
Chemist in Soil Investigation, Department of Agriculture.		
JOHN WADE SHORE,	B. S.,	Boonville, N. C.
Farmer and Teacher.		
WILLIAM TURNER SMITH,	B. E.,	Dublin, Ga.
Contractor Crofts & Smith.		
SOLOMON ALEXANDER VEST,	B. S., 1900; B. Agr., 1901,	Mt. Pleasant, Tenn.
Chief Chemist F. G. Smith Laboratory and Chemist Rockdale Iron Co.		
ROSCOE MARVIN WAGSTAFF,	B. E.,	Newport News, Va.
Draftsman with Newport News Shipbuilding and Dry Dock Co.		
GAITHER HALL WHITING,*	B. S.,	Richmond, Va.

CLASS OF 1901.

FLETCHER HESS BARNHARDT,	B. E.,	Phoenixville, Pa.
Assistant Engineer Phœnix Bridge Co.		
WILLIAM OSBORNE BENNETT,	B. E.,	Wadesboro, N. C.
Manager South Atlantic Oil Co.		
FRED WILHELM BONITZ,	B. E.,	Wilmington, N. C.
Attorney at Law.		
ZOLLY MOSBY BOWDEN,	B. E.,	Tampa, Fla.
BEDFORD JETHRO BROWN,		Charlotte, N. C.
Meter Expert Southern Power Co.		

* Deceased.

Name.	*Degree.*	*Address.*
PAUL COLLINS,	B. S.,	New Haven, Conn.
Chemist Sanderson Fertilizer and Chemical Co.		
WILLIAM PESCUD CRAIGE,	B. S.,	New Orleans, La.
With Peter F. Pescud, Underwriter.		
WILLIAM LOIS CRAVEN,	B. E.,	York, Pa.
Draftsman York Bridge Co.		
FELIX GRAY CRUTCHFIELD,	B. E.,	Winston-Salem, N. C.
Secretary and Treasurer Maynard-Crutchfield Co., Plumbers, etc.		
GEORGE MASLIN DAVIS,	B. E.,	Winston-Salem, N. C.
Chief Draftsman Southbound Railway Co.; also General Manager Winston Tag Machine Co.		
WILLIAM DOLLISON FAUCETTE,	B. E.,	Portsmouth, Va.
Assistant Civil Engineer Seaboard Air Line Railway.		
BENJAMIN OLIVER HOOD,	B. E.,	New York, N. Y.
With F. A. Burdett, Consulting Engineer.		
MARTIN KELLOGG,	B. Agr.,	Gatesville, N. C.
Register of Deeds of Gates County.		
JESSE JULIAN LILES,	B. E.,	Pittsburg, Pa.
Electrical Engineer General Electric Co.		
LEWIS OMER LOUGEE,	B. E.,	Pittsburg, Pa.
Of the firm of George S. Baton & Co., Civil and Mining Engineers.		
CHARLES HARDEN MCQUEEN,	B. E.,	Richmond, Va.
Civil Engineer Atlantic Bitulithic Co.		
WILLIAM FRANKLIN PATE,	B. S.,	Wooster, Ohio.
Assistant Chemist Agricultural Experiment Station.		
EDWARD OSCAR SMITH,	B. E.,	Newport News, Va.
Special Draftsman Newport News Shipbuilding and Dry Dock Co.		
WALTER STEPHEN STURGILL,	B. E.,	Fort D. A. Russell, Wyo.
First Lieutenant Second Field Artillery, U. S. Army.		
BEVERLY NATHAN SULLIVAN,	B. S.,	Winston-Salem, N. C.
Superintendent Winston-Salem Light and Fuel Co.		
CHARLES AUGUSTUS WATSON,*	B. S.,	Raleigh, N. C.
BENJAMIN VADEN WRIGHT,	B. E.,	Laurel, Miss.
Engineer of Bridges and Buildings M. J. & K. C. R. R. Co.		

CLASS OF 1902.

WILLIAM DAVID ROSEMAN,	B. E.,	Rocky Mount, N. C.
Farmer.		
JUNIUS SIDNEY CATES,	B. S.,	Washington, D. C.
M. Agr. 1904. U. S. Department of Agriculture.		
ROBERT BAXTER COCHRAN,	B. E.,	Urbana, Ohio.
Electrical Engineer. Home address, Statesville, N. C.		

* Deceased.

Name.	*Degree.*	*Address.*
JAMES LUMSDEN FEREBEE,	B. E.,	Wilmington, Del.
Resident Engineer Water Department City of Wilmington.		
ROBERT IRVING HOWARD,	B. E.,	Greenville, N. C.
Bookkeeper Water and Light Commission.		
JOHN LUTHER MCKINNON,	B. Agr.,	Laurinburg, N. C.
Farmer.		
LAURIE MOSELEY,	B. E.,	Greensboro, N. C.
Southern Agent Owego Bridge Co.		
VASSAR YOUNG MOSS,	B. E.,	Canonsburg, Pa.
Draftsman Fort Pitt Bridge Works.		
CHARLES ARTHUR NICHOLS,	B. E.,	Muscogee, Indian Ter.
Merchant.		
JAMES LAFAYETTE PARKER,	B. E.,	New York, N. Y.
Assistant Engineer H. C. Keith, Consulting Engineer.		
WILLIAM BENEDICT REINHARDT,	B. E.,	Dawson, Y. T.
Electrician Dawson Electric Light and Power Co., Ltd.		
RUSSELL ELSTNER SNOWDEN,	B. E.,	Moncure, N. C.
Assistant Civil Engineer S. A. L. Railway. Home address, Snowden, N. C.		
JOSEPH PLATT TURNER,	B. E.,	Spray, N. C.
Vice President and Superintendent Lily Mills.		
CLEVELAND DOUGLAS WELCH,	B. E.,	Gastonia, N. C.
Luray Cotton Mills.		

CLASS OF 1903.

WILLIAM NORTON BOGART,	B. E.,	Washington, N. C.
LESLIE MORWOOD BONEY,	B. E.,	Wallace, N. C.
Architect.		
JOHN SAMUEL P. CARPENTER,	B. E.,	Cherryville, N. C.
Superintendent and Director Melville Manufacturing Co.		
WALTER CLARK, JR.,	B. E.,	Raleigh, N. C.
Lawyer.		
JOHN ELLIOT COIT,	B. Agr.,	Tucson, Ariz.
Ph. D. Cornell University. Horticulturist Arizona Experiment Station.		
SUMMEY CROUSE CORNWELL,	B. E.,	Shelby, N. C.
Civil Engineer.		
CHARLES LESTER CREECH,	B. S.,	New York, N. Y.
Manager of New York Office of John W. Fries.		
EUGENE ENGLISH CULBRETH,	B. E.,	Raleigh, N. C.
Bookkeeper E. M. Uzzell & Co., Printers.		
WALTER LEE DARDEN,	B. E.,	Portsmouth, Va.
Civil Engineer Seaboard Air Line Railway, Portsmouth, Va.		

Name.	*Degree.*	*Address.*
JUNIUS FRANKLIN DIGGS,	B. S.,	Rockingham, N. C., R. 1.
Farmer and Merchant.		
THEOPHILUS THOMAS ELLIS,	B. E.,	Henderson, N. C., R. 4.
Farmer.		
JOHN DANIEL FERGUSON,	B. E.,	Bladenboro, N. C.
Civil Engineer and Farmer.		
HUGH PIERCE FOSTER,	B. E.	
Not heard from. Home address, Nance, Granville County, N. C.		
OLIVER MAX GARDNER,	B. S.,	Shelby, N. C.
Lawyer.		
LAMAR CARSON GIDNEY,	B. E.,	Shelby, N. C.
JOHN HOWARD GLENN,*	B. E.,	Crowder's Creek, N. C.
EMIL GUNTER,	B. E.,	Oshkosh, Wis.
Chief Engineer and Electrical Engineer Winnebago Traction Co. Home address, Pierson, Fla.		
EUGENE COLISTUS JOHNSON,	B. E.,	Ingold, N. C.
Sawmilling.		
JAMES MATTHEW KENNEDY,	B. E.,	Raleigh, N. C.
Architect.		
BENNETT LAND, JR.,	B. E.,	Jacksonville, Fla.
Division Engineer Seaboard Air Line Railway.		
JOHN THOMAS LAND,	B. E.,	Norfolk, Va.
Civil Engineer with E. C. Foreman and J. T. Land.		
EDMOND SHAW LYTCH,	B. E.,	Mulberry, Fla.
Electrical Engineer Prairie Pebble Phosphate Co.		
JESSE JOHN MORRIS,	B. E.,	Norfolk, Va.
Civil Engineer Norfolk and Southern Railroad. Not heard from.		
DAVID STARR OWEN,	B. E.,	Fayetteville, N. C.
Superintendent Standard Turpentine Co.		
JOHN HARVEY PARKER,	B. E.,	Savannah, Ga.
Secretary-Treasurer Pepsi-Cola Bottling Co.		
JOEL POWERS,	B. E.,	Goldsboro, N. C.
Draftsman Dewey Bros.		
EDWARD HAYS RICKS,	B. E.,	Enfield, N. C.
Machinist Baldwin Locomotive Works.		
GASTON WILDER ROGERS,	B. E.,	Raleigh, N. C.
C. E. 1905. Civil Engineer Seaboard Air Line Railway.		
CHARLES BURDETTE ROSS,	B. E.,	Charlotte, N. C.
Contractor.		
JOHN HOUSTON SHUFORD,	B. S.,	Knoxville, Tenn.
Technical Representative and Salesman Berlin Aniline Works.		
EDWARD ROE STAMPS,	B. E.,	Macon, Ga.
Superintendent F. S. Royster Guano Co.		

* Deceased.

Name.	*Degree.*	*Address.*
GEORGE YATES STRADLEY,	B. E.,	Roanoke, Va.
Structural Draftsman Virginia Bridge and Iron Company.		
CHARLES EDWARD TROTTER,	B. S.,	Baltimore, Md.
Medical Student Johns Hopkins University.		
JONATHAN WINBORNE WHITE,	B. S.,	State College, Pa.
Assistant Chemist Agricultural Experiment Station.		
EDWIN SEYMOUR WHITING,*	B. E.,	Hamlet, N. C.

CLASS OF 1904.

NELSON ADAMS,	B. E.,	McColl, S. C.
Farmer.		
HAYWOOD LEWIS ALDERMAN,	B. E.,	Panama, R. P.
Assistant Engineer Panama-American Corporation.		
EUGENE CLEVELAND BAGWELL,	B. E.,	Hull, Fla.
General Superintendent Charlotte Harbor and Northern Railway.		
EDWARD PAR BAILEY,	B. E.,	Wilmington, N. C.
President and Manager Wilmington Iron Works.		
JAMES CLAUDIUS BARBER,	B. E.,	Barber, N. C.
Farmer.		
WILLIAM WALTER BARBER,	B. E.,	Barber, N. C.
Farmer.		
WILLIAM ALEXANDER BARRETT,	B. E.,	Missoula, Mont.
Chief Engineer Missoula Light and Power Co. Home address, White Store, N. C.		
TIMOTHY ELDRIDGE,	B. E.,	Mt. Olive, N. C.
Superintendent Electric Light Plant.		
JAMES WILLIAM FARRIOR,	B. E.,	Schenectady, N. Y.
General Electric Company, Testing Department.		
WILLIAM WALTER FINLEY,	B. S.,	North Wilkesboro, N. C.
Farmer and Breeder of Registered Percheron Horses.		
GEORGE WASHINGTON FOUSHEE,	B. E.,	Gibsonville, N. C.
Mineola Manufacturing Company.		
EDGAR WILLIAM GAITHER,	B. S.,	Wooster, Ohio.
Assistant Chemist Ohio Agricultural Experiment Station.		
PAUL STIREWALT GRIERSON,	B. E.,	Newport News, Va.
Electrician in charge Charles Cory & Son, New York.		
JOSEPH PERRIN GULLEY, JR.,	B. E.,	Philadelphia, Pa.
Meterman Philadelphia Electric Light Co.		
JARVIS BENJAMIN HARDING,	B. E.,	Guadalajara Jalisco, Mex.
Locating Engineer Southern Pacific Railway. Home address, Greenville, N. C.		

*Deceased.

Name.	*Degree.*	*Address.*
GEORGE HERBERT HODGES,	B. E.,	Scottdale, Pa.
Engineer H. C. Frick Coke Co.		
JESSE MCRAE HOWARD,	B. E.,	Concord, N. C.
Assistant Superintendent Gibson Manufacturing Co.		
BRANTON FAISON HUGGINS,	B. E.,	Macon, Ga.
Central Georgia Land and Lumber Co.		
HILL MCIVER HUNTER,	B. E.,	Greensboro, N. C.
Assistant Purchasing Agent Proximity Manufacturing Co. and White Oak Mills.		
WILLIAM KERR,	B. S.,	San Diego, Cal.
In Forestry work. Care of J. A. Creelman.		
ERNEST EDWIN LINCOLN,	B. E.,	Phoenixville, Pa.
Draftsman Phœnixville Bridge Co.		
JOHN FAIRLY MCINTYRE,	B. E.,	Laurinburg, N. C.
Farmer.		
JAMES MCKIMMON,	B. E.,	Raleigh, N. C.
Bookkeeper Raleigh Banking and Trust Co.		
JOSEPH ALFRED MILLER, JR.,	B. E.,	Brevard, N. C.
Vice President and Manager Miller-DeVane Supply Co.		
WILLIAM FIELD MORSON,	B. E.,	Dante, Va.
Assistant Engineer C., C. & O. Railway.		
LEON ANDREW NEAL,	B. E.,	Bristol, Tenn.
Assistant Engineer Virginia and Southwestern Railway Co.		
WILLIAM JOEL PATTON,	B. E.,	Brevard, N. C.
Lumber Business.		
FREDERICK COLWELL PHELPS,	B. E.,	Washington, D. C.
Care Adjutant General. Second Lieutenant U. S. Army.		
WILLIAM WALTER RANKIN,	B. E.,	Fredericksburg, Va.
Professor of Mathematics, Fredericksburg College.		
RISDEN PATTERSON REECE,	B. E.,	Winston-Salem, N. C.
Assistant Mechanical Engineer Salem Iron Works.		
WILLIAM RICHARDSON, JR.,	B. E.,	Scottdale, Pa.
Draftsman H. C. Frick Coke Co.		
JAMES CLARENCE TEMPLE,	B. S.,	Experiment, Ga.
M. S. 1908. Bacteriologist Georgia Experiment Station.		
JOSEPH KENDALL WAITT,	B. E.,	Mulberry, Fla.
Civil Engineer Prairie Pebble Phosphate Co.		
MARION EMERSON WEEKS,	B. E.,	Portsmouth, Va.
Draftsman Norfolk Navy Yard.		
ALBERT CLINTON WHARTON, JR.,	B. S.,	Clemmonsville, N. C.
Stock and Grain Farmer.		

CLASS OF 1905.

Name.	*Degree.*	*Address.*
LEON FRANKLIN ABERNETHY,	B. Agr.,	Hickory, N. C.
With the Abernethy Hardware Co.		
ROBERT JAMES AVERY,	B. Agr.,	Morganton, N. C., R. 5.
OSCAR LUTHER BAGLEY,	B. S.,	Weldon, N. C.
Manager Coca-Cola Bottling Works.		
BENJAMIN ALEXANDER BROOM,	B. E.,	Milwaukee, Wis.
Allis-Chalmers Co.		
JOEL W. BULLOCK,	B. Agr.,	Whigham, Ga., R. 4.
Bullock Bros., Tobacco Growers.		
HENRY BROZIER CARTWRIGHT,	B. E.,	Jacksonville, Fla.
Assistant Civil Engineer Seaboard Air Line Railway.		
WILLIAM MILLER CHAMBERS,	B. E.,	Maben, W. Va.
Pay-roll Clerk W. M. Ritter Lumber Co.		
WALTER GOSS FINCH,	B. E.,	Brownsville, Pa.
Civil Engineer War Department.		
STERLING GRAYDON,	B. E.,	Charlotte, N. C.
Superintendent Atherton Mills.		
JARVIS BENJAMIN HARDING,	B. E.,	Guadalajara Jalisco, Mex.
Locating Engineer Southern Pacific Railway.		
RICHARD HUGH HARPER,	B. S.,	Green Park, N. C.
Manager Green Park Hotel.		
JERE ISAAC HERRITAGE,	B. E.,	Jacksonville, N. C.
Surveyor Jacksonville Lumber Co.		
LABAN MILES HOFFMAN, JR.,	B. E.,	Dallas, N. C.
With Monarch Cotton Mills Co.		
LLOYD RAINEY HUNT,	B. E.,	High Point, N. C.
Mechanic, Electrical Engineer Shields & Co.		
ARTHUR TEMPLETON KENYON,	B. E.,	Buenaventura, Columbia.
Resident Engineer Columbian Pacific Railway.		
WM. FRANKLIN KIRKPATRICK,	B. E., 1904, B. Agr.,	Kingston, R. I.
First Assistant Division of Biology, R. I. Experiment Station.		
STARR NEELY KNOX,	B. E.,	Charlotte, N. C.
Assistant Engineer Southern Railway.		
JAMES HERRITAGE KOONCE,	B. E.,	Jacksonville, Fla.
Assistant Civil Engineer Seaboard Air Line Railway.		
HENRY MARVIN LILLY,	B. E.,	Waco, Tex.
Draftsman and Building Superintendent S. P. Herbert & Co.		
LIPSCOMBE GOODWIN LYKES,	B. E.,	Havana, Cuba.
With Lykes Bros.		
GEORGE GREEN LYNCH, JR.,	B. E.,	Jacksonville, Fla.
Supervisor of Water Softening Plants Atlantic Coast Line Railway.		
MALCOLM ROLAND MCGIRT,	B. Agr.,	Fayetteville, N. C.
Farmer.		

Name.	*Degree.*	*Address.*
WALTER HOGE MCINTIRE,	B. S.,	State College, Pa.
Assistant in Agronomy Pennsylvania State College.		
JAMES OSCAR MORGAN,	B. Agr.,	Agricultural College, Miss.
Professor of Agronomy Mississippi Agricultural College.		
LINDSAY ALEXANDER MURR,	B. E.,	Jacksonville, Fla.
Assistant Engineer Seaboard Air Line Railway.		
GARLAND PERRY MYATT,	B. S.,	Bayonne, N. J.
Chemist General Chemical Co.		
JOHN ALSEY PARK,	B. E.,	Raleigh, N. C.
Instructor in Mathematics N. C. College of Agriculture and Mechanic Arts.		
JAMES HICKS PIERCE,	B. S.,	Warsaw, N. C.
Wholesale Lumber Business.		
PLEASANT H. POINDEXTER, JR.,	B. Agr.,	Canadian, Tex.
Manager Yard Panhandle Lumber Co.		
EDWARD GRIFFITH PORTER,	B. E.,	Tampa, Fla.
Bridge Engineer Seaboard Air Line Railway.		
ROBERT WALTER SCOTT, JR.,	B. Agr.,	Rocky Mount, N. C.
Superintendent of Edgecombe Test Farm, N. C. Agricultural Department.		
JONATHAN RHODES SMITH,	B. E.,	Phoenixville, Pa.
Structural Draftsman The Phœnix Bridge Co.		
JOHN DAVIDSON SPINKS,	B. E.,	Oriental, N. C.
Inspector U. S. Engineering Department.		
ERVIN BLAKENEY STACK,	B. E.,	Monroe, N. C.
Electrical Engineer General Electric Co.		
SYLVESTER MURRAY VIELE,	B. E.,	New York, N. Y.
Pennsylvania Railroad Co.		
WALTER JENNINGS WALKER,	B. E.,	Schenectady, N. Y.
General Electric Co. Home address, Winston-Salem, N. C.		
STEVEN DOCKERY WALL,*	B. E.,	Rockingham, N. C.
WALTER WELLINGTON WATT, JR.,	B. E.,	Charlotte, N. C.
Draftsman and Machinery Salesman Saco & Pettee Machine Shops.		
ARCHIE CARRAWAY WILKINSON,	B. E.,	Waynesville, N. C.
Locating Engineer Shoolbred & Seaver, Civil Engineers. Home address, Charlotte, N. C.		

CLASS OF 1906.

DURANT STEWART ABERNETHY,	B. E.,	Lynchburg, Va.
Civil Engineer Southern Railway. Home address, Hickory, N. C.		
GEORGE GILDEROY ALLEN,	B. E.,	Cooleemee, N. C.
Erwin Cotton Mills Co.		
GEORGE PAGE ASBURY,	B. E.,	Jonesboro, Tenn., R. 5.
Civil Engineer C., C. & O. Railway.		

*Deceased.

Name.	*Degree.*	*Address.*
JAMES CLAUDIUS BEAVERS,	B. Agr.,	Washington, D. C.
Scientific Fertilizer Investigation. Assistant in U. S. Department of Agriculture.		
NEEDHAM ERIC BELL,	B. S.,	Auburn, Ala.
Assistant Chemist Agricultural Experiment Station.		
KENNETH LEON BLACK,	B. E.,	Richmond, Va.
Civil Engineer with I. J. Smith Co., Contractors.		
WILLIAM ANDREWS BUYS,	B. E.,	Belhaven, N. C.
Civil Engineer for Interstate Cooperage Co.		
MARK HOPKINS CHESBRO,	B. Agr.,	Claremont, Va.
Farmer.		
CONNOR CALHOUN CLARDY,	B. E.,	Schenectady, N. Y.
Testing Department General Electric Co.		
JOHN WASHINGTON CLARK,	B. E.,	Charlotte, N. C.
B. E. (Tex.) 1907. Chadwick Mills.		
JAMES DUNCAN CLARK,	B. S.,	Tampa, Fla.
Carbonic Acid Manufacturer.		
SAMUEL HERBERT CLARKE,	B. E.,	Statesville, N. C.
Civil Engineer. Not heard from.		
WILEY THEODORE CLAY,	B. E.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
DUNCAN ARCHIBALD COX,	B. S.,	Allens Creek, Tenn.
Chemist Bonair Coal and Iron Co.		
ALEXANDER DOANE CROMARTIE,	B. Agr.,	Garland, N. C.
Farmer.		
LATTA VANDERION EDWARDS,	B. E.,	Ithaca, N. Y.
Instructor in Railroad Engineering, Cornell University.		
WELDON THOMPSON ELLIS,	B. E.,	West Raleigh, N. C.
M. E. 1908. Instructor N. C. College of Agriculture and Mechanic Arts.		
ALBERT EDWARD ESCOTT,	B. E.,	Raleigh, N. C.
Secretary Raleigh Cotton Mills and Neuse River Mills.		
WILLIAM CARLYLE ETHERIDGE,	B. Agr.,	West Raleigh, N. C.
M. S. 1908. Assistant in Field Crops, North Carolina Agricultural Experiment Station.		
JAMES BECKETT EWART,	B. E.,	New York, N. Y.
Engineer in Experimental Laboratory Western Electric Co.		
SHIRLEY WATSON FOSTER,	B. Agr.,	Washington, D. C.
Agent and Expert Bureau of Entomology, U. S. Department of Agriculture.		
ARTHUR WYNNS GREGORY,	B. S.,	Shanghai, China.
British-American Tobacco Co.		
HORACE LESTER HAMILTON,	B. E.,	Schenectady, N. Y.
Technical Writer General Electric Co.		
JOHN FREDERICK HANSELMAN,	B. E.,	Richmond, Va.
With Morrison Machinery and Supply Co.		
CLARENCE WILSON HEWLETT,	B. E.,	Baltimore, Md.
Graduate Student Johns Hopkins University.		

Name.	*Degree.*	*Address.*
JAMES ALLAN HIGGS, JR.,	B. E.,	Knoxville, Tenn.
Draftsman Southern Railway.		
WILLIAM GRAHAM KNOX,	B. E.	
Not heard from. Home address, Charlotte, N. C.		
JOE POINDEXTER LOVILL,	B. E.,	Spokane, Wash.
Civil Engineer North Coast Lumber Co.		
THOMPSON MAYO LYKES,	B. E.,	Tampa, Fla.
Cattle Business.		
HORACE SMITH MCLENDON,	B. Agr.,	Sanford, Fla.
Farm Superintendent. Holder Real Estate Co.		
RAYMOND MAXWELL,	B. E.,	Leachville, N. C.
Chief Engineer Mattamuskeet Railroad.		
LACY MOORE,	B. E.,	Graham, N. C.
Assistant Engineer Gilbert C. White, Constructing Engineer.		
JOSEPH GRAHAM MORRISON,	B. Agr.,	Stanley, N. C.
Merchant and Cotton Manufacturer.		
JESSE CLARENCE MYRICK,	B. E.,	Wilmington, N. C.
Electrician Tidewater Power Co.		
CHARLES FRANKLIN NIVEN,	B. Agr.,	Dahlonega, Ga.
Professor of Agriculture in North Georgia Agricultural College.		
LOLA ALEXANDER NIVEN,	B. Agr.,	Conway, Ark.
Professor of Agriculture Arkansas State Normal.		
LEWIS MILTON ODEN,	B. Agr.,	Raleigh, N. C.
Dairyman.		
THOMAS JEFFERSON OGBURN, JR.,	B. E.,	Richmond, Va.
Everett Waddey Co.		
CLYDE ESTER PARKER,	B. S.,	Raleigh, N. C.
Cotton Buyer, Parker Bros. & Co.		
SAMUEL OSCAR PERKINS,	B. S.,	Raleigh, N. C.
Assistant Chemist N. C. Department of Agriculture.		
ANGELO BETTLENA PIVER,	B. E.,	Phoenixville, Pa.
Draftsman Phœnix Bridge Co.		
WILLIAM CRAWFORD PIVER,	B. S.,	New York, N. Y.
With F. C. R. Hemingway.		
DURANT WAITE ROBERTSON,	B. E.,	Washington, D. C.
Traveling Salesman American Tobacco Co.		
FREDDIE JACKSON TALTON,	B. Agr.,	Pikeville, N. C., R. 2.
Farmer.		
RICHARD HENRY TILLMAN,	B. E.,	Rochester, N. Y.
Rochester Railway and Light Co.		
WILLIAM SIDNEY TOMLINSON,	B. E.,	Portsmouth, Va.
Civil Engineer Seaboard Air Line Railway.		
REID TULL,	B. E.,	Elise, N. C.
Civil Engineer Durham and Charlotte Railway.		

Name.	*Degree.*	*Address.*
JACKSON CORPENING TUTTLE,	B. E.,	Schenectady, N. Y.
Designing Engineer General Electric Co.		
ROBERT PEELE UZZELL,	B. Agr.,	Goldsboro, N. C.
Farming.		
PETER VALAER, JR.,	B. S.,	Washington, D. C.
Assistant Chemist Bureau Internal Revenue.		
LILLIAN LEE VAUGHAN,	B. E.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
JOHN HARLEY WILLIAMS,	B. E.,	Spartanburg, S. C.
Physical Director City Y. M. C. A.		
LEWIS TAYLOR WINSTON,	B. Agr.,	Bristol, Tenn.
Assistant Cashier Bristol Gas and Electric Co.		

CLASS OF 1907.

HERBERT SCANDLIN BATTIE,	B. E.,	Ithaca, N. Y.
Student Cornell University.		
JOE PITTMAN BIVENS,	B. E.,	New York, N. Y.
Meter Tester New York Edison Co.		
CARNEY JOHN BRYAN,	B. E.,	Panama City, Fla.
Wholesale Dealer in Fish and Oysters.		
LINDSAY FERGUSON CARLLTON,	B. E.,	Charlotte, N. C.
Light and Power Solicitor Southern Power Co.		
ROBERT HILL CARTER,	B. E.,	Wilkinsburg, Pa.
Apprentice Westinghouse Electric and Manufacturing Co.		
JACOB TATUM EATON,	B. Agr.,	Farmington, N. C.
Farmer and Dairyman.		
SEBA ELDRIDGE,	B. E.,	New York City, N. Y.
Student Columbia University.		
BENJAMIN BRYAN EVERETT,	B. Agr.,	Palmyra, N. C.
Farmer.		
JOHN LINDSAY FERGUSON,	B. E.,	Wilkinsburg, Pa.
Westinghouse Electric and Manufacturing Co.		
ELIAS VAN BUREN FOWLER,	B. E.,	Schenectady, N. Y.
General Electric Co.		
CLEMENT LEINSTER GARNER,	B. E.,	Key West, Fla.
U. S. Coast and Geodetic Survey.		
LOVIC RODGERS GILBERT,	B. E.,	Rock Hill, S. C.
Hamilton-Carhartt Cotton Mills.		
ROY JOSEPH GILL,	B. E.,	Manila, P. I.
Civil Engineer Bureau of Lands.		
ROBERT STRICKLER GRAVES,	B. E.,	Schenectady, N. Y
Traveling Salesman General Electric Co.		

Name.	*Degree.*	*Address.*
GEORGE ROM. HARDESTY,	B. E.,	Goldsboro, N. C.
Assistant Engineer State Hospital.		
PHILIP WILLIAM HARDIE,	B. E.,	Manila, P. I.
Civil Engineer U. S. Government.		
JOKTON LAFAYETTE HEMPHILL,	B. E.,	Schenectady, N. Y.
With General Electric Co.		
LAWRENCE JAMES HERRING,	B. Agr.,	Raleigh, N. C.
Veterinarian.		
GUY FRANCIS HINSHAW,	B. E.,	Winston-Salem, N. C.
Assistant City Engineer.		
WILLIAM NORMAN HOLT,	B. E.,	Smithfield, N. C.
Manager Brokerage Co., Holt & Adams.		
ALBERT CARL JONES,	B. Agr.,	High Point, N. C.
Veterinarian.		
WILLIAM WHITMORE JONES,	B. E.,	Franklin, N. C.
Laundry.		
LAFAYETTE FRANCK KOONCE,	B. Agr.,	Kansas City, Mo., R. 1.
Veterinary Surgeon.		
LOUIS EDGAR LOUGEE,	B. S.,	Pittsburg, Pa.
Jones & Laughlin Steel Co.		
HENRY KREIGER MCCONNELL,	B. S.,	West Nashville, Tenn.
Chemist Federal Chemical Co.		
OSCAR FRANKLIN MCNAIRY,	B. E.,	Spartanburg, S. C.
Constructing Engineer A. D. McClain, Contracting Engineer.		
EUGENE FRANKLIN MEADOR,	B. E.,	Reidsville, N. C.
Farmer.		
BENNETT TAYLOR MIAL,		Glenlyn, Va.
Foreman McClintic-Marshall Construction Co.		
Home address, Raleigh, N. C.		
FRANK CURTIS MICHAEL,	B. E.,	Pitstburg, Pa.
Testing Department New York Edison Co.		
JOHN MAPLE MILLS,	B. E.,	Raleigh, N. C.
Raleigh and Southport Railroad.		
HENRY STARBUCK MONTAGUE,	B. S.,	Richmond, Va.
Chemist Virginia-Carolina Chemical Co.		
JOHN LIGHTFOOT MORSON,	B. E.,	Raleigh, N. C.
Civil Engineer Seaboard Air Line Railway.		
JAMES ELWOOD OVERTON,	B. Agr.,	Aboskie, N. C.
Dealer in Peanuts.		
THOMAS FRANKLIN PARKER,	B. Agr.,	Powder Springs, Ga.
M. S. 1908. Teacher Seventh District Agricultural School.		
FRED MAYNARD PARKS,	B. E.,	Wilkinsburg, Pa.
Westinghouse Electric and Manufacturing Co.		
ARTHUR LEE PASCHAL,	B. Agr.,	Honolulu, H. I.
Government Agricultural School.		

Name.	*Degree.*	*Address.*
GUY PINNER,	B. E.,	Phoenixville, Pa.
Structural Draftsman The Phœnix Bridge Co.		
WINSLOW GERALD PITMAN,	B. E.,	Cumberland, Md.
McClintic-Marshall Construction Co., Pittsburg, Pa. Home address, Lumberton, N. C.		
JAMES KEMP PLUMMER,	B. S.,	West Raleigh, N. C.
Assistant Chemist N. C. Agricultural Experiment Station.		
LEON JACOB SCHWAB,	B. E.,	Savannah, Ga.
Civil Engineer Central of Georgia Railway.		
JOHN OSCAR SHUFORD,	B. E.,	Lincolnton, N. C.
City Engineer.		
VANCE SYKES,	B. E.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
LUTHER RUSSELL TILLETT,	B. E.,	Manila, P. I.
Civil Engineering, Bureau of Lands.		
WILLIAM BROOKS TRUITT,	B. E.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
JOHN ED. TURLINGTON,	B. Agr.,	Ithaca, N. Y.
Student Cornell University.		
EDMUND FARRISS WARD,	B. Agr.,	Lumberton, N. C.
Lawyer.		
LINDSAY MARADE WEAVER,	B. E.,	Lexington, N. C.
Bookkeeper.		
JOHN JACKSON WELLS,	B. E.,	Rocky Mount, N. C.
Civil Engineer.		
DAVID LYNDON WHITE,	B. Agr.,	Greensboro, N. C., R. 2.
Dairyman Greensboro Creamery.		
CECIL BERNARD WHITEHURST,	B. E.,	Morton Park, Ill.
Salesman Western Electric Co.		
ARTHUR JOHN WILSON,	B. S.,	Ithaca, N. Y.
M. S. 1908. Graduate Student and Teacher of Chemistry, Cornell University.		

CLASS OF 1908.

Name.	*Degree.*	*Address.*
JOHN CAMILLUS APP,	B. S.,	Charleston, W. Va.
Chief Chemist and Bacteriologist Kanawha Water and Light Co.		
JOHN OSCAR BALDWIN,	B. S.,	Richmond, Va.
Virginia-Carolina Chemical Co.		
GEORGE FRANCIS BASON,	B. E.,	East Orange, N. J.
Crocker-Wheeler Electric Co.		
JOHN LELAND BECTON,	B. E.,	Wilmington, N. C.
Deputy City Engineer.		

Name.	*Degree.*	*Address.*
HARWOOD BEEBE,	B. E.,	Spies, N. C.
WILLIAM LAMAR BLACK,	B. E.,	Rock Hill, S. C.
	Southern Power Co.	
ASA GRAY BOYNTON,	B. E.,	Biltmore, N. C.
	Landscape Engineer Vanderbilt Estate.	
FRANK HAMILTON BROWN,	B. Agr.,	Cullowhee, N. C.
	Teacher Cullowhee Normal and Industrial School.	
JOHN HARVEY BRYAN,	B. E.,	Goldsboro, N. C.
	Engineer Electric Light and Water Plant.	
WILLIAM BRYANT BURGESS,	B. E.,	Rocky Mount, N. C.
	Electrician Roanoke Rapids Power Co.	
LEWELLYN HILL COUCH,	B. E.,	Greensboro, N. C.
	Traveling Salesman Central Electric Co.	
CLAUD COUNCIL DAWSON,	B. E.,	Charlotte, N. C.
	Mayes Manufacturing Co.	
ALVIN DEANS DUPREE,	B. E.,	Greenville, N. C.
RAYMOND ROWE EAGLE,	B. Agr.,	Raleigh, N. C.
	Civil Engineer Seaboard Air Line Railway.	
MINNIC LUTHER EARGLE,	B. Agr.,	Delmar, S. C.
	Farmer.	
ISAAC HERBERT FARMER,	B. E.,	Portsmouth, Va.
	Civil Engineer Seaboard Air Line Railway.	
BENJAMIN TROY FERGUSON,	B. Agr.,	Kimbolton, N. C.
	Farmer and Teacher.	
PERCY LEIGH GAINEY,	B. Agr.,	West Raleigh, N. C.
	Instructor N. C. College of Agriculture and Mechanic Arts.	
JUNIUS TALMAGE GARDNER,	B. E.,	Shelby, N. C.
	Shelby Insurance and Realty Co.	
SETH MANN GIBBS,		West Raleigh, N. C.
	Civil Engineer Greater Raleigh Land Co.	
MAURICE MORDECAI GLASSER,	B. E.,	Charleston, S. C.
MOSES HENRY GOLD,		Monroe, N. C.
	Civil Engineer Seaboard Air Line Railway.	
JOHN DAVID GRADY,	B. Agr.,	Amsterdam, Ga.
	Superintendent of Dairy Farm A. Cohn & Co.	
DORSEY YATES HAGAN,	B. E.,	Greensboro, N. C.
	Bandy & Myers, Consulting Engineers.	
MAURICE HENDRICK,	B. E.,	Shelby, N. C.
	Ella Cotton Mills.	
HERBERT WILLIAM KUEFFNER,	B. E.,	Burlington, N. C.
	With Gilbert C. White.	
CLAUDE MILTON LAMBE,	B. E.,	Durham, N. C.
	Mercantile Business.	

Name.	*Degree.*	*Address.*
CHARLES EDWARD LATTA,	B. E.,	Raleigh, N. C.
Grocer.		
DAVID LINDSAY,	B. E.,	Draper, N. C.
Working through mill, German-American Co.		
JOHN HENRY LITTLE,	B. E.,	Waycross, Ga.
Engineer in Power Plant. A. C. L. Railway.		
GEORGE LAFAYETTE LYERLY,	B. E.,	Hickory, N. C.
Shuford Hardware Co.		
CLARENCE TALMAGE MARSH,	B. E.,	Fort McKinley, Me.
Second Lieutenant U. S. Army.		
DAVID JOHN MIDDLETON,	B. Agr.,	Wilmington, N. C., R. 1.
Superintendent of Farm D. L. Gore.		
BENJAMIN FRANKLIN PITTMAN,	B. E.,	Richmond, Va.
Virginia Passenger and Power Co.		
LAWRENCE LYON PITTMAN,	B. E.,	Whitakers, N. C.
RUBLE ISAAC POOLE,	B. E.,	Ithaca, N. Y.
Student Cornell University.		
HARRY ALEXANDER POWELL,	B. E.,	Wake Forest, N. C.
Royall Cotton Mill.		
JAMES ALEXANDER POWELL,	B. E.,	Raleigh, N. C.
Draftsman H. P. S. Keller, Architect.		
THOMAS MILTON POYNER,	B. E.,	Moncure, N. C.
Civil Engineer Seaboard Air Line Railway.		
EDGAR ENGLISH SMITH,	B. E.,	San Juan, Porto Rico.
Deck Officer U. S. Coast and Geodetic Survey.		
JAMES LAWRENCE SMITH, JR.,	B. E.,	Dublin, Ga.
With Crafts & Smith, Bridge Contractors and Civil Engineers.		
JESSE PAGE SPOON,	B. Agr.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
JOHN SNIPES STROUD,	B. E.,	East Durham, N. C.
Erwin Cotton Mill.		
JOHN LAWRENCE VON GLAHN,	B. E.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
ROYALL EDWARD WHITE,	B. E.,	Aulander, N. C.
JOHN C. WILLIAMS,	B. E.,	Hazlehurst, Ga.
Bridge Construction Georgia and Florida Railroad.		
WOODFIN BRADSHER YARBROUGH,	B. E.,	Locust Hill, N. C.
JOHN FRANKLIN ZIGLAR,	B. E.,	Winston-Salem, N. C.
Transitman J. N. Ambler.		