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WEST RALEIGH, N. C.

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REGISTRAR, A. AND M. COLLEGE,  
West Raleigh, N. C.

**THE**  
**NORTH CAROLINA COLLEGE**  
**OF**  
**AGRICULTURE AND MECHANIC ARTS**  
**WEST RALEIGH**

**1911-1912**



**RALEIGH**  
**E. M. UZZELL & Co., STATE PRINTERS AND BINDERS**  
**1912**



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## COLLEGE CALENDAR.

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### 1912.

Thursday, July	11.	Entrance examination at each county courthouse, 10 A. M.
Wednesday, September	4.	Entrance examination at the College, 8:30 A. M.
Wednesday, September	4.	Examinations to remove conditions.
Thursday, September	5.	First Term begins; Registration Day.
Thursday, November	28.	Thanksgiving Day.
Wednesday, December	18.	First Term ends.

### 1913.

Wednesday, January	1.	Second Term begins; Registration Day.
Saturday, March	15.	Second Term ends.
Monday, March	17.	Third Term begins.
Sunday, May	25.	Baccalaureate Sermon.
Monday, May	26.	Alumni Day. Annual oration.
Tuesday, May	27.	Commencement Day.

## BOARD OF TRUSTEES.

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GOVERNOR WILLIAM WALTON KITCHIN, *ex officio* Chairman.

<i>Name.</i>	<i>Postoffice.</i>	<i>Term Expires.</i>
J. O. ELLINGTON.....	Fayetteville .....	March 20, 1913.
W. E. DANIEL.....	Weldon .....	March 20, 1913.
W. H. RAGAN.....	High Point.....	March 20, 1913.
W. B. COOPER.....	Wilmington .....	March 20, 1913.
M. B. STICKLEY.....	Concord .....	March 20, 1915.
T. T. BALLENGER.....	Tryon .....	March 20, 1915.
N. B. BROUGHTON.....	Raleigh .....	March 20, 1915.
O. L. CLARK.....	Clarkton .....	March 20, 1915.
EVERETT THOMPSON.....	Elizabeth City.....	March 20, 1917.
R. H. RICKS.....	Rocky Mount.....	March 20, 1917.
O. MAX GARDNER.....	Shelby .....	March 20, 1917.
M. L. REED.....	Biltmore .....	March 20, 1917.
E. M. KOONCE.....	Jacksonville .....	March 20, 1919.
C. W. GOLD.....	Raleigh .....	March 20, 1919.
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D. A. TOMPKINS.....	Charlotte .....	March 20, 1919.

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7

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- HARRY RASCOE FULTON, M.A.,  
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Assistant Chemist.
- CHARLES EDWARD BELL, B.S.,  
Assistant Bacteriologist.
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Bursar.
- MISS NELLIE FORT,  
Stenographer.
- MISS LOULA V. SHERWOOD,  
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---

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### Cadet Major.

O. W. SMITH.

### Battalion Staff.

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S. B. HOWARD, First Lieutenant and Adjutant.

W. T. SHULL, First Lieutenant and Quartermaster.

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R. D. GOODMAN, Quartermaster Sergeant and Color Sergeant.

J. O. RANKIN, Chief Trumpeter.

### Band.

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McN. DuBOSE, First Lieutenant.

R. F. GIERSCH, First Lieutenant.

C. M. TAYLOR, Second Lieutenant.

W. D. SIMPSON, Sergeant.

G. L. ARTHUR, JR., Sergeant.

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W. V. PEARSALL, Corporal.

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J. O. RANKIN, Sergeant.  
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W. H. PARKER, First Sergeant.  
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J. J. PHILLIPS, Sergeant.  
W. B. STOVER, Sergeant.  
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J. E. FEREBEE, Corporal.  
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E. C. BLAIR, Corporal.  
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R. C. DEAL, First Lieutenant.  
J. G. KELLOGG, Second Lieutenant.

G. L. BAIN, First Sergeant.  
W. T. NIXON, Sergeant.  
G. T. ROWLAND, Sergeant.  
T. R. HART, Sergeant.  
L. L. DAIL, Sergeant.  
R. S. MAUNEY, Sergeant.  
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J. W. ROSS, Corporal.  
H. BURLESON, Corporal.  
J. C. BRANTLEY, Corporal.  
J. B. REES, Corporal.  
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H. L. TAYLOR, Second Lieutenant.  
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L. C. HAND, Sergeant.  
R. T. MELVIN, Sergeant.  
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C. M. KEPHART, Corporal.  
J. R. BUCHANAN, Corporal.  
D. E. ROBERTS, Corporal.  
P. MALLETT, Corporal.



## GENERAL INFORMATION.

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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 four hundred and eighty-five acres of land. Fifteen 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 campus consists of about thirty acres of rolling land, which is being improved as rapidly as circumstances permit.

**BUILDINGS.**

The buildings, numbering twenty-six in all, of the College are grouped as follows: the academic buildings; the social life buildings; and the farm buildings.

I. The academic buildings are as follows:

1. **Holladay Hall.**—This, the administration building of the College, is of brick with brown stone trimmings. It is 170 feet long by 64 feet deep; part of the building is four stories and the remainder two. The first floor is devoted to the lecture-rooms and laboratories of the Physics Department. The second floor contains the offices of the President, the Dean of the Faculty, the Commandant, Registrar, and the Bursar. In addition, six lecture-rooms are located on this floor. The upper stories are used by students.

2. **Patterson Hall.**—This is the largest of the Agricultural buildings. It is a three-story buff press-brick structure, with granite trimmings, and is 204 feet long by 74 deep. The basement floor contains a very commodious dairy with wash-rooms and sterilization chamber. It also contains mailing rooms for bulletins, a large hall for examination of animals. The second floor provides room for the offices of the Experiment Station, for offices, lecture-rooms, and laboratories for the departments of Agronomy, Horticulture, Soils, and Agricultural Extension. On the third floor are the rooms devoted to the offices, lecture-rooms, and laboratories of the departments of Botany, and Plant Pathology, and of Physiology and Veterinary Medicine. This building contains excellently equipped laboratories, and is well lighted and ventilated. Each section of the building was designed for its specific function and hence admirably meets the requirements of these departments.

3. **Animal Industry Building.**—In order to meet the growing needs of the Agricultural division of the College, a building for the Animal Industry Department is just being completed. This is a three-story brick structure, and has white brick and cement trimmings. One-half of the first floor will be given to the Poultry Department. The other half is devoted to a stock-judging room. The offices, lecture-rooms, and laboratories of the Animal Industry Department take up all the second floor. The third floor is assigned to the Department of Entomology and Zoölogy. In addition to offices and laboratories, this floor will contain photographic room and museum.

4. **Winston Hall.**—This is the Civil and Electrical Engineering building. It is built of brick, with reinforced concrete floors, three stories high, including the basement. It consists of a main section,

104 by 58 feet, with two wings, each 91 by 32 feet. The basement contains the laboratories and instrument rooms of the departments of Electrical and Civil Engineering. The main floor has the lecture, recitation, and drafting rooms and the offices of the same two departments. The second floor contains the lecture and recitation rooms and the laboratories and offices of the Department of Chemistry and the Chemical Department of the State Experiment Station.

**5. Mechanical Engineering Building and Machine Shops.**—A plain, substantial, two-story brick building furnishes room for the machine shop, the wood shop, the forge shop, the tool room of the Mechanical Department. In the same building are housed the mechanical laboratory, the drawing-rooms, lecture-rooms, and offices of this department.

**6. Textile Building.**—This is a two-story brick building 125 by 75 feet, with a basement. Its construction is similar to a cotton mill, and is 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.

**7. Central Power Plant.**—Heat, light, and power for all the College buildings are furnished from this central station. The boiler plant consists of two 75-horse-power Babcock and Wilcox boilers and two 100-horse-power Atlas Water-tube boilers, with a working steam pressure of 150 pounds. The engine plant embraces a 100-horse-power Skinner engine and a Crocker-Wheeler generator attached; a 100 k. w. DeLaval turbine generator set with self-exciter; and 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 **Fire Protection** of the College consists of the following equipment: An Underwriter fire pump, standpipe and reservoir, hose and hose reels. Hydrants are conveniently located about the grounds, with attached hose nozzles, etc. The buildings are supplied with extinguishers.

**8. Foundry.**—Is a one-story brick building with a brick stack. It contains a 36-inch cupola furnace; a Griffin oil furnace for melting iron; another for brass, and a small crucible furnace for brass melting; a core oven, and benches and hand tools for moulding in the course of exercises, as well as for any repair work required by the College.

II. The social life buildings are as follows:

1. **Pullen Hall.**—The basement of this large three-story colonial brick building will, after this year, be used as an armory. The first floor gives quarters for a splendidly lighted reading-room and library and two lecture-rooms. The second story serves as the college auditorium and seats about one thousand people.

2. **Primrose Hall** and the new **Y. M. C. A. Building.**—At present Primrose Hall is used for the Young Men's Christian Association home. The Association has, however, just let a contract for a handsome building that will be erected this summer, and devoted exclusively to the social and religious life of the College.

3. **Dining Hall.**—The College will complete in the early spring a dining hall which will seat seven hundred and fifty students. This building is 144 feet by 54 feet. It is trimmed with Indiana limestone and white brick. Attached to this dining hall is a large kitchen which is being supplied with a complete modern outfit of kitchen conveniences and utensils. Serving rooms, storerooms, preparation rooms, and every needful adjunct have been provided.

4. **Infirmary.**—This is a two-story brick building, containing a sitting-room, seven bedrooms, three bathrooms, a kitchen, linen-room, the College Physician's office, and a medicine chest. 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.

5. **Watauga Dormitory.**—Rooms for one hundred and thirty students are provided by this three-story brick dormitory. A large bathroom is located in the basement of this dormitory.

6. **Nineteen-Eleven Dormitory.**—This is the largest and most complete dormitory on the grounds. It is divided into sections by fire-proof walls, and each section is practically a separate house. It furnishes rooms for two hundred and forty students. Large and convenient bathrooms are located in the basement of the building.

7. **First Dormitory.**—This two-story brick dormitory has ten rooms and affords accommodations for twenty students.

8. **Second Dormitory.**—Built on the same plan as the First Dormitory, this building affords a college home for twenty students.

9. **Third Dormitory.**—Twenty students also find rooms in this small dormitory.

10. **Fourth Dormitory.**—This is a three-story, mansard-roofed brick structure, and furnishes rooms for forty-eight students.

III. The farm buildings constitute the third group of college buildings. These are as follows:

1. A large sanitary dairy barn with stalls and feed-rooms for fifty cows. This barn is abundantly aired and lighted, is equipped with James sanitary fixtures, and has cement floors.

2. A barn for the work stock. Stalls for most of the work animals and some overhead storage are supplied by this barn.

3. A storage barn. This barn gives storage for feedstuffs for the dairy and is also equipped with stalls for the Percheron horses.

4. A fertilizer and implement barn. The College is just completing a commodious barn in which to provide room for instruction in mixing fertilizers and to store the farm implements and machines.

5. The Experiment Station barn. This convenient building is located on the College farm and houses the work stock of the station.

6. A calf barn. The young stock of the College are provided with separate stalls and feeding rooms in a comfortable building on the farm site.

7. The foreman's home. A cottage near the barns is occupied by the foreman of the College farm and by the herdsman.

8. The Horticulturist's home. In order that he may be near his work, the Horticulturist is provided with a home in the center of the orchard.

#### 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 Patterson Hall. The laboratories are, some of them, in the same building; the rest are in Winston Hall. 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.

Bulletins 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.

Arrangements are now being perfected to combine the Station with the experimental work of the State Department of Agriculture, and hereafter the work of College and State Department will be done together.

#### 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 many lines 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, Chemistry, Dyeing, Textile Industry, and Agriculture. It also offers practical training in Carpentry, Woodturning, Blacksmithing, Machinist's 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, Political Economy, Physics, Chemistry, Botany, Zoölogy, 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.**

The College does not have many rules. It expects that its students will live rightly for their own sakes and for the sake of the State that is educating them. The fundamental law of the College is this: Always and everywhere, be a gentleman.

A record is kept of every student. If it is apparent from this record that a student is not studying or that his conduct is not meeting the requirements of the College, such student will be required to withdraw. Scandalous, vicious, or immoral conduct will necessitate an immediate dismissal.

Students attend this College, of course, to fit themselves for a technical business life. They are therefore expected to be business-like in their habits; to be prompt in their attendance and regular at chapel, classes, shops, drills, inspections, and all other duties. To prepare themselves for their daily work, students are expected to observe in their own rooms the regular morning and evening hours of study and to be absent from College only at the regularly specified periods. These periods are as follows: For Juniors, Friday, Saturday, and Sunday nights; for Sophomores, Saturday and Sunday nights; for Freshmen, Sunday nights. Saturday and Sunday afternoons are liberty afternoons.

Students are expected to keep their rooms neat and sanitary; to refrain from disturbing one another by noise in the buildings or on the grounds—in short, to conduct themselves in their College home with the same courtesy, self-respect, and propriety that they do in their own homes.

Visiting poolrooms, leaving College after 11 o'clock at night, continued cigarette smoking, willful destruction of College property, drinking, immorality, gambling in all forms, hazing of any kind, disrespect to members of the Faculty or officers of the College, any conduct unbecoming a gentleman—these offenses it is expected that a student's self-respect will lead him to abstain from, and should any student be found guilty of them he will be excluded from College.

**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 nor to the College.

**PRIZES.**

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.

A gold medal is awarded to the Senior speaker who makes the best oration on Commencement Day.

The National Association of Cotton Manufacturers offers annually a medal to the student in the Textile Department who has the highest proficiency in his work.

**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 or layman.

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.

**THE YOUNG MEN'S CHRISTIAN ASSOCIATION.**

The Young Men's Christian Association is a voluntary organization among the students for the purpose of centralizing and directing the moral and religious life of the student body. The work is under the direction of a General Secretary, who is employed to give his entire time to the work, and of the following student officers: president, vice president, corresponding and recording secretaries, and treasurer. Active assistance is also given by an Advisory Committee, which includes three members of the Faculty and six prominent business men in Raleigh. The president and treasurer of the Association are *ex officio* members of this committee.

Membership is open to all College students of good moral character. Only members of evangelical churches may become active members.

A hand-book, giving general information about the College, is published each spring and sent to prospective students with a personal letter of welcome from the officers of the Association.

A large number of men are trained each year in active Christian service through membership on the following standing committees, all of which are trained by the General Secretary in their particular work: Bible Study Committee, which has charge of the organiza-



tion of voluntary Bible Study classes among the students, and in this way seeks to reach all of the non-Christian element of the student body; Religious Meetings Committee, which provides speakers and arranges programs for the weekly meetings of the Association; Mission Study Committee, which provides for Mission Study among the students; Membership Committee, which seeks to enlist students as members of the Young Men's Christian Association; Social Committee, which provides means of social entertainment and diversion; Employment Bureau, which seeks to help men find employment while in College; and Finance Committee. Each committee is held responsible for its part of the Association activities.

The Association is supported by gifts from the Board of Trustees, the Faculty, and citizens of the State, and by its regular membership fees. Although membership is voluntary, it is desired that all students should apply for membership and thereby align themselves with an organization which will assist them in leading an upright life while in college.

The Association maintains headquarters in Primrose Hall, which are fitted up with reading matter, small games, etc., and serve as an office for the General Secretary. A suitable building, to cost \$40,000, and to be furnished with all modern equipments, is now under construction on the campus. It is expected that this building will be ready for occupation by the first of January.

Any further information may be obtained by addressing the General Secretary, Y. M. C. A., West Raleigh, N. C.

#### ATHLETICS.

**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 baseball, basketball, football, track athletics, etc. The Association employs a director who devotes all his time to the interests of this department.

**The Athletic Park** is situated in the center of the College buildings. It is provided with a grandstand and uncovered seats, and meets amply the needs of the various athletic teams.

#### 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 seven thousand five hundred 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 eleven thousand five hundred volumes, is free to the students, and they have the privilege of borrowing books from it.

Students are also allowed to consult 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 twelve. 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 problems. The meetings are conducted in the manner of a Farmers' Institute, and give training in conducting farmers' meetings, in *ex tempore* speaking on agricultural questions, and in the writing and reading of reports on various farm operations.

The **Rural Science Club** meets semimonthly 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 semimonthly 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 week for the discussion of mechanical subjects. The society is composed of Seniors and Juniors taking the Mechanical Engineering Course. Its work has proved very beneficial to its members.

**Electrical Engineering Society.**—A student branch of the American Institute of Electrical Engineers was organized at the College several years ago. It holds regular meetings for the reading and discussion of papers. At convenient intervals the society makes trips for inspecting interesting electrical installations. From time to time addresses are made to the society by visiting engineers.

**Berzelius Society** meets fortnightly for discussion of chemical topics, and reporting upon the leading articles in the chemical journals.

**The Vorwaerts Verein** (Forward Society) is a society for the promotion of interest in the study of German. Weekly meetings are held at which literary programs are carried out in German, giving its members practice in expressing themselves in that language. Membership is open to students and members of the Faculty who have acquired sufficient knowledge to understand simple conversation in German.

**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 the 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 and to the two-year course in Veterinary Medicine for the session 1912-13 will be examined on the following subjects: Arithmetic (complete), Algebra (to involution), English Grammar 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.

## GENERAL INFORMATION.

Beginning with the session of 1913-14, admission to the Freshman Class of all four-year courses will be by the unit system. A unit is defined as a subject pursued in schools of approved grade for five periods a week throughout the year, each period being at least 45 minutes in length. Each applicant selecting from the subjects named must on examination make eight units. The following units are required for all four-year courses:

SUBJECT.	UNITS.
Algebra .....	1½
English .....	2
Geometry .....	½
United States History.....	1
Total units in required subjects.....	5

In addition to the 5 units in required subjects, a total of three units must be offered from the following electives, the credit on any one subject not to exceed the value indicated:

SUBJECT.	UNITS.
Agriculture .....	1
Botany .....	½ or 1
Bookkeeping .....	½
Chemistry .....	½ or 1
Civics .....	½
Drawing .....	½
English History.....	1
Foreign Language.....	1
Latin .....	2
Manual Training.....	½
Physics .....	½ or 1
Physiology .....	½
Zoology .....	½ or 1

The  $1\frac{1}{2}$  units required in Algebra must cover the subject to quadratic equations.

The  $\frac{1}{2}$  unit required in Geometry must include the first three books of plane Geometry.

Of the 2 units required in English, 1 unit must be in grammar and composition and 1 unit in literature.

The  $\frac{1}{2}$  unit in drawing may be for either free-hand or mechanical drawing.

A full unit will be allowed for any one science only when the subject has been given with laboratory work.

**Admission on Certificate.**—The applicant is required to submit to the Dean of the College a certificate of the high-school or academy credits, properly certified to by the authorities of the institution in which the work was done.

**To the Two-year Courses.**—Applicants for admission to the two-year courses in Agriculture and in Mechanic Arts will be examined on Arithmetic complete, English Grammar and Composition, and American History.

**To the One-year Course in Agriculture.**—Applicants for admission to the One-year Course in Agriculture and to the Two-year Course in Textile Industry will be required to pass on Arithmetic through decimal fractions, on English Grammar and on United States History.

**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 1912 is July 11. These examinations will save the expense of a trip to Raleigh in case the candidate should fail or in case there should not be room enough for him in the College. Entrance examinations will be held also at the College at 8:30 o'clock a. m. on the Wednesday preceding the opening day. The examinations begin with English at 8:30 a. m., in Room 21, Holladay Hall, followed by Mathematics at 10, and History at 2, in the same room. The date for 1912 is September 4.

#### ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to winter courses, if over eighteen years of age.

2. School teachers, holding teachers' certificates, if the holders are sufficiently familiar with Algebra.

3. Graduates of those high schools and academies whose certificates are accepted by the Faculty of this College.

#### ADVANCED CREDIT.

Students who have attended colleges of approved standing will be allowed credit for work done upon the presentation of proper certificates to the Dean, who, with the heads of the departments concerned, will determine their value.

#### 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 \$235.

The total average college expense of a Freshman student having a scholarship is \$190.

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 should be kept within reasonable bounds. The allowances which parents make their sons for contingencies and spending money, it is suggested, should be kept small; for small allowances frequently take away temptation to unwise living.

#### DETAILED INFORMATION.

The largest payment is made in September. On entrance, a Freshman student will need \$85 to meet all of his various payments for the first month. But of this amount, the payment \$22.50 for tuition may be deferred, if desired, to the first of November. This will reduce the first, or entrance, payment to \$62.50. This amount includes payment to the College of \$44 (this may vary one or two dollars according to the course of instruction); deposit with the dealer for uniform and cap of \$5, and \$13.50 for the purchase of books and incidentals. In the case of day students, or students rooming and boarding out of College, tuition will be paid on entrance.

Board is \$11 per month, payable in advance on the first day of each calendar month from September through to May. Board for less time than one month is charged for at the rate of 50 cents a day, or \$3 per week. Refunds for board will be made on the basis of these charges.

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 and lodging during the time they are in College. In special cases the right is reserved to modify or entirely to revoke this rule.

Refunds to students withdrawing later than two weeks from date of entrance will be made in proportion to the length of time they are in College. The right in special cases to modify or to revoke this rule is reserved.

#### EXPENSE BY MONTHS.

The following is a statement of the College expenses of a Freshman student by months, for Civil, Electrical, and Mechanical Engineering divisions:

**SEPTEMBER:** Room rent, fuel and lights, \$15; incidental fee, \$2; medical and hospital fee, \$3; lecture fee, \$1; library fee, \$1; furniture fee, \$1; physical culture fee, \$1; military equipment deposit, \$5; mechanical and physical laboratory fees, \$3; board for September, \$11; a total of \$43. Tuition for one-half session, \$22.50, may be paid at this time, which will make a total of \$65.50. In addition, there is required by the merchant a deposit of \$5 for uniform and cap when the measure of the student is taken; and about \$10 to \$15 is required to buy books, drawing instruments, and for incidentals. An Agricultural Freshman pays \$1.50 more than the above. A Textile Freshman pays \$1 less than the above. Chemical and Veterinary Freshmen pay \$1 more than the above.

**OCTOBER:** Board, \$11, and balance to merchant for uniform and cap, \$15.

**NOVEMBER:** Board, \$11; tuition, if it was not paid in September, \$22.50.

**DECEMBER:** Board, \$11.

**JANUARY:** Tuition, \$22.50; lodging and fuel and lights, \$15; medical and hospital fee, \$3; furniture fee, \$1; physical culture fee, \$1; board, \$11. A total of \$53.50.

**FEBRUARY:** Board, \$11.

**MARCH:** Board, \$11.

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

APRIL: Board, \$11.

MAY: Board, \$11.

If the student has a scholarship, he does not pay tuition.

Students entering after September will pay on entrance all the items enumerated under "September," less a credit in part for tuition and room rent.

The amount of the September or entrance payment for students in other than Freshman classes varies slightly with the class, the course, and the division. This variation is caused by the additional collection of fees and deposits for laboratory work and for supplies. The amount of these fees and deposits is given in the table below, for all classes and courses. They vary widely in the Agricultural Course; here the minimum and maximum amounts are given.

	Sen.	Jun.	Soph.	Fresh.	2d Year S. C.	1st Year S. C.
Agr. students....	\$ 0.00 to 14.00	\$ 6.00 to 16.00	\$ 8.50	Given on page 29.	\$ 2.00 to 15.00	\$ 2.00 to 11.00
C. E. " ....	1.00	1.00	4.00		-----	-----
M. E. " ....	2.00	3.00	6.00		2.00	2.00
E. E. " ....	2.00	4.00	6.00		-----	-----
Chem. " ....	14.00	16.00	7.00		-----	-----
Tex. " ....	9.00	8.00	8.00		4.00	5.00

All unused deposits are refunded to the student at the end of the session or upon his withdrawal from College. If he has overdrawn his deposit, he is required to pay the amount of the overdraft.

#### ROOM FURNITURE.

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

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 young men 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.

Some students who are alert and energetic frequently earn part of their expenses in College. Some of the agricultural students find work at odd hours on the farm, in the orchard, in the barn, in the dairy. Some students act as agents for laundries, for furnishing-houses, for pressing clubs. The College employs a few students for the dining-room and for other purposes. A student's ability to support himself will depend largely on his own power to find work and to hold it after he finds it. It must, however, be remembered that the duties of the classroom take most of a student's time, and his hours for remunerative work are therefore limited.

#### 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 6 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 \$4,210.

#### BOARD AND LODGING.

All students are expected to board in the College dining hall or in approved boarding-houses near the College, 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 \$11 per month, payable in advance.

Rooms in the College dormitories are supplied with electric lights, steam heat, and all necessary furniture, except sheets, blankets, pillow-cases, 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.

**DRILL.**

In return for the Morrill Fund of the United States Government, the College is under contract to require its students to drill at least three times each week, and an Army officer is detailed to conduct the drills. No student will be excused from drill unless the College Physician, after examination, deems him unfit for military duty.

**UNIFORM.**

The College uniform must be worn by all students when they are on military duty. It must be bought at the College from the regular contractor. The uniform is of strong gray cloth and with proper care should last one or two years.

**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.

**VACCINATION.**

By direction of the Trustees, no young man will be registered unless he has been successfully vaccinated. The College greatly prefers that all applicants for admission should be vaccinated at home, and that a certificate of successful vaccination within the past two years be brought from the family physician. In case this cannot be done, the College Physician will vaccinate applicants before they are registered at the College. A blank form to be filled by the home physician will be mailed on application. It will save a great deal of time and trouble, therefore, to be vaccinated before applying for registration. In this way applicants will avoid the inconvenience and discomfort resulting from vaccination while at College.

## COURSES OF INSTRUCTION.

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The College offers the following courses of instruction :

### I. Four-year Courses:

1. **Agriculture** (including Agronomy, Soils and Drainage, Animal Husbandry and Dairying, Horticulture, Veterinary Science, Biology, Poultry Husbandry, and Agricultural Chemistry).
2. **Engineering** (including Civil Engineering, Mechanical Engineering, Electrical Engineering, and Chemistry).
3. **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 of 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 two years in Textile Industry, two years in Agriculture, one year in Agriculture, and of two years in Veterinary Science, and in the Mechanic Arts (including Carpentry, Woodturning, Blacksmithing, Machine-shop Work, Drawing), and a one-week course in Farm Drainage.

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. They 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 six weeks.

**IV. Normal Courses** for the training of teachers in industrial subjects.

**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 in special subjects.

**VI. May School for Teachers**, a two-weeks course designed for public school teachers who desire preparation in Nature Study and Agriculture.

## AGRICULTURAL COURSES.

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- a. **The Four-year Course in Agriculture.**
- b. **The Two-year Course in Agriculture.**
- c. **The Two-year Course in Veterinary Medicine.**
- d. **The One-year Course in Agriculture.**
- e. **The Six-weeks Winter Course in Agriculture.**
- f. **The May School for Teachers.**

**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 five distinct courses:

a. **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 43.**

b. **The Two-year Course in Agriculture** is offered to meet the necessities of young men who wish to prepare themselves in the art rather than in the science and art of agriculture. This course does not lead to graduation, but is designed to help young men better fit themselves by a year or two of practical work for their chosen sphere of industrial activity in the garden, orchard, on the farm, and in the production of animals and animal products. **The Two-year course is described on page 63.**

c. **The Two-year Course in Veterinary Medicine** has been established at this College as the result of a rapidly increasing demand for qualified veterinarians. The purpose of the course is to give a

broad and thorough basic training in the fundamentals of veterinary medicine, along with abundance of practical work in the clinics, laboratories, judging and dissecting rooms.

The work of these first two years is correlated with that of the junior and senior years at a number of the better veterinary colleges, in which colleges subject credit may be obtained for work taken here. **For outline and description of course, see page 68:**

d. **The One-year Course in Agriculture** 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 74.**

e. **The Six-weeks Winter Course in Agriculture** 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 Six-weeks Course is described on page 78.**

f. **The May School** is intended to meet the needs of teachers who wish to make themselves more proficient in Agriculture and Nature Study. **The May School Course is described on page 148.**

**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, and in varieties of fruit, of vegetables, and of forage crops. The methods employed and the results obtained are freely used for instruction.

## SCHOOL OF AGRICULTURE.

## a. Four-year Course in Agriculture.

This course leads to the degree of Bachelor of Science.

## Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mathematics, 110, 111.....	5	5	5
English, 120.....	3	3	3
Botany, 30, 31.....	3	3	3
Agriculture, 1.....	3	--	--
Animal Husbandry, 40.....	--	3	3
Chemistry, 90.....	3	3	3
Drawing, 142.....	2	--	--
Physiology, 60.....	--	2	2
Military Drill, 150.....	3	3	2
Totals.....	22	22	21

## Sophomore Year.

Dairying, 48.....	4	--	--
Physiology, 60.....	2	--	--
Poultry, 51.....	--	3	3
Plant Diseases, 32.....	3	--	--
Wood Shop, 140.....	--	2	2
Plant Propagation, 20.....	--	3	--
Vegetable Gardening, 21.....	--	1	4
Zoology, 80.....	2	2	--
Entomology, 81.....	--	--	2
Chemistry, 92.....	3	3	3
Physics, 100.....	2	2	2
English, 121.....	3	3	3
Tactics, 151.....	1	1	1
Military Drill, 150.....	3	3	2
Totals.....	23	23	22

**AGRONOMY DIVISION.**  
**Junior Year.**

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Equipment, 2.....	--	2	2
Farm Crops, 3.....	2	2	2
Soils, 10.....	3	3	3
Bacteriology, 34.....	2	2	2
Animal Husbandry, 41, 42, 43.....	3	3	3
Entomology, 81.....	2	--	--
Agricultural Chemistry, 92.....	2	2	2
English, 122, 123.....	3	3	3
Horticulture, 22, 23.....	4	4	4
Military Drill, 150.....	3	3	2
Totals.....	24	24	23

**Senior Year.**

Special Crops, 4.....	3	3	3
Farm Management, 5.....	3	--	--
Agronomy, 6.....	--	3	--
Fertilizers, 11.....	--	2	2
Drainage, 12.....	2	--	--
Plant Diseases, 33.....	2	2	2
Live-stock Management, 44.....	3	3	3
Poultry, 52.....	--	--	3
Economics, 125.....	1	1	1
Elective.....	8	8	8
Totals.....	22	22	22

## HORTICULTURAL DIVISION.

## Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Animal Husbandry, 41, 42, 43.....	3	3	3
Soils, 10.....	3	3	3
Entomology, 81.....	2	2	2
Farm Crops, 3.....	2	2	2
Farm Equipment, 2.....	--	2	2
Agricultural Chemistry, 02.....	2	2	2
Bacteriology, 34.....	2	2	2
English, 122, 123.....	3	3	3
Practical Pomology, 22.....	4	2	--
Plant Breeding, 23.....	--	2	4
Military Drill, 150.....	3	3	2
Totals.....	24	26	25

## Senior Year.

Farm Management, 5.....	3	--	--
Special Crops, 4.....	3	3	3
Fertilizer, 11.....	--	2	2
Systematic Pomology, 24.....	3	--	--
Floriculture, 25.....	3	--	--
Landscape Gardening, 20.....	--	3	3
Horticulture (elective).....	--	3	3
Plant Diseases, 33.....	2	2	2
Entomology, 82.....	2	2	2
Economics.....	1	1	1
Elective.....	5	5	6
Totals.....	22	23	22



ANIMAL HUSBANDRY DIVISION.  
Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Equipment, 2.....	--	2	2
Farm Crops, 3.....	2	2	2
Soils, 10.....	3	3	3
Bacteriology, 34.....	2	2	2
Animal Husbandry, 41, 42, 43.....	3	3	3
Veterinary Medicine, 61, a, b, c.....	4	4	4
Entomology, 81.....	2	--	--
Agricultural Chemistry, 92.....	2	2	2
English, 122, 133.....	3	3	3
Military Drill, 150.....	3	3	2
Totals.....	24	24	23

Senior Year.

Special Crops, 4.....	3	3	--
Farm Management, 5.....	3	--	--
Fertilizers, 11.....	--	2	2
Live-stock Management, 44.....	3	3	3
Advanced Breeding, 45, or } Advanced Dairying, 49.....	3	--	--
Advanced Feeds, 46, or } Dairy Bacteriology, 36.....	--	3	--
Market Classes and Grades of Meat, 47, or } Dairy Manufacture, 50.....	--	--	3
Poultry, 52.....	--	--	3
Veterinary Medicine, 62.....	3	3	3
Economics, 125.....	1	1	1
Elective.....	6	7	7
Totals.....	22	22	22

## VETERINARY DIVISION.

## Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Crops, 3.....	2	2	2
Soils, 10.....	3	3	3
Bacteriology, 34.....	2	2	2
Animal Husbandry, 41, 42, 43.....	3	3	3
Anatomy, 64, and Clinics, 67.....	3	3	3
Histology, 65.....	3	3	3
Agricultural Chemistry, 92.....	2	2	2
English, 122, 123.....	3	3	3
Materia Medica, 66 (elective).....	--	2	2
Military Drill, 150.....	3	3	2
Totals.....	24	26	25

## Senior Year.

Special Crops, 4.....	3	3	--
Live-stock Management, 44, or Breeding, 45.....	3	3	3
Feeding, 46, or Grades and Classes of Meats, 47.....	3	3	3
Poultry, 52.....	--	--	3
Anatomy, 68, and Clinics, 73.....	3	3	3
Veterinary Physiology, 69.....	2	2	2
Pathology and Bacteriology, 70.....	3	3	3
Materia Medica and Pharmacy, 71.....	3	--	--
Physical Diagnosis, 72.....	--	3	3
Elective.....	2	2	2
Totals.....	22	22	22

**NORMAL DIVISION.**

**Junior Year.**

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Animal Husbandry, 41, 42, 43.....	3	3	3
Soils, 10.....	3	3	3
Entomology, 81.....	2	--	--
Farm Crops, 3.....	2	2	2
Farm Equipment, 2.....	--	2	2
Agricultural Chemistry, 92.....	2	2	2
Bacteriology, 34.....	2	2	2
English, 122, 123.....	3	3	3
Practical Pomology, 22.....	4	2	--
Plant Breeding, 23.....	--	2	4
Military Drill, 150.....	3	3	2
Totals.....	24	24	23

**Senior Year.**

Farm Management, 5.....	3	--	--
Special Crops, 4.....	3	3	--
Fertilizers, 11.....	--	2	2
Poultry, 52.....	--	--	3
Live-stock Management, 44.....	3	3	3
Plant Diseases, 33.....	2	2	2
Mathematics.....	5	5	5
Elective.....	6	7	7
Totals.....	22	22	22

## Senior Electives.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
English, 124.....	2	2	2
Advanced Soils, 13.....	3	3	3
Bacteriology, 35.....	3	3	3
Advanced Chemistry, 94.....	3	3	3
Advanced Physiology, 69.....	2	2	2
Histology, 63.....	3	3	3
French, German, Spanish, 130, 131, 132.....	3	3	3
Economics, 125.....	1	1	1
Drill, 150.....	3	3	3

## FOUR-YEAR COURSE IN AGRICULTURE.

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### EQUIPMENT.

In addition to Patterson Hall, with its classrooms, laboratories, dairy, stock-judging room and offices, the College possesses the following equipment for instruction in Agriculture:

The farm includes four hundred and eighty-five acres, with two hundred and sixty acres under cultivation; a two-story sixteen-stall horse and storage barn; a fifty-stall dairy barn; a large combination horse, implement, and storage barn; a large implement, fertilizer and grain barn; and a calf barn; silos with capacity for four hundred tons of silage; a No. 18 Ohio feed and ensilage cutter operated by an electric motor, and implements and machinery necessary for up-to-date farming.

The live stock consists of the necessary Percheron mares and mules, a Percheron stallion, a herd of dairy cattle, and pure-bred swine. Breeding stock is sold as a part of the farm products.

The poultry plant has thirty 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 makes of incubators; a brooder house heated by hot water, and several makes of indoor and outdoor brooders. The feed-room is equipped with steam engine, grist and bone mills. Ten or fifteen varieties of poultry are kept, and eggs and breeding fowls are sold to the public.

The horticultural equipment consists of about thirty acres in tree fruit, nuts, vineyard, berries, and vegetables, in appropriate assortment of classes and varieties for demonstration and instruction. These afford means for work in seed selection, bud studies, propagation, budding, grafting, transplanting, pruning, spraying, and variety study. The greenhouse affords means for starting vegetables and growing ornamental and exotic plants as well as for the illustration of interesting and instructive plant-life phenomena.

The dairy equipment is complete and thoroughly modern. The laboratory occupies about four thousand feet of floor space in Patterson Hall, and is equipped for instruction in farm dairying, retailing milk, creamery practice, cheese and butter making, milk testing and pasteurizing. The dairy equipment is modern and complete.

The North Carolina Experiment Station is a department of the College, and its close association with the School of Agriculture gives exceptional opportunities to the Agricultural students for

instruction and observation covering experiments and research in agronomy, chemistry, horticulture, vegetable pathology, plant diseases, bacteriology, dairy and animal husbandry, poultry husbandry, veterinary science, and entomology.

### AGRONOMY.

#### Subjects of Instruction.

1. **Agriculture.**—Introductory to Agriculture in its broader sense. The simpler properties of soils, tillage, fertilizers, conservation of fertility; crops of North Carolina, seed selection, rotation, etc., are briefly considered by lectures and practical demonstrations in the laboratory and in the fields. Three periods, first term. Required of Freshmen. Professor NEWMAN.

2. **Farm Equipment.**—Lectures and recitations upon selecting, planning, and equipping farms; locating, planning, and erecting farm buildings; tools and miscellaneous appliances; farm power; fences, gates, and bridges; farm roads. Two periods, second and third terms. Required of Juniors. Professor NEWMAN.

3. **Farm Crops.**—Recitations and lectures upon the history, production, uses, and marketing of farm crops. Exercises in the field and laboratory, covering tillage, seed selection, storage, and rotation. The crops grown upon the College farm are used for instruction and demonstration, supplementing laboratory, lecture, and text-book instruction. Two periods, first, second, and third terms. Required of Juniors. Mr. Hodson.

4. **Special Crops.**—This course embraces advanced work in farm crops and is a continuation of the Junior work, but is more specialized and technical. Corn, cotton, small grain, hay and forage crops and the principal legumes are studied in detail, as well as such other crops as time will permit. Rotation and the conservation and development of fertility in connection with their use on the farm or the sale of the various crops. The practical application of the principles of breeding is applied to cotton, corn, and cowpeas. Each student is required to present a monograph on some crop or some subject of close relationship to important crops of the State. Three periods, first, second, and third terms. Required of Seniors. Professor NEWMAN.

5. **Farm Management.**—Types of farming and their relation to soil, climate, labor, transportation, population, capital, and land values; operating expenses; systems of land tenure; farm organization; size of farms; location and arrangement of buildings, roadways, fences,

water supply, orchard, garden, etc.; factors governing nature and amount of equipment; financial accounts; farm records; diversification; rotation from a business point of view; cropping systems; relationship of animal and plant production; maintenance of fertility; standard of living; schools; churches. Three periods, first term. Required of Seniors. Professor NEWMAN.

**6. Agronomy.**—This course is for students specializing in Agronomy. Each student will select a subject or a group of allied subjects for investigation, be given references, and required to submit the results of his studies in bulletin form. Three periods, second term. Required of Seniors in Agronomy Division. Professor NEWMAN.

### SOILS.

#### Equipment.

The Soils Department has a large new laboratory in Patterson Hall furnished with solid oak desks and lockers so arranged as to accommodate a large number of students in general soils work and to allow individual locker space with plenty of working room for each student. These desks and lockers, with other tables and soil chests, were designed and made to order for this laboratory, and hence are arranged to give the greatest convenience and the most complete use of the room that is possible.

The apparatus is all of the latest and most approved models, giving greater utility and accuracy, combined with simplicity, than would be possible with any other.

In addition to the laboratory facilities, the department makes use of the College farm for its practical work in drainage, terracing, fertilization, cultivation, and study of soil types. A series of plats for soil demonstration work has been arranged which is expected to illustrate many features of practical importance in the maintenance of soil fertility.

#### Subjects of Instruction.

**10. Soils.**—Attention is given to the forces that decompose and disintegrate rock and to the influence of these forces and of the various kinds of rock on the resulting soil. The physical characters, such as water-holding capacity, capillarity, drainage, effect of mulches, temperature and weight, and the modification of these characters by tillage, cropping, and all operations of practical soil management, are discussed and exemplified in the classroom, laboratory, and field. Some attention is given to the classification of soils in the United

States, and especially in North Carolina. The physical, chemical, and bacteriological soil conditions are discussed in relation to each other and to their effects on soil fertility. Systems of maintaining the permanent productiveness of soils are studied. Three periods throughout the year. Required of Juniors. Prerequisite, Chemistry 90 and 92, and Physics 100. Associate Professor SHERWIN.

11. **Fertilizers.**—Sources, composition, availability, and value of various commercial and farm fertilizers. Comparative value of the elements of plant food in different carriers as shown by their productive capacity. Fertilization of all the principal crops of the State and of any special crops in which the class is interested will be discussed, considering amount, method, and time of application, as well as the most economical formula to use. Two periods, second and third terms. Required of Seniors. Prerequisite, Soils 10. Associate Professor SHERWIN.

12. **Farm Drainage.**—This includes both principles and practice of drainage. The student becomes familiar with the use of various drainage instruments and implements, as the course involves considerable field work in laying out systems of under-drains. Different methods of leveling and determining grade are discussed and practiced.

Determination of size of tile needed, depth and method of laying, influence of depth of tile and distance apart of drains on withdrawal of water from the soil, and all of these as influenced by texture and character of the soil, are considered. Drainage by means of open ditches and surface drainage by means of terraces will also be given attention. Two periods a week, first term. Required of Seniors in Agronomy. Elective for all other Seniors. Prerequisite, Soils 10. Associate Professor SHERWIN.

13. **Advanced Soils.**—In this course the student will be guided in the study of any line of Soils work he may choose, either along practical or scientific lines. Laboratory work will be given. Considerable reference will be made to Experiment Station literature with the aim of acquainting the student with the literature on the subject and with the methods of investigation used. Three periods a week throughout the year. Elective for Seniors. Prerequisite, Soils 10. Associate Professor SHERWIN.



**HORTICULTURE.****Equipment.**

The Department of Horticulture is provided with facilities for instruction which are singularly efficient in many respects; and additional ones which are to be expected in the near future will equip it with unexcelled means of teaching Horticulture in all its branches. At present, the offices, classrooms, laboratory, and storage spaces of the department are located in Patterson Hall, and additional working space is available in connection with the greenhouses under its control. The department also has the management of about twenty-five acres of land devoted to fruits and vegetables of all kinds, and of the college campus, covering from forty-five to fifty acres, which is in process of development in accordance with artistic and scientific principles of landscape design.

The laboratories are used for practice work in all methods of propagation of plants; the study of buds and twigs of fruit and ornamental plants; the study of vegetables, fruits, and nuts; the design of greenhouse structures, landscape plans and specifications; and the sorting, grading, and packing of horticultural products. A supply of necessary apparatus is on hand, and consists of knives; pruning shears and saws; grafting and budding tools; spray pumps, wheel hoes, and seed drills; fruit and vegetable packing tables; and market packages of all standard kinds, for use both indoors and out in the field. Practice work is an essential adjunct of every course. Student work under competent supervision is employed in all parts of the grounds.

Exceptional facilities for instruction in Pomology and Plant Breeding are possessed by the department in the management of the Horticultural Grounds, which contain from fifteen to twenty acres of land planted with the best varieties of all fruits which will grow in North Carolina. In these grounds there is an orchard each of apples, pears, peaches, pecans, and figs; a vineyard each of "bunch" and muscadine grapes; and smaller plantings of plums, persimmons, quinces, cherries, raspberries, blackberries, dewberries, strawberries, and other small fruits. The remaining and intermediate space is used for growing vegetables; the maintenance of a nursery for fruit and ornamental plants; and the ornamental planting about the dwelling situated near the middle front of the grounds, which, as a whole, are designed to serve as a model of a small fruit farm economically and tastefully arranged.

A separate plot of land covering about five acres is used entirely for vegetable gardening purposes. Here students are assigned plots of equal size, and are required to plan, plant, cultivate, and harvest vegetable crops—to apply the knowledge acquired in the classroom. In addition to the methods common to the trucking industry and the home garden, the growing of a large quantity of vegetables for the College Dining Hall furnishes an excellent opportunity for instruction in market-gardening practices.

#### Subjects of Instruction.

**20. Plant Propagation.**—A course in the study of the principles involved, and the methods employed, in the multiplication of plants. Seedage, separation and division, layerage, cuttage, and graftage are considered in turn. The student is given an opportunity to acquire skill in propagation by practicing the most common and approved methods used with vegetable, fruit, and ornamental plants. Three periods, second term; recitation, two hours; practice, two hours per week. Required of Sophomores. Mr. CRIDER.

**21. Vegetable Gardening.**—A course dealing with the principles and practices of the Home, Truck, and Market Gardening areas. Special attention is given to the Home Garden and Trucking Industry in North Carolina. The work consists in the selection of sites and soils; and treats of manures and fertilizers, sowing of seeds, handling of plants, transplanting and planting, construction and management of hotbeds and cold frames, and the culture, harvesting, storing, and marketing of all important vegetables. One period, second term; practice, two hours. Four periods, third term; recitation, three hours; practice two hours per week. Required of Sophomores. Prerequisites: Horticulture 20. Mr. CRIDER.

**22. Practical Pomology.**—A course treating of the location of orchards; the selection of sites and soils; the choice of varieties; the preparation of the land; and the planting, cultivation, fertilizing, pruning, harvesting, and marketing of North Carolina fruits. Practice consists in the inspection and examination of sites and soils; the making of orchard plans; laying out the orchard; handling and planting trees; training and pruning; and the exercise of modern methods of picking, grading, packing, and marketing fruits. Four periods, first term; recitation, three hours; practice, two hours. Two periods, second term; recitation, one hour; practice, two hours per week. Required of Juniors in Horticultural and Normal Divisions. Prerequisite: Horticulture 20. Professor PILLSBURY.

**23. Plant Breeding.**—A course in the study of the fundamental laws of plant breeding, and the application of principles to the practice of the most approved methods of selection, hybridization, origination and improvement of varieties of plants. Two periods, second term: recitation, two hours. Four periods, third term: recitation, two hours, practice four hours per week. Required of Juniors in Agronomy and Horticultural divisions. Prerequisites: Horticulture 20. Professor PILLSBURY.

**24. Systematic Pomology.**—A course which deals with the origin, evolution, and classification of varieties of fruits. Practice work consists in describing, identifying, classifying, and judging varieties of apples, pears, peaches, plums, grapes, and other fruits in season. Three periods, first term: recitation two hours, practice two hours per week. Required of Seniors in Horticultural Division. Prerequisite: Horticulture 22 and 23.

**25. Floriculture.**—A course which treats of the principles and practice of growing plants under glass. Practice consists in designing greenhouse structures, and the handling, culture, harvesting, and marketing of the principal greenhouse crops. Three periods, first term: recitation two hours, practice two hours per week. Required of Seniors in Horticultural Division. Prerequisite: Horticulture 20. Professor PILLSBURY.

**26. Landscape Gardening.**—A course in the study of the principles of the arts of design and their application to the design of landscapes. The principal styles of composition are considered and compared as to history, development, and adaptation. Practice consists in a study of landscape materials, and in mapping, designing plans and specifications, and in the execution of important parts of the practical work of improving grounds, such as grading, laying out drives and walks, and areas for planting, making lawns, and planting ornamental plants. Three periods, second and third terms: recitation two hours, practice two hours per week. Required of Seniors in Horticultural Division. Prerequisites: Horticulture 25. Professor PILLSBURY.

**27. Horticulture, Elective.**—A course designed to give the student an opportunity to elect and to pursue the study of some special line of horticultural investigation. Three periods, second and third terms: hours to be arranged. Open to Seniors in Horticulture only. Professor PILLSBURY.

**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, and a storeroom, a dark-room, and an incubator-room. All rooms are supplied with electricity, gas, and 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 fire-proof, 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.

**30. Elementary Botany.**—Weekly lectures, accompanied by laboratory work and reference reading regarding the algae, 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, first and second terms. Required of Freshmen. Professor FULTON and Mr. ROSENKRANS.

**31. 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 Freshmen. Professor FULTON and Mr. ROSENKRANS.

**32. 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 FULTON.

**33. 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. For Seniors. Professor FULTON.

**34. Bacteriology.**—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation and 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 FULTON and Mr. NORTON.

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

**36. Dairy Bacteriology.**—Lecture and text-book course covering the more important facts in the relation of bacteria to dairying. The laboratory course consists in demonstrating and supplementing the lecture course. Practice is given in pasteurizing milk and cream for market, and in making and using starters in butter and cheese-making. Three periods, second term. For Seniors. Mr. NORTON.

## ANIMAL HUSBANDRY.

### Equipment.

A new Animal Husbandry building will be ready for occupancy during the summer of 1912. This building has been constructed at a cost of twenty-five thousand dollars and is up to date in every way. The department will have classrooms, offices, record-room, and stock-judging room, furnishing excellent facilities in this respect for students in Animal Husbandry.

The live-stock equipment has been added to materially during the past year. A fine registered Percheron stallion and three high-grade mares have been purchased for horse work. These are all used for

farm work and breeding purposes as well as for class work. The dairy herd now consists of seventy-five head, of which about forty are cows in milk. Three leading breeds are represented, consisting of twelve high-grade Holstein cows and a registered bull, six pure-bred Ayrshire cows and a bull, twelve pure-bred Jerseys and a bull, the remainder being grade Jerseys and Guernseys. This gives splendid material for class work in the study of the dairy breeds.

Two Shorthorn, two Aberdeen Angus, and two Hereford steers are kept as material to be used in teaching methods of judging beef animals and for study of the leading beef breeds.

A herd of pure-bred swine has been established, consisting of the following breeds: Berkshire, Duroc Jersey, and Chester White. Good individuals have been selected and enough animals will be maintained to give the student a splendid opportunity for swine work.

The product of the dairy is sold as milk, butter, and cream to the College Dining Hall and to city customers.

**40. Breeds of Live Stock.**—A study of the origin, history, characteristics, adaptability, and popularity of the breeds of live stock. Every opportunity will be taken advantage of to teach the student the merits of the various breeds, and, when possible, classes of the breeds will be judged. Three periods per week, second and third terms. Required of Freshmen. Professor McNUTT.

**41. Animal Breeding.**—A study of the fundamental laws and principles underlying the science of breeding, and the application of these laws in breeding the different species of domestic animals. Three periods per week, third term. Required of Juniors. Professor McNUTT.

**42. Stock Feeding.**—A study of the composition of feeds and the food requirements of the domestic animals. The student will be required to become familiar with the fundamental principles so that he can compound suitable rations for the different classes of live stock. Especial emphasis will be laid upon practical problems in feeding. Three periods per week, second term. Required of Juniors. Text-book, Henry's *Feeds and Feeding*. Professor McNUTT.

**43. Live-stock Judging.**—A study of the score-card and its use. A comparison of the score-cards for the various breeds, and practical scoring. Methods and rules in judging the various classes of live stock. In practical judging the student will be required to give oral or written reasons to sustain his placing of the animals. Three periods per week, first term. Required of Juniors. Professor McNUTT.

**44. Live-stock Management.**—A study of the rules and regulations governing the importation of live stock into the United States, and the shipment of same in the United States. The feeding, care, and management of breeding and work stock, as well as fattening stock. Lecture course. Three hours per week throughout the year. Required of Seniors. Professor McNUTT.

**45. Advanced Animal Breeding.**—A study of the Flock, Herd, and Stud books, and the rules governing registration as laid down by the different breed associations. Pedigree work will be included to give the student a clear idea of the leading families and prominent individuals. Three periods per week, first term. Required of Seniors. Professor McNUTT.

**46. Advanced Stock Feeding.**—Continuation of Course 42, with especial emphasis laid upon practical feeding. The experimental work on feeding that has been done by the various experiment stations will be reviewed to give the student a clear conception of the importance and value of such work. Three periods each week, second term. Required of Seniors. Professor McNUTT.

**47. Market Classes and Grades of Meat.**—A study of the market classes and grades of beef cattle, sheep, and swine; also slaughtering, marketing, and meat cutting. The relative value of the cuts from the various parts of the carcass will be given due consideration. Three periods each week, third term. Required of Seniors. Professor McNUTT.

#### DAIRYING.

**Dairy Equipment.**—The dairy laboratory occupies about four thousand square feet of floor space in the basement 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, United States, 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 the lactometer is also used.

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.

48. **Dairying.**—Text-book and lecture course covering the fundamental principles of modern dairying. The laboratory work consists of practice in the use of modern dairy equipment. Each student is required to become familiar with the construction, care, and operation of the leading makes of cream separators. Proficiency is required of the student in testing and standardizing milk and cream, and in cream-ripening, churning, working, packing, and scoring butter. Four periods each week, first term. Required of Sophomores.  
Mr. SANBORN.

49. **Advanced Dairying.**—A study of the practical problems in dairy management. Dairy barn construction and arrangement of building and lots. The different phases of dairying will be studied from an economic standpoint. Three periods, first term. Professor McNUTT.

50. **Advanced Dairying.**—A study of the production of sanitary and certified milk. Dairy inspection with practice in scoring dairies. Milk inspection for adulterants and preservatives and butter scoring. Three periods a week, third term. Professor McNUTT.

#### POULTRY HUSBANDRY.

The poultry plant has thirty 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, and with grist and bone mills.

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



**51. 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. For Sophomores. Assistant Professor JEFFREY, Mr. TAYLOR.

**52. Poultry Husbandry.**—Theory and practice of judging fowls by score-card and comparison; comparisons of different systems of poultry keeping; artificial incubation and brooding. Three periods, third term. For Seniors. Assistant Professor JEFFREY, and Mr. TAYLOR.

### VETERINARY SCIENCE.

(Anatomy, Physiology, and Veterinary Medicine.)

For Course in Veterinary Medicine, see page 68.

#### Equipment.

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

The offices contain the usual office fixtures, besides a library of most of the standard works on veterinary medicine in English.

For use in classroom and laboratory, the department is supplied with mounted skeletons of man, of horse, and of cow; also numerous specimens of tumors, tuberculous organs, bony lesions of spavins, splints, ring bones, and side bones. Besides the collection illustrating diseased tissues, the department has a large collection of parasites which infest domestic animals.

The laboratories are provided with wall cases, work tables and desks, washing sinks, hot and cold water, gas burners, and electric lights. The laboratory for special work has microtome (for cutting sections of tissues for study with microscope), glass slides, stains, and the various materials required for making temporary and permanent mounts of healthy and diseased tissues. The larger 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, and casting harness and slings for larger animals.

**60. Animal Physiology.**—This subject during the Freshman year will include a study of the structures of the body and of the composition of foods. In the Sophomore year it will include a comparative

study of the bodily functions of man and of the domestic animals. The subject will be covered by lectures and recitations, demonstrations, and laboratory exercises. Two periods, second and third terms. Required of Freshmen. Two periods, first term. Required of Sophomores. Professor ROBERTS and Doctor SIMMS.

61. **Veterinary Medicine**—(a) **Veterinary Anatomy**.—Text-book, supplemented by lectures and illustrated by charts, models, skeletons, sketches, and dissections. Anatomy being a fundamental subject in any system of medicine, and essential to a thorough knowledge of live stock, the first term will be largely devoted to this study, special attention being given to the organs of digestion and locomotion, and such other parts as are of interest to the stock farmer. One period each week will be devoted to a clinic. Four periods, first term. Required of Juniors in Animal Husbandry Division. Professor ROBERTS and Doctor KOONCE.

(b) **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. One period each week will be devoted to a clinic. Four periods, second term. Required of Juniors in Animal Husbandry Division. Doctor SIMMS and Doctor KOONCE.

(c) **Veterinary Practice**.—Lectures on the most common diseases and injuries of domestic animals will be given. These lectures will be supplemented weekly by clinics, where drugs will be administered to sick animals and surgical operations performed. Four periods, third term. Required of Juniors in Animal Husbandry Division. Doctor SIMMS and Doctor KOONCE.

62. **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, and also to diseases attendant upon breeding animals. Three periods. Required of Seniors in Animal Husbandry Division. Professor ROBERTS and Doctor KOONCE.

63. **Histology**.—A microscopical study of the tissues of the body, treating of the cell as the unit of structure, and of its functions; also of tissues, their classification, and their relation to the structure of organs. From dissections, clinics, and proximity to slaughter-houses, abundance of histological material of various animals is received. Three periods. Required of Juniors in the Veterinary Division. Elective for Seniors. Professor ROBERTS and Doctor SIMMS.

*For agricultural students intending to pursue a veterinary course, opportunity will be given during their Junior and Senior years to elect subjects required in the Freshman and Sophomore years of such a course.*

**64. Veterinary Anatomy.**—This subject will deal with the study of the skeleton, including bones and joints, and of muscles and digestive organs. A complete dissection of the muscles of the horse will be made. Three periods. Required of Juniors in Veterinary Division. Doctor SIMMS.

**65. Materia Medica.**—A study of the drugs used in comparative medicine will consist of their classification, composition, physiological actions, and doses. Two periods, second and third terms. Required of Juniors in the Veterinary Division. Professor ROBERTS.

**66. Clinics.**—An essential part of the training of students in comparative medicine consists in seeing for himself animals suffering with the various diseases discussed in classroom. To this end abundant clinic material is available in the veterinary hospitals in Raleigh. Three periods. Required of Juniors in the Veterinary Division. Doctors KOONCE, ROBERTS, and SIMMS.

**67. Veterinary Anatomy.**—A continuation of course 64. A study of the respiratory, circulatory, and nervous systems will be made, with complete dissection of each in the horse. Three periods. Required of Seniors in the Veterinary Division. Professor ROBERTS.

**68. Veterinary Physiology.**—A comparative study of the bodily functions of the various domestic animals is made, with special reference to digestion, respiration, circulation, and secretion. Two periods. Required of Seniors in the Veterinary Division. Elective in all other Senior courses. Doctor SIMMS.

**69. Pathology and Bacteriology.**—A large number of specimens of diseased tissue already present in the museum and opportunity for collecting others from clinics and abattoirs insure plenty of material to demonstrate the various macroscopical and microscopical changes in organs and tissues due to disease. Especial attention is paid to the isolation and study of the pathogenic bacteria from the various organs of diseased animals. Three periods. Required of Seniors in the Veterinary Division. Doctor SIMMS.

**70. Materia Medica and Pharmacy.**—Course 66 will be continued along with prescription-writing and laboratory work in the preparation, compounding, and dispensing of medicines. Three periods, first term. Required of Seniors in Veterinary Division. Doctor SIMMS.

**71. Clinical Diagnosis.**—This subject is taught for the purpose of studying the methods for the examination of animals to detect and diagnose the various diseases affecting them. Three periods, second and third terms. Required of Seniors in Veterinary Division. Professor ROBERTS.

**72. Clinics.**—These will be given, as in the year previous, and will give the student opportunity of putting into practice the information he has gained from study of clinical diagnosis. In connection with the clinics autopsies are frequently held, giving the students excellent opportunities to observe changes in the body structures resulting from disease. Three periods. Required of Seniors in Veterinary Division. Doctors KOONCE, ROBERTS, and SIMMS.

#### ZOOLOGY.

**80. Zoology.**—An elementary study of all forms of animal life—regarding their general structure and classification, with particular reference to type examples of the principal groups of some economic importance—is given by text-book, laboratory work, and supplementary lectures. The first term's work is devoted to invertebrates, but with only a brief study of the true insects. The second term covers vertebrate animals. This course is planned to give the student a general knowledge of the animal kingdom and to lay a foundation for the more special subjects that are to follow. Two periods, first and second terms. Required of Sophomores. Associate Professor METCALF.

#### ENTOMOLOGY.

**81. 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. Two periods, third term, required of Sophomores; and two periods, first term, required of Juniors. Associate Professor METCALF.

**82. 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, three terms. For Seniors. Required in Horticultural Division, elective in other divisions. Associate Professor METCALF.

## CHEMISTRY.

90. **Inorganic Chemistry.**—Newell's *Inorganic 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. Laboratory work accompanies the classroom work. Three periods. Required of Freshmen. Professors WITHERS and Mr. SHERWOOD.

92. **Analytical Chemistry.**—W. A. Noyes' *Qualitative Analysis*. After the student has learned to separate and identify elements in unknowns, special attention is given to tests of special interest to agricultural students. Three periods. Required of Sophomores. Doctor WILLIAMS.

93. **Chemistry (Elective).**—During the Senior year the student may elect some work in the Chemistry Department from the following subjects: Organic Chemistry, Physiological Chemistry, Qualitative Analysis, Quantitative Analysis. These subjects are described more in detail under the courses in Chemistry beginning with No. 300.

94. **Organic Chemistry.**—Lectures and laboratory work. Remsen's *Organic Chemistry*. Two periods. Required of Juniors. Doctor RAY.

## PHYSICS.

100. **Elementary Physics.**—In this course special stress is laid upon the subjects of mechanics, liquids, gases, and heat. It includes the study of fundamental units, British and Metric standard measures, definitions of force, work and power, laws of motions, principles of machines, mechanics of fluids and gases, heat, and a brief introduction to the study of sound and light. For description of the Physical equipment, see page 105. Two periods. Required of Sophomores. Mr. LATANÉ.

## MATHEMATICS.

110. **Algebra.**—Wells' *New Higher Algebra*. Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; three periods, second term. Required of Freshmen. Prerequisite for first term, entrance requirements; for second term, the work of the first term, or, in case of failure, a term standing of 60 per cent or more.

and a final examination grade of at least 40 per cent on the work of the first term. Professor YATES, Mr. HARBELSON, Mr. ANGEL, and Mr. TUCKER.

111. **Plane Geometry.**—Wentworth's *Plane and Solid Geometry*. A complete course in plane geometry, including numerous original exercises. Two periods, second term; five periods, third term. Required of Freshmen. Prerequisite, entrance requirements. Professor YATES, Mr. HARBELSON, Mr. ANGEL, and Mr. TUCKER.

#### ENGLISH.

120. **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. PECKHAM.

121. **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. PECKHAM.

122. **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. Three periods, first and second terms. Required of Juniors. Professor HARRISON.

123. **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. Three periods, third term. Required of Juniors. Professor HARRISON.

124. **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. Two periods. Elective for Seniors. Professor HARRISON.

125. **Economics.**—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. Open to Seniors. Doctor SUMMEY.

#### 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, 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, humorous 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, by frequent repetitions, and by 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 deducted 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.

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.

130. **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; and a scientific reader. Three periods. Elective for Juniors and Seniors. Doctor RUBY.

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

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

#### SHOP AND DRAWING.

140. **Wood Shop.**—The use and care of ordinary woodworking and bench tools. Exercises in sawing, planing, and making joints. As much time as possible is spent in making models of small buildings, gates, etc. Required of Sophomores, second term, two periods per week. Mr. CLAY.\*

142. **Drawing.**—Elementary drawing, elementary projection, free-hand sketching and lettering. Geometrical problems. Freehand drawing. Two periods, first term. Required of Freshmen. Mr. COBURN.

#### MILITARY SCIENCE.

150. **Drill.**—Callisthenic exercises; bayonet exercises; military signaling; school of the soldier, squad, company, and battalion; ceremonies including inspection, parade, review, and guard mounting; guard duty; marches and minor tactics; attack and defense; gallery and range target practice. Three hours each week for the first and second terms; two hours each week for the third term. Captain PEACE and Cadet Officers of the Battalion.

151. **Tactics.**—Theoretical instructions in Infantry Drill Regulations, Field-service Regulations, Manual for Guard Duty, and Small Arms Firing Manual. One hour each week. Required of Sophomores. Captain PEACE.

\*For description of the shop equipment see page 94.



## SHORT COURSES IN AGRICULTURE.

In order to meet the necessities of young men who wish to prepare themselves for the industrial arts rather than for industrial science and art, the following short courses are offered. None of these courses, of course, lead to graduation, and they are not, in any sense, intended as preparatory courses to the regular four-year classes. They are designed simply to help young men better fit themselves, by a year or two of practical work under competent and interested supervision, for their chosen spheres of industrial activity.

Those students whose inclinations, limitations, or necessities lead them to take these shorter courses will be carefully drilled in the handicraft and mechanism of their art and in the application of elementary science to the farm, dairy, garden, and orchard.

### b. TWO-YEAR COURSE IN AGRICULTURE.

This course offers, in addition to the purely agricultural branches, introductory and cultural subjects, and thus enables the student to secure not only all the technical and practical work of the One-year Course, but Physiography, Physics, English, and Mathematics, in addition, and all the better prepares young men to become farmers, farm managers, and teachers of agriculture and allied branches in the public schools. A description of the equipment will be found on page 43.

#### First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture.....	2	2	2
Soils.....	--	2	2
Physiography.....	2	--	--
Principles of Plant Culture.....	--	--	2
Physics.....	2	2	2
Forge.....	2	2	--
Woodwork.....	2	2	2
Mathematics.....	5	5	5
English.....	3	3	3
Drill.....	3	3	3
<b>Totals.....</b>	<b>21</b>	<b>21</b>	<b>21</b>

## Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture.....	3	2	3
Soils and Fertilizers.....	3	3	..
Animal Husbandry.....	3	3	3
Dairying.....	..	..	4
Veterinary Science.....	3	..	..
Poultry Husbandry.....	..	3	3
Fruit Culture.....	3	1	..
Vegetable Gardening.....	..	..	3
Plant Life.....	2	..	..
Diseases of Plants.....	..	3	..
Entomology.....	..	2	2
English.....	3	3	3
Drill.....	3	3	2
Totals.....	23	23	23

**Agriculture (Two-year Course).—First Year:** A broad elementary introduction to the study of Agriculture, including the more important field crops of the State. The history, classification, adaptation, culture, harvesting, marketing, and uses of corn and small grain. Two hours for three terms. Professor NEWMAN and Mr. HODSON.

**Second Year:** Cotton, legumes, hay and forage plants, seeds and seed selection; farm equipment, farm management. Three hours first term, two hours second term, and three hours third term. Professor NEWMAN and Mr. HODSON.

**Physiography.**—A study of the natural agencies affecting the earth's surface: soil, water, air, and temperature, and their effect upon plants and animals. Two hours first term. Required of first-year students. Professor NEWMAN.

**Soils.**—**First Year:** An elementary study of soils; different types and classes in relation to earliness, warmth, water-holding capacity, drainage, weight, and fertilization. An elementary study of plant food in the soil, including humus and its effect on crop production. The proper use of plows and cultivators and their influence on the production of better crops. Two periods a week, second and third terms. Associate Professor SHERWIN.

**Second Year:** This will include a study of the soils of the State; their formation and classification into agricultural types; their physical properties; relation to moisture and air supply; best methods of conserving and regulating the soil moisture; principles and practice of drainage. The effect of different soil and crop treatments, such as rotation, cultivation, and fertilization, will be studied. Considerable attention will be given to humus, farm manures, and green manures, and to the use and home-mixing of fertilizers, with special reference to the time and methods of using and the best mixtures for the various crops on different types of soil. Three periods, first and second terms. Associate Professor SHERWIN.

**Principles of Plant Culture.—First Year:** A course in which the functions of the various parts of plants; the activities engendered by heat, cold, moisture, and light, in seedage and other methods of propagation; the effect of soil and climate, and the principles of plant propagation, training, and pruning, are considered. Practice work consists in laboratory exercises demonstrating the facts studied. Two periods, third term.

**Fruit Culture.—Second Year:** This course treats of fruit growing as applied to the different sections of the State and the possibilities embodied in its further development. A text-book on the general subject of fruit culture is supplemented by lectures on the leading fruits, dealing with the kind of soil for fruits and its preparation, laying out the orchard, varieties, methods of propagation, planting, cultivation, fertilizing, pruning, harvesting, and marketing.

Practical exercises are given in laboratory, orchards, and vineyards, which include budding, grafting, top-grafting; making of cuttings; pruning of fruit and ornamental trees; fruit bud studies; planting and transplanting; identification of varieties; packing; and handling of nursery stock. Three periods first term, one period second term. Mr. CRIDER.

**Vegetable Gardening.—Second Year:** This course treats of the trucking industry of the State and the growing of vegetables for home use. A text-book is used, supplemented by lectures on the growing, handling, and marketing of the leading vegetables.

Practical exercises are given in the laboratory and field which include germinative tests of seeds; seed sowing; methods of transplanting and culture; manipulation of garden tools; construction and management of hotbeds and cold-frames, and protection of plants from insects. Three periods, third term. Mr. CRIDER.

**Plant Life.**—The structure of the leading types of plants is studied and the general principles of nutrition, growth, reproduction, are discussed in an elementary and practical way. Second year. Two periods, first term. Mr. NORTON.

**Diseases of Plants.**—Practical instruction will be given concerning the chief fungous and bacterial diseases attacking farm crops, fruit trees, etc.; how to recognize them and how to prevent them, including instruction concerning the preparation of spraying mixtures. Second year. Three periods, second term. Professor FULTON.

**Animal Husbandry.**—Study of breeds, judging and management of live stock, animal breeding, and stock feeding. There will be lectures on all the above subjects, supplemented by practical work as far as possible. Second year. Three periods, first, second, and third terms. Professor McNUTT.

**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 becomes familiar with their construction and proficient in operating them.

The laboratory course is supplemented by 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 dairymen who handle dairy products, whether for home use or for commercial purposes. Four periods, third term. Mr. SANBORN.

**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. Second year. Three periods, second and third terms. Mr. JEFFREY. Mr. TAYLOR.

**Veterinary Science.**—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. Second year. Three periods, first term. Doctor ROBERTS and Doctor KOONCE.

**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, second term; two periods, third term. Associate Professor MERCALF.

**Physics.**—Properties of matter, fundamental units, British and metric standard measures, mechanics, liquids, gases, heat, introduction to light and sound. First Year. Two periods a week, three terms. Mr. LATANÉ.

**Algebra.**—Wells' *New Higher Algebra*. A thorough treatment of the fundamental conceptions and operations of Elementary Algebra, with special attention to factoring, fractions, simple equations, simultaneous equations in two or more unknowns, and problem solving. First year. Five periods. Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

**English.**—This is a thoroughly practical course in the elements of grammar and of composition, especially spelling, sentence and paragraph structure, and letter-writing. Some reading is done in class, and supplementary reading also is assigned for private study. First year. Three hours a week. Doctor SUMMEY and Mr. PECKHAM.

**120. 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. Second year. Three periods. Required of Freshmen. Professor HARRISON, Doctor SUMMEY, Mr. PECKHAM.

**Wood Shop.**—The use and care of ordinary woodworking and bench tools. Exercises in sawing, planing, and making joints. As much time as possible is spent in making models of small buildings, gates, etc. First and second years. Mr. CLAY.

**Forge Shop.**—This course is designed to teach the use of the ordinary blacksmith's tools, and the making of the more common forgings, such as chains, hooks, etc. Required of One-year Agricultural Course, first term. Mr. WHEELER.

**Drill.**—Calisthenic exercises; bayonet exercises; military signaling; school of the soldier; squad, company, and battalion ceremonies, including inspection, parade, review, and guard mounting; guard duty; marches and minor tactics; gallery and range target practice. First and second years. Three hours each week for the first and second terms. Two hours each week required of all classes except Seniors. Captain PEACE and Cadet Officers of the Battalion.

## c. TWO-YEAR COURSE IN VETERINARY MEDICINE.

As a consequence of the frequent inquiries concerning a course in Veterinary Medicine at this College and in a realization of the need of competent veterinarians for the live-stock and meat and milk inspection interests of the South, the first two years work in such a course is here outlined.

This arrangement is somewhat similar to the courses in human medicine given at other institutions in the State not offering a complete course.

This course is correlated with courses in other Veterinary Colleges, so that credit may be obtained in them for the subjects taken here.

There are a number of advantages to be gained by giving such a course in Veterinary Medicine at an Agricultural College where several of the fundamental subjects, especially along live-stock lines, are so aptly given.

Opportunity is given to Agricultural students in their Junior and Senior years to elect sufficient veterinary subjects to obtain credit for Freshman and Sophomore years in a Veterinary Course. See page 57.

For entrance requirements and fees, see pages 25 and 28.

## FIRST AND SECOND YEARS IN VETERINARY MEDICINE.

## First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Anatomy, 160, and Clinics, 161.....	3	3	3
Histology, 162.....	3	3	3
Materia Medica, 163.....	--	2	2
Physiology, 164.....	2	--	--
Botany, 165.....	3	3	3
Chemistry, 169.....	3	3	3
English, 168.....	3	3	3
Agriculture, 167.....	3	--	--
Breeds, 166.....	--	3	3
Drill.....	3	3	2
Totals.....	23	23	22

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Anatomy, 170, and Clinics, 171.....	3	3	3
Pathology and Bacteriology, 172.....	3	3	3
Materia Medica and Pharmacy, 173.....	3	--	--
Physiology, 174.....	2	2	2
Clinical Diagnosis, 175.....	--	3	3
Chemistry, 176.....	3	3	3
Physics, 177.....	2	2	2
Zoology, 178.....	2	2	--
Dairying, 181.....	--	--	4
Feeding, 179, and Judging, 180.....	3	3	--
Drill.....	3	3	2
Totals.....	24	24	24

160. **Veterinary Anatomy.**—This subject will deal with the study of the skeleton, including bones and joints, and of muscles and digestive organs. A complete dissection of the muscles of the horse will be made. Three periods. Required of First-year men in Veterinary Medicine. Doctor SIMMS.

161. **Clinics.**—An essential part of the training of students in comparative medicine consists in seeing for himself animals suffering with the various diseases discussed in the classroom. To this end abundant clinic material is available in the veterinary hospitals in Raleigh. Three periods. Required of First-year men in Veterinary Medicine. Doctors ROBERTS, KOONCE, and SIMMS.

162. **Histology.**—A microscopical study of the tissues of the body, treating of the cell as the unit of structure, and of its functions; also of tissues, their classification and their relation to the structure of the organs. From dissections, clinics, and proximity to slaughter-houses, abundance of histological material of various animals is received. Three periods. Required of First-year men in Veterinary Medicine. Professor ROBERTS and Doctor SIMMS.

163. **Materia Medica.**—A study of the drugs used in comparative medicine will consist of their classification, composition, physiological actions, and doses. Two periods, second and third terms. Required of First-year men in Veterinary Medicine. Professor ROBERTS.

**164. Physiology.**—This study will include a comparative study of the body functions of man and the domestic animals. The subject will be covered by lectures and recitations, demonstrations and laboratory exercises. Two periods. First term. Required of First-year men in Veterinary Medicine. DOCTORS ROBERTS and SIMMS.

**165. 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 First-year men in Veterinary Medicine. PROFESSOR FULTON and Mr. ROSENKRANS.

**166. Breeds of Live Stock.**—A study of the origin, history, characteristics, adaptability, and popularity of the breeds of live stock. Every opportunity will be taken advantage of to teach the student the merits of the various breeds, and, when possible, classes of the breeds will be judged. Three periods per week, second and third terms. Required of First-year men in Veterinary Medicine. PROFESSOR McNUTT and Mr. SANBORN.

**167. Agriculture.**—Elementary and popular lectures introductory to the subject of Agriculture in its broad sense. The simpler properties of soils; tillage, fertilizers, conservation of fertility; seed selection; crops of North Carolina, rotation, etc., will be briefly considered by lecture and practical demonstration in the laboratory and in the field. Three periods, first term. Required of First-year men in Veterinary Medicine. PROFESSOR NEWMAN.

**168. Composition and Rhetoric.**—After a review of grammatical principles, especial attention is given to the selection of subjects and the plannings 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 First-year men in Veterinary Medicine. PROFESSOR HARRISON, DOCTOR SUMMEY, Mr. PECKHAM.

**169. Inorganic Chemistry.**—Brownlee's *First Principles 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. Laboratory work accompanies the classroom work. Three periods. Required of First-year men in Veterinary Medicine. Professor WITHERS, Doctor WILLIAMS, and Mr. PATE.

170. **Veterinary Anatomy.**—A continuation of course 160. A study of the respiratory, circulatory, and nervous systems will be made, with complete dissection of each in the horse. Three periods. Required of Second-year men in Veterinary Medicine. Doctor ROBERTS.

171. **Clinics.**—These will be given as in the year previous and will give the student opportunity of putting into practice the information he has gained from the study of clinical diagnosis. In connection with the clinics, autopsies are frequently held, giving the students excellent opportunities to observe changes in body structure resulting from disease. Three periods. Required of Second-year men in Veterinary Medicine. Doctors ROBERTS, KOONCE, and SIMMS.

172. **Pathology and Bacteriology.**—A large number of specimens of diseased tissue already present in the museum and opportunity for collecting others from clinics and abattoirs insure plenty of material to demonstrate the various macroscopical and microscopical changes in organs and tissues due to disease. Especial attention is paid to the isolation and study of pathogenic bacteria from the various organs of diseased animals. Three periods. Required of Second-year men in Veterinary Medicine. Doctor SIMMS.

173. **Materia Medica and Pharmacy.**—Course 163 will be continued with prescription writing and laboratory work in the preparation, compounding and dispensing of medicines. Three periods, first term. Required of Second-year men in Veterinary Medicine. Doctor SIMMS.

174. **Veterinary Physiology.**—A comparative study of the bodily functions of the various domestic animals is made, with special reference to digestion, respiration, circulation, and secretion. Two periods. Required of Second-year men in Veterinary Medicine. Professor ROBERTS and Doctor SIMMS.

175. **Clinical Diagnosis.**—This subject is taught for the purpose of studying the methods for the examination of animals to detect and diagnose the various diseases affecting them. Three periods, second and third terms. Required of Second-year men in Veterinary Medicine. Professor ROBERTS.

176. **Organic Chemistry.**—Lectures and laboratory work. Moore's *Outlines of Organic Chemistry*. Three periods. Required of Second-year men in Veterinary Medicine. Professor WITHERS.

**177. 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 study of light. Two periods. Required of Second-year men in Veterinary Medicine. Mr. LATANÉ.

#### ZOOLOGY.

**178. Zoology.**—An elementary study of all forms of animal life—regarding their general structure and classification, with particular reference to type examples of the principal groups of some economic importance—is given by text-book, laboratory work, and supplementary lectures. The first term's work is devoted to invertebrates, but with only a brief study of the true insects. The second term covers vertebrate animals. This course is planned to give the student a general knowledge of the animal kingdom and to lay a foundation for the more special subjects that are to follow. Two periods, first and second terms. Required of Second-year men in Veterinary Medicine. Associate Professor METCALF.

**179. Stock Feeding.**—A study of the composition of feeds and the food requirements of the domestic animals. The student will be required to become familiar with the fundamental principles so that he can compound suitable rations for the different classes of live stock. Especial emphasis will be laid upon practical problems in feeding. Three periods per week, first term. Required of Second-year men in Veterinary Medicine. Text-book, Henry's *Feeds and Feeding*. Professor McNUTT.

**180. Live-stock Judging.**—A study of the score-card and its use. A comparison of the score-card for the various breeds, and practical scoring. Methods and rules in judging the various classes of live stock. In practical judging the student will be required to give oral or written reasons to sustain his placing of the animals. Three periods per week, second term. Required of Second-year men in Veterinary Medicine. Professor McNUTT.

**181. Dairying.**—Text-book and lecture course covering the fundamental principles of modern dairying. The laboratory work consists of practice in the use of modern dairy equipment. Each student is required to become familiar with the construction, care, and operation of the leading makes of cream separators. Proficiency is required of the student in testing and standardizing milk and cream, and in cream-ripening, churning, working, packing, and scoring butter. Four periods each week, third term. Required of Second-year men in Veterinary Medicine. Mr. SANBORN.

## MILITARY SCIENCE.

150. **Drill.**—Calisthenic exercises; bayonet exercises; military signaling; school of the soldier; squad, company and battalion ceremonies, including inspection, parade, review, and guard mounting; guard duty; marches and minor tactics; gallery and range target practice. Three hours each week for the first and second terms. Two hours each week required of all classes except Seniors. Seniors may elect either the drill or three hours extra in some other subject in its place. Captain PEACE and Cadet Officers of the Battalion.

## ONE-YEAR COURSE IN AGRICULTURE.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture.....	3	2	3
Soils and Fertilizers.....	3	3	..
Animal Husbandry.....	3	3	3
Dairying.....	..	..	4
Veterinary Science.....	3	..	..
Poultry Husbandry.....	..	3	3
Fruit Culture.....	3	1	..
Vegetable Gardening.....	..	..	3
Plant Life.....	2	..	..
Diseases of Plants.....	..	3	..
Entomology.....	..	2	2
Woodwork.....	2	2	2
English.....	3	3	3
Drill.....	3	3	2
Totals.....	25	25	25

**Agriculture.**—The course in Elementary Agriculture will consist of lectures and recitations on crops, farm equipment, and farm machinery. One period per week will be devoted to practical exercises, including the identification and habit of growth of farm crops and the drawing of plans for farms and farm buildings. The work will be made practical and will be suited to the needs of the student. Three periods, first term; two periods, second term; three periods, third term. Professor NEWMAN and Mr. HOBSON.

**Soils and Fertilizers.**—This will include the study of the soils of the State, their formation and classification into agricultural types; their physical properties, relations to moisture and air supply; best methods of conserving and regulating the soil moisture; principles and practice of drainage; effect of different soil and crop treatments, such as rotation, cultivation, and fertilization. Considerable attention will be given to humus, farm manures and green manures, and the use and home-mixing of fertilizers, with special reference to the time and methods of using and the best mixtures for the various crops on the different types of soil. Three periods, first and second terms. Associate Professor SHERWIN.

**Animal Husbandry.**—Study of breeds, judging and management of live stock, animal breeding, and stock feeding. There will be lectures on all the above subjects, supplemented by practical work as far as possible. Three periods, first, second, and third terms. Professor McNUTT.

**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 becomes familiar with their construction and proficient in operating them.

The laboratory course is supplemented by 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. Four periods, third term. Mr. SANBORN.

**Veterinary Science.**—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. Three periods, first term. Doctor ROBERTS and Doctor KOONCE.

**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, Mr. TAYLOR.

**Fruit Culture.**—This course treats of fruit growing as applied to the different sections of the State and the possibilities embodied in its further development. A text-book on the general subject of fruit culture is supplemented by lectures on the leading fruits, dealing with the kind of soil for fruits and its preparation, laying out the orchard, varieties, methods of propagation, planting, cultivation, fertilizing, pruning, harvesting, and marketing.

Practical exercises are given in laboratory, orchards, and vineyards, which include budding, grafting, top-grafting; making of cuttings; pruning of fruit and ornamental trees; fruit bud studies; planting and transplanting; identification of varieties; packing; and handling of nursery stock. Three periods, first term. Mr. CRIDER.

**Vegetable Gardening.**—This course treats of the trucking industry of the State, and the growing of vegetables for home use. A text-book is used, supplemented by lectures on the growing, handling, and marketing of the leading vegetables.

Practical exercises are given in the laboratory and field which include germinative tests of seeds; seed sowing; methods of transplanting and culture; manipulation of garden tools; construction and management of hotbeds and cold-frames, and protection of plants from insects. Three periods, third term. Mr. CRIDER.

**Diseases of Plants.**—Practical instruction will be given concerning the chief fungous and bacterial diseases attacking farm crops, fruit trees, etc.; how to recognize them and how to prevent them, including instruction concerning the preparation of spraying mixtures. Three periods, second term. Professor FULTON and Mr. NORTON.

**Plant Life.**—The structure of the leading types of plants is studied and the general principles of nutrition, growth, reproduction, are discussed in an elementary and practical way. Two periods, first term. Mr. NORTON and Mr. ROSENKRANS.

**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, second term; two periods, third term.

**Wood Shop.**—The use and care of ordinary woodworking and bench tools. Exercises in sawing, planing, and making joints. As much time as possible is spent in making models of small buildings, gates, etc. Two hours the three terms. Mr. CLAY.

**English.**—This is a thoroughly practical course in the elements of grammar and of composition, especially spelling, sentence and paragraph structure, and letter-writing. Some reading is done in class, and supplementary reading also is assigned for private study. Three hours a week. Required of one-year students. Doctor SUMMEY and Mr. PECKHAM.

**Physics.**—Properties of matter, fundamental units, British and metric standard measures, mechanics, liquids, gases, heat, introduction to light and sound. Mr. LATANÉ.

**Drill.**—Calisthenic exercises; bayonet exercises; military signaling; school of the soldier; squad, company and battalion ceremonies, including inspection, parade, review, and guard mounting; guard duty; marches and minor tactics; gallery and range target practice. Three hours each week for the first and second terms. Two hours each week required of all classes except Seniors. Seniors may elect either the drill or three hours extra in some other subject in its place. Captain PEACE and Cadet Officers of the Battalion.

## **WINTER SHORT COURSES IN AGRICULTURE.\***

### **SIX-WEEKS COURSE IN GENERAL AGRICULTURE.**

**Begins January 6 and Ends February 15, 1913.**

The College is frequently called upon to supply young men to take charge of farms of wealthy owners, and 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 are 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. This course is meant to help those (1) who want to cultivate their own farms with more knowledge and who want to keep informed as to recent improvements and recent farm literature; (2) who want to improve their teaching of agricultural subjects; (3) who want to specialize for a few weeks in some particular phase of farm industry.

#### **EQUIPMENT.**

The new Agricultural Building is devoted entirely to agriculture, and contains laboratories and classrooms 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 department of the School of Agriculture 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 Six-weeks Course, and board may be had in the mess-hall for \$2.75 per week. The College will furnish lodging in the dormitories free if there is room. Room in the College buildings is very limited this year. Students who expect to room in the dormitories should provide themselves with bed cover, sheets, pillow-cases, and towels.

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\*Details will be announced in Winter Course Circular, which is published in November of each year.

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.

#### ADMISSION.

No examinations are required for entrance to the Six-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 meetings of students for their mutual improvement.

The regular work of the Six-weeks Course begins January 6th, but all should arrive the day before, in order that board and room may be arranged for, and so that each man may be ready for the work when it begins.

Should further information be desired, either the President or the Professor of Agriculture will take pleasure in furnishing it.

### OUTLINE OF SIX-WEEKS COURSES.

#### GENERAL AGRICULTURE.

Professor Newman and Mr. Hodson.

**Farm Crops.**—Selection of crops to be grown, and their economic relation to farm operations; preparation and cultivation; planting; seed selection and plant breeding on the farm; studies of the staple crops; corn, small grain, cotton, and legumes; special crops to be grown in association with the live-stock industry.

**Farm Equipment and Farm Management.**—Selection and laying out of farm; fences, roads, houses; tools and machinery; rotation; farming as a business.

#### SOILS AND FERTILIZERS.

Professor Sherwin.

This will include a study of the soils of the State; their formation and classification into Agricultural types; their physical properties; relation to moisture and air supply; best methods of conserving and regulating the soil moisture; principles and practices of drainage.

The effect of different soil and crop treatments, such as rotation, cultivation, and fertilization, will be studied. Considerable attention



will be given to humus, farm manures and green manures, and to the use and home-mixing of commercial fertilizers, with special reference to the time and methods of using and the best mixtures for special crops on different types of soil.

#### AGRICULTURAL BOTANY.

**Professor Fulton.**

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, and 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.

#### BREEDS OF LIVE STOCK AND STOCK JUDGING.

**Professor McNutt and Mr. Sanborn.**

Lectures on this subject will treat of the characteristics of the different breeds of live stock.

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.

**Mr. Sanborn.**

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, retailing milk, making cottage cheese and skim-milk buttermilk, pasteurizing milk and cream, making and using starters, and making tests of all sorts of dairy products, and standardizing milk and cream.

#### FEEDS AND FEEDING AND STOCK RAISING.

**Professor McNutt.**

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, and suggestions as to the best and most economical feeds for the different classes of live stock.

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

#### DAIRY EQUIPMENT.

The dairy laboratories occupy about 4,000 feet of floor space on the ground floor of the new Agricultural Building, besides the locker-rooms, toilet and bathrooms on the same floor, and the dairy lecture-room on the first floor, used by dairy students.

The main laboratory is 33 x 57 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 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.

Recently a new dairy barn has been erected which is a model in dairy-barn construction, embodying every feature that goes to make a barn convenient and sanitary.

#### DISEASES OF LIVE STOCK.

##### Doctors Roberts and Simms.

To maintain the usefulness of animals and to advance the live-stock interests, all who handle live stock should have some knowledge of the causes of disease and the nursing of sick animals.

A general conception of the structures of the body and their uses being essential to competent judging and feeding of animals, as well as to a knowledge of disease, a short time will be given to this subject. The structures will be divided into groups, so that in a limited time one may gain a fair idea of the composition of the body. Comparisons will be made of the structures of the various farm animals with those of man. Mounted skeletons of the horse, cow, and man, in the lecture-room, enable the student readily to become familiar with this part of the body.

The lectures will include the care and management of live stock to prevent disease, and the nature, causes, and treatment of the more common diseases and injuries.

One period each week will be devoted to a clinic, where animals will be treated medicinally and operated upon. During the course there will be a practical demonstration of the tuberculin test upon the dairy herd.

### HORTICULTURE.

Professor Pillsbury and Mr. Crider.

The course includes both lectures and field work, and is made especially applicable to North Carolina conditions.

**Fruit Culture.**—This 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 our leading fruits, which deal with the kind of soil, preparation of soils for fruits, and with varieties, planting, cultivation, fertilization, pruning, harvesting, and marketing. Special emphasis is laid on the home fruit garden.

**Vegetable Gardening.**—Lectures on the best methods of growing the leading vegetables for market and home use.

**Laboratory Work.**—Practice in plant propagation, such as budding, grafting, top grafting, pruning of fruit and ornamental trees; fruit-bud studies; planting and transplanting of trees and vegetables; construction of cold-frames and hotbeds.

**Equipment.**—The Horticultural Department is well equipped for this work. The College has a very complete fruit plantation, which includes all the standard varieties of the following fruits: apple, pear, peach, plum, cherry, quince, persimmon, pecan, fig, muscadine grapes, fox grapes, raspberries, dewberries, and strawberries; also a nursery where various methods of budding and grafting are carried on.

### ENTOMOLOGY.

Associate Professor Metcalf.

The course in Entomology is intended to teach students the general facts concerning the common injurious and beneficial insects, with which every one should be familiar.

Insect injury to farm crops, fruit, and vegetables amounts annually to thousands and even millions of dollars. A conservative estimate has shown that fully 10 per cent of the values 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 course will consist of a number of lectures, illustrated by specimens, photographs, and charts, to familiarize the student with the principal insects affecting general farm crops and fruit trees. Field observations will be made to study insects that may be found during January and February. The preparation and application of various spray mixtures for controlling insects, including the use of spraying apparatus, will be made a special feature of the work.

#### POULTRY RAISING.

Mr. Jeffrey and Mr. Taylor.

The subject of poultry raising will be considered from the farm standpoint. Instruction will include lectures and work with the fowls. Students will be told what to do and how to do it, and will also be required to do the work.

Instruction will be given in poultry-house construction, the breeds of fowls best suited to the farm, and their breeding, feeding, and management. Egg production and the production of market poultry will receive special attention. The former will be considered both from the standpoint of breeding and feeding, and the results obtained at our own and other Experiment Stations will be discussed. Market poultry will include the production of broiler or frying-size chickens, roasters, and capons. Incubation and brooding, both natural and artificial, will also be studied.

The Poultry Department is equipped with thirty breeding pens of several different types; a good incubator cellar, and several different makes of incubators; a brooder-house and both indoor and outdoor brooders of both the heated and fireless types, and a feed-room with steam engine and both grist and bone mills. Good specimens of ten different varieties of poultry best suited to farm requirements are kept so that students may become familiar with the requirements of the different breeds.

Students wanting to specialize in poultry will be given extra work in this department, taking charge of a pen of fowls, operating an incubator, raising chicks in a brooder, and keeping all the records necessary in poultry work.

#### ONE-WEEK COURSE IN FARM DRAINAGE.

This course is intended to meet the needs of farmers who want instruction in practical drainage. Methods of leveling which the average farmer can practice on his land are discussed and practiced. It is intended to show where to drain, how to get proper grades and

size of tile needed, and how to lay the tiles. The work is mostly practice and is adapted to the needs of the average farmer who wishes to learn more about draining the wet parts of his land. It does not give information regarding projects which are properly engineering problems.

This course will be given beginning November 30, 1912.

For further information, write to M. E. SHERWIN, West Raleigh, N. C.

#### AGRICULTURAL EXTENSION.

The Department of Agricultural Extension was organized July 1, 1909. This department was and is made possible by the help of the General Educational Board in the United States. The work is closely correlated with that of the United States Department of Agriculture. The object of this department is to link the scientific agricultural work of the College and Station to the practical work on the farms of the State. Each year the trained scientific workers of America add to the fund of information needed by progressive farmers. The object of this department is to carry this information to the busy men on the farm, and to help in the teaching of farm science in our schools. This is done by addresses to farmers, by farm schools held in different sections, holding seed-corn days, organizing boys' corn clubs, and in such other ways as time and occasion may permit. Professor I. O. SCHAUB.

## ENGINEERING COURSES.

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### Four-year Courses in

- II. Civil Engineering.
- III. Mechanical Engineering.
- IV. Electrical Engineering.
- V. Chemistry.

### 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 preëminently a technical course; but 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, 230†.....	2	2	2
Woodwork, 235.....	2	2	2
Forge-work, 236.....	2	2	--
Foundry, 237.....	--	--	2
Algebra, 340.....	5	3	--
Geometry, 341.....	--	2	5
Physics, 280.....	4	4	4
Physical Laboratory, 282.....	1	1	1
Composition and Rhetoric, 360.....	3	3	3
Military Drill, 390.....	3	3	2
Totals.....	22	22	21

### Sophomore Year.

Architecture, 220.....	2	--	--
Architectural Drawing, 221.....	2	2	2
Geometry, 342.....	5	--	--
Advanced Algebra, 343.....	--	3	--
Trigonometry, 344.....	--	2	5
Descriptive Geometry, 200.....	--	2	2
Physics, 281.....	2	2	2
Inorganic Chemistry, 300.....	3	3	3
Inorganic Chemistry (laboratory), 301.....	2	2	2
American Literature, 361.....	3	3	3
Military Drill, 390.....	3	3	2
Military Tactics, 391.....	1	1	1
Totals.....	23	23	22

\*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.
Road Building, 212.....	1	1	1
Surveying, 202, 206.....	2	2	2
Surveying (field work), 207.....	2	2	2
Construction, 205.....	2	--	--
Topographical Drawing, 200, 203.....	2	2	2
Graphic Statics, 201.....	--	2	2
Mechanics, 204.....	3	3	3
Analytical Geometry, 345.....	5	2	--
Calculus, 346.....	--	3	5
English, 362, 363.....	3	3	3
Military Drill, 390.....	3	3	2
Spanish (elective), 372.....	3	3	3
Totals.....	23	23	22

## Senior Year.

Mechanics of Materials, 214.....	3	--	--
Roofs and Bridges, 209.....	3	--	--
Bridge Design, 210.....	--	3	3
Municipal Engineering, 211.....	--	2	2
Surveying (field work), 208.....	2	--	--
Hydraulics, 216.....	--	2	2
Calculus, 346.....	3	--	--
Railroad Engineering, 206.....	3	3	3
Reinforced Concrete, 214.....	--	2	2
Astronomy, 212.....	--	2	2
Laboratory, 217.....	--	2	2
Mechanics, 203.....	2	--	--
English Literature, 364.....	2	2	2
Economics, 380.....	1	1	1
Elect one of the following:			
Military Drill, 390.....	3	3	2
Modern Languages, 370, 372.....	3	3	3
Totals.....	22	22	22



## CIVIL ENGINEERING.

## Equipment.

There is a complete equipment of all instruments necessary to civil engineering field work. The classrooms, drawing-rooms, and laboratories are in Winston Hall.

## Subjects of Instruction.

**200. Descriptive Geometry, Stereotomy.**—Text-book, lectures, problems, and completed drawings. Two periods, second and third terms. Required of Sophomores in Civil Engineering. Assistant Professor MANN and Mr. POOLE.

**201. 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 Engineering. Assistant Professor MANN.

**202. Surveying.**—Land surveying, leveling, elements of triangulation, topographical surveying, roadmaking. Merriman's *Land Surveying*. Two periods, first term. Required of Juniors in Civil Engineering. Assistant Professor MANN.

**203. Topographical Drawing.**—Conventional signs, computations, forms of field notes, methods of platting, completed map from field notes. Two periods. Required of Juniors in Civil Engineering. Assistant Professor MANN.

**204. 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. Three periods. Required of Juniors in Civil Engineering. Two periods, first term. Required of Seniors. Assistant Professor MANN.

**205. Construction.**—Masonry, foundations, railroads, dams, retaining walls, arches, etc. Baker's *Masonry Construction*. Lectures. Two periods, first term. Required of Juniors in Civil Engineering. Assistant Professor MANN.

**206. 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 Engineering. Three periods. Required of Seniors in Civil Engineering. Assistant Professor MANN.

**207. Surveying.**—Field work. Use of instruments, compass, level, transit, and plane table. Practical work in land surveying, topogra-

phy, leveling, railroad surveying, working up notes, and platting. Two periods. Required of Juniors in Civil Engineering. Assistant Professor MANN, Mr. POOLE, and Mr. TUCKER.

208. **Surveying.**—Field work. Triangulation and topography, surveys for sewers, waterworks, etc. Two periods, first term. Required of Seniors in Civil Engineering. Assistant Professor MANN, Mr. POOLE, Mr. TUCKER.

209. **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. Mr. POOLE.

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

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

212. **Road Building.**—Text-book on construction of roads, streets and pavements. Lectures on practical roadmaking in North Carolina. One period. Required of Juniors in Civil Engineering. Professor RIDDICK.

213. **Astronomy.**—Determination of azimuth, latitude and longitude, and time. Comstock's *Astronomy for Civil Engineers*. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

214. **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. Assistant Professor MANN.

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

216. **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 Civil Engineering. Two periods, second and third terms. Required of Seniors in Mechanical and Electrical Engineering. Professor RIDDICK.

217. **Laboratory.**—Tests of cement and other materials. Hydraulic measurements. Two periods, second and third terms. Required of Seniors in Civil Engineering. Mr. MANN, Mr. POOLE.

**ARCHITECTURE.**

**220. 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.

**221. Architectural Drawing.**—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings. Two periods. Required of Sophomores in Civil Engineering. Assistant Professor MANN and Mr. POOLE.

## FOUR-YEAR COURSE IN MECHANICAL ENGINEERING.

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The regular four-year course in Mechanical Engineering offers a training in the fundamental principles of design, construction, manufacture, and operation of all classes of standard and special machinery, and their economic application to railroads, steamships, mills, shops, factories, and power plants, as well as in the technical and executive management of the manufacturing and transportation industries. To this end the course of instruction is as broad as is possible to give in a technical school.

The course begins with a thorough training in mathematics, physics, and chemistry as a foundation for the appropriate technical work which is developed along several parallel lines. Applications of these fundamental sciences to the physical properties of the materials of construction, especially the metals and their practical manipulation, lead through the courses in mechanics, resistance of materials, shop processes, the materials-testing laboratory, drafting and kinematics, to the principles of design, which are fixed by application to the design of machinery for the execution of any kind of process in which machinery is either absolutely essential or more economical than corresponding hand execution of the same process. The principles underlying the performance of machinery are developed by courses in thermodynamics, mechanics, and hydraulics, with experimental laboratory demonstrations. The instruction in the performance, design, and manufacture of machine and power units in the classroom and laboratory, supplemented by visits to power plants and factories, is the basis of the work on the design of plants and mills.

To success in any one of these particular branches or phases of this profession a thorough technical training is absolutely indispensable, for it supplies the broad, general foundation, which must in its turn be supplemented by practical experience and by contact with the special line of work chosen.

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, 230.....	2	2	2
Woodwork, 235.....	2	2	2
Forge-work, 236.....	2	2	--
Foundry, 237.....	--	--	2
Algebra, 340.....	5	3	--
Geometry, 341.....	--	2	5
Physics, 280.....	4	4	4
Physical Laboratory, 282.....	1	1	1
Composition and Rhetoric, 360.....	3	3	3
Military Drill, 390.....	3	3	3
Totals.....	22	22	22

Sophomore Year.

Descriptive Geometry, 231.....	2	--	--
Mechanical Drawing, 232.....	--	2	2
Foundry, 237.....	2	--	--
Pattern-making, 238.....	--	2	2
Geometry, 342.....	5	--	--
Advanced Algebra, 343.....	--	3	--
Trigonometry, 344.....	--	2	5
Physics, 281.....	2	2	2
Physical Laboratory, 283.....	1	1	1
Inorganic Chemistry, 300.....	3	3	3
Inorganic Chemistry (laboratory), 301.....	2	2	2
American Literature, 361.....	3	3	3
Military Drill, 390.....	3	3	2
Military Tactics, 391.....	1	1	1
Totals.....	24	24	23

## Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Steam Engines and Boilers, 241.....	3	3	3
Mechanics, 250.....	2	2	2
Machine Design, 233.....	2	2	2
Machine Shop, 239.....	2	2	2
Electrical Engineering, 285.....	2	2	2
Electrical Laboratory, 290.....	1	1	1
Analytical Geometry, 345.....	5	2	..
Calculus, 346.....	..	3	5
English, 362, 363.....	3	3	3
Military Drill, 390.....	3	3	2
German (elective), 370.....	3	3	3
Totals.....	23	23	22

## Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Applied Mechanics, 251.....	3	--	--
Mechanics of Materials, 252.....	--	2	2
Machine Design, 234.....	3	2	2
Machine-shop Work, 240.....	2	2	2
Power Plants, 243.....	3	3	--
Gas Engines, 244.....	3	--	--
Industrial Engineering, 245.....	--	2	--
Power Transmission, 242.....	--	--	2
Heating, Ventilation, and Refrigeration, 247.....	--	2	3
Power-plant Design, 248.....	--	2	2
Surveying, 246.....	--	--	2
Steam Engineering Laboratory, 249.....	2	2	2
Calculus, 346.....	3	--	--
Hydraulics, 215.....	--	2	2
Elect three periods of the following:			
Military Drill, 390.....	3	3	2
Modern Languages, 370, 371, 372.....	3	3	3
English, 364.....	2	2	2
Economics, 380.....	1	1	1
Totals.....	22	22	22

## MECHANICAL ENGINEERING EQUIPMENT.

**Buildings.**—The drawing-rooms, recitation-rooms, the forge shop, wood shop, machine shop, and mechanical laboratory are in the Mechanical Building. The Power Plant is also utilized for experimental engineering. The building formerly used as a boiler plant is now used as a foundry.

**Drawing-rooms.**—There are two of these, one accommodating the Freshmen, the other those in the higher classes. These are equipped with drawing tables, board and filing cabinets, models of valves, pumps, machine parts, etc., etc. They are well lighted, heated, and ventilated, and are well adapted to the work.

**Forge Shop.**—This well-lighted and ventilated room is 30 x 40 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 and gases from the fires; anvils and all necessary hand tools.

**Wood Shop.**—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.

**Machine Shop.**—This contains a 16-inch Davis & Egan lathe with 10-foot bed, a 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 Champion lathe with 6-foot bed, a 14-inch Flather lathe with a 6-foot bed, three 14-inch lathes with 6-foot beds (built in 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 Greenwich arbor press, 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.

**Foundry.**—This will accommodate about thirty students at one time. The floor is 30 x 60 feet, and the equipment consists of a Northern Engineering Works 36-inch cupola, with blast furnished by a Buffalo blower, a Griffen oil-burning furnace with air furnished by a No. 0 Sturtevant high-pressure blower, and oil by a Goulds triplex pump. There is also a crucible brass furnace of good size. For moulding machines the foundry is equipped with an Arcade squeezer and a Model moulding machine, both made by the Arcade Manufacturing Company and a Prkmore moulding machine made by Henry Prkmore. A Cadet core oven and all necessary tools for bench and floor work complete the equipment.



**Laboratory.**—This department is fairly well equipped with the necessary apparatus for performing commercial tests on the various mechanical engineering problems.

For general laboratory there are various measuring instruments, thermometers, pyrometers, steam-engine indicators, planimeters, tachometers, pressure and vacuum gages, a Crosby gage tester, steam calorimeters, both throttling and separating, an Emerson fuel calorimeter for testing coal and oils, apparatus for testing oil for flash point, burning point, and viscosity, an apparatus for flue-gas analysis and apparatus rigged for making calibration tests on thermometers, indicator springs, and steam gages.

For the work in steam engineering there are the following: A 40-horse power Skinner automatic engine, to which is connected a Wheeler surface condenser with a Blake air pump; a 25-horse-power steam engine; a 10-horse-power engine; apparatus arranged for making tests on injectors, pumps, flow of fluids through orifices and nozzles. Besides the above, which are used only for experimental purposes, the College power plant with a 100-horse-power Skinner automatic steam engine, a 135-horse-power DeLaval steam turbine, with all auxiliaries, as well as the boiler equipment—consisting of two 200-horse-power Atlas and two 75-horse-power Babcock and Wilcox water tube boilers—are all available for tests.

For making efficiency and economy tests on gasoline and oil engines, the following equipment is available: One 11-horse-power Foss gasoline engine, one 2-horse-power International Harvester Company gasoline engine, one 2-horse-power McVicker gasoline engine, one 16-horse-power Ford automobile engine, and a 1-horse-power engine built in the shops. To this collection it is hoped to add one or two oil engines in the near future.

For the course in testing of materials the following is available: a 500,000-pound Riehle automatic testing machine arranged for tensional, compression, and transverse tests; a 15,000-pound Olsen testing machine for small specimens, and necessary auxiliary apparatus, such as micrometers, extensometers, etc., for obtaining results of the various tests.

#### Subjects of Instruction.

**230. Mechanical Drawing.**—Instruction in care and use of instruments; lettering, geometrical drawing; projection drawing; isometric and cabinet projections; drawings from working sketches of machine details; tracing; blueprinting; elements of descriptive geometry; cylinders; cones; prisms; intersections and developments; miscellaneous problems. Two periods. Required of Freshmen and first-year Short Course men. Mr. COBURN.

**Note.**—Each student will be required to furnish, at his own expense, the following outfit. To insure uniformity in grade of instruments and other supplies the department keeps for sale practically at cost the articles named below. These may be purchased elsewhere, but must be approved by the department. Estimated cost of outfit \$10:

Drawing board, 22 x 32 inches.  
 T-square, 30 inches.  
 60° triangle, 9 inches, transparent.  
 45° triangle, 7 inches, transparent.  
 12-inch triangular architect's scale.  
 4 H pencil. H or F pencil.  
 Erasers for ink and pencil.  
 Penholder with fine points.  
 Pencil sharpener.

Instrument set consisting of:

6-inch compass with pen, pencil, and lengthening bar.  
 5½-inch dividers with hair-spring adjustment.  
 3-inch bow dividers, 3-inch bow pencil, 3-inch bow pen.  
 5½-inch ruling pen, 4½-inch ruling pen.

**231. Descriptive Geometry.**—General definitions; third angle; representation of points, lines, and planes; profile plane; projected views; line and plane essentials; relations of points, lines, and planes in space; intersection of lines and planes; curved surfaces; development of surfaces; plane sections of solids. During the term many practical problems are given for solution and construction. Two periods. Required of Sophomores in Mechanical and Electrical Engineering. Prerequisite, Mechanical Drawing 230. Professor **SATTERFIELD** and Mr. **MORRIS**.

**232. Mechanical Drawing.**—Making drawings and calculations setting forth the general principles of Descriptive Geometry. The design of cams to give specified motions and problems in elementary machine design. Two periods, second and third terms. Required of Sophomores in Mechanical and Electrical Engineering. Prerequisites, Mechanical Drawing 230 and Descriptive Geometry 231. Mr. **MORRIS**.

**233. Machine Design.**—A study of materials used in machine construction; analysis of stresses in machine parts; design of machine parts, considering them as compression, tension, or torsion members; modification of the above to suit practice and for the sake of general appearance. Design of simple machines, such as shears, punches, air

hoists, riveters, etc., all calculations to be made in standard form and handed in with the assigned problem. Two periods throughout the year. Required of Juniors in Mechanical and Electrical Engineering. Prerequisites, Descriptive Geometry 231 and Mechanical Drawing 230 and 232. Assistant Professor ELLIS.

**234. Machine Design.**—Advanced Machine Design based on the thermal and mechanical problems involved in the design of a steam engine for power, economy, and regulation. The students are given the requirements of the engine—such as speed, regulation and point of cut-off for required horse-power—and are required to make calculations for the same; draw all theoretical diagrams from the ideal indicator card to the rectified tangential pressure diagrams; valve diagrams, showing different events of valve; details of cylinder, frame, fly-wheel, governor, etc. Three periods, first term; two periods, second and third terms. Required of Seniors in Mechanical Engineering. Prerequisites, Machine Design 233, Mechanics 250, and Heat Engines 241. Assistant Professor ELLIS.

**235. Woodwork.**—The use and care of the ordinary woodworking bench tools. Exercises in laying out and working from drawings, sawing, planing, and making of joints. The use and care of woodworking machines such as saws, planers, shapers, dovetailers, tenoners, etc. Exercises in wood-turning. Work on repairs about the College. Two periods. Required of Freshmen and first-year Short Course. Mr. CLAY.

**236. Forge Work.**—Treatment of iron and steel, the uses of the fuller, swage, punch and set hammer; drawing and upsetting; butt, scarf, and jump welding; making of forge and machine shop tools, with tempering of tool steel; exercises on power hammer. Special work on equipment and repairs about the College. Required of Freshmen and first-year Short Course. Two periods, recitations and exercises, first and second terms. Mr. WHEELER.

**237. Foundry.**—Recitations and exercises in foundry work, including working condition of the sand, use and care of tools, moulding, core-making, management of cupola and crucible furnaces in iron and brass melting. Required of Freshmen. Two periods, third term. Sophomores in Mechanical and Electrical Engineering and second-year Short Course. Two periods, first term. Mr. PARK and Mr. WHEELER.

**238. Pattern-making.**—A study of pattern-making in its relation to moulding; the practical construction of patterns to prevent warping and twisting; the making of special patterns; cores and core-boxes; introducing draft, shrinkage, finish, and the appliances and usages of modern pattern work. Required of Sophomores in Mechanical and

Electrical Engineering. Two periods, second and third terms. Prerequisite, Woodwork, 235. Mr. CLAY and Mr. MORRIS.

239. **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 Engineering. One period. Required of Juniors in Electrical Engineering. Mr. PARK.

240. **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.

241. **Heat Engines.**—A study of elementary thermodynamics, properties of steam, calorimeters and mechanical mixtures, combustion and fuels, boilers and boiler auxiliaries, steam engines, including types and details, valve gears, and governors; layout and necessary calculations for steam-engine testing, condensers, and air pumps, steam turbines, gas engines, and economy of heat engines. Three periods throughout the year. Required of Juniors in Mechanical Engineering. Two periods throughout the year. Required of Juniors in the Electrical and Textile Engineering. Prerequisites, Physics 281 and Advanced Algebra 343. Professor SATTERFIELD and Mr. VAUGHAN.

242. **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 the various systems of power-transmission machinery. Two periods, third term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

243. **Mechanical Engineering of Power Plants.**—A critical study of steam boilers and furnaces, of boiler-room accessories, of coal and ash handling, and of piping, steam engines, steam turbines, pumps, condensers, traps, separators, etc. Special attention is paid to the conditions under which different equipment would be used, and to the selection of the apparatus, also to the cost of power, depreciation, repairs, etc. Three periods, first and second terms. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

244. **Gas Engines.**—Thermodynamics of the gas engine, theoretical comparison of various types of internal combustion engines. Combustion, including combining weights and volumes, heating value, air required, etc. Gas-engine fuels; solid, liquid, and gas. Gas producers, carburetors, and vaporizers. The fuel mixture, pressure, and

temperature resulting from combustion. Modern types of internal combustion engines, auxiliaries, including ignition, starting apparatus, and mufflers; regulation, efficiency, and economy. Three periods, first term. Required of Seniors in Mechanical Engineering. Prerequisites, Heat Engines 241 and Mechanics 250. Mr. VAUGHAN.

**245. Industrial Engineering.**—A study of the origin and principles of the Industrial System; the nature and distribution of expense; labor; materials, etc. Two periods, second term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

**246. Surveying.**—A brief course teaching the use of the level and transit in locating buildings, laying out foundations, and lining up shafting, engines, and machinery. Two periods, third term. Required of Seniors in Mechanical Engineering. Assistant Professor MANN and assistants.

**247. Heating, Ventilation, and Refrigeration.**—This subject treats of the various methods of heating, such as by open fires, hot air, steam and hot water; of the proper ventilation of all types of buildings; of methods of utilizing the waste heat from power plants for the heating of buildings; of the various types of ice-making and refrigerating machinery, and their installation, care, and management; and of the cost of heating and cooling. Two periods, second term; three periods, third term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

**248. Power Plant Design.**—A study of the selection, location, and proportioning of the essential details of steam and gas power plants, such as engines, boilers, pumps, piping, condensers, feed water heaters, chimneys, etc. The course consists of the study of references, lectures on the subject, and the drawing of plans of plants showing all details. Two periods, second and third terms. Required of Seniors in Mechanical Engineering. Prerequisite, Heat Engines 241. Assistant Professor ELLIS and Mr. VAUGHAN.

**249. Steam Engineering Laboratory.**—Calibration of the various instruments used in performing tests on various mechanical engineering problems. Practice in the use of calorimeters, both steam and fuel; indicators, planimeters, etc. Testing of lubricants for flash point, burning point, and viscosity. Checking the formulas used in determining the flow of fluids through orifices and nozzles. Efficiency tests of boilers, steam engines, injectors, pumps, and gasoline and oil engines. Testing of materials used in engineering construction. Two periods throughout the year. Required of Seniors in Mechanical Engineering. One period throughout the year. Required of Seniors in Electrical Engineering. Prerequisites, Heat Engines 241 and Mechanics 250. Mr. VAUGHAN and Mr. MORRIS.

**250. Mechanics.**—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, momentum and impact, work power, friction, application of principles to various engineering problems. Elasticity and mechanics of fluids. Preparatory to Applied Mechanics 251. Two periods throughout year. Required of Juniors in Mechanical and Electrical Engineering. Prerequisites, Physics 280, Algebra 240, and Trigonometry 344. Mr. VAUGHAN.

**251. Applied Mechanics.**—A study of the laws of equilibrium and motion as applied to a particle or to a rigid body; analytic treatment of stresses in structures; center of gravity, moment of inertia, energy and work, friction and dynamics of machinery. Three periods, first term. Required of Seniors in Mechanical and Electrical Engineering. Prerequisites, Mechanics 250. Assistant Professor ELLIS.

**252. Mechanics of Materials.**—A study of the effects of loads and forces in engineering structures by use of the stress-strain diagram. Determination of ultimate stress and elastic limit of materials, with investigation for maximum and minimum bending moment and shear. Torsion and its application to shafting, with theories as to elastic limit and failure. Two periods, second and third terms. Required of Seniors in Mechanical and Electrical Engineering. Prerequisites, Mechanics 250 and 251. Assistant Professor ELLIS.

## TWO-YEAR COURSE IN MECHANIC ARTS.

In order to meet the necessities of young men who wish to prepare themselves for the industrial arts rather than for industrial science and art, the following two-year course in Mechanic Arts is offered.

This course does not lead to graduation, and it is not, in any sense, intended as a preparatory course for the regular four-year classes. It is designed simply to help young men better fit themselves by a year or two of practical work under competent and interested supervision, for their chosen sphere of industrial activity.

Those students whose inclinations, limitations, or necessities lead them to take this course will be carefully drilled in the handicraft of their art and in the application of elementary science to the shop, drawing-room, and power plant.

### First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing.....	3	3	3
Woodwork.....	2	2	2
Forge-work.....	2	2	--
Foundry.....	--	--	2
Mechanical Technology.....	2	2	2
Physics.....	2	2	2
Algebra.....	5	5	--
Plane Geometry.....	--	--	5
English.....	3	3	3
Military Drill.....	3	3	2
Totals.....	22	22	21

### Second Year.

Machine Drawing.....	3	3	3
Machine-shop Work.....	3	3	3
Power Machinery.....	3	3	3
Algebra.....	5	2	--
Geometry.....	--	3	5
English.....	3	3	3
Drill.....	3	3	3
Elective work:			
Machine Shop or Drawing.....	2	2	2
Pattern Work.....	--	2	2
Foundry.....	2	--	--
Totals.....	24	24	24

## SUBJECTS OF INSTRUCTION.

## First Year.

**Mechanical Drawing.**—Instruction in care and use of instruments; lettering, geometrical drawing; projection drawing; isometric and cabinet projections; drawings from working sketches of machine details; tracing; blueprinting; elements of Descriptive Geometry; cylinders; cones; prisms; intersections and developments; miscellaneous problems. Three periods. Mr. COBURN.

**Note.**—Each student will be required to furnish at his own expense, the following outfit. To insure uniformity in grade of instruments and other supplies, the department keeps for sale, at practically cost, the articles named below. These may be purchased elsewhere, but must be approved by the department. Estimated cost of outfit, \$10:

- Drawing board 21 x 30 inches.
- T-square 30 inches.
- 60° triangle 9 inches, transparent.
- 45° triangle 7 inches, transparent.
- 12-inch triangular architect's scale.
- Irregular curve.
- 4 H pencil. H or F pencil.
- Erasers for ink and pencil.
- Penholder with fine points.
- Pencil sharpener.

Instrument set consisting of:

- 6-inch compass with pen, pencil, and lengthening bar.
- 5½-inch dividers with hairspring adjustment.
- 3-inch bow dividers, 3-inch bow pencil, 3-inch bow pen.
- 5½-inch ruling pen, 4½-inch ruling pen.

**Woodwork.**—The use and care of the ordinary woodworking bench tools. Exercises in laying out and working from drawings; sawing, planing and making of joints. The use and care of woodworking machines, such as saws, planers, shapers, dovetailers, tenoners, etc. Exercises in wood-turning. Work on repairs about the College. Two periods. Mr. CLAY.

**Forge Work.**—Treatment of iron and steel, the uses of the fuller, swage, punch and set hammer; drawing and upsetting; butt, scarf, and jump welding; making of forge and machine shop tools, with tempering of tool steel; exercises on power hammer. Special work on equipment and repairs about the College. Two periods, first and second terms. Mr. WHEELER.



**Foundry.**—Recitations and exercises in foundry work, including working condition of the sand, use and care of tools, moulding, core-making, management of cupola and crucible furnaces in iron and brass melting. Required of first year. Elective for second year. Two periods, third term. Mr. PARK and 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; elementary power problems, steel-making, etc. Two periods. Professor SATTERFIELD.

**Short-course English.**—This is a thoroughly practical course in the elements of grammar, and of composition, especially spelling, sentence and paragraph structure, and letter-writing. Some reading is done in class, and supplementary reading is assigned for private study. Three hours a week. Required of first-year students. Doctor SUMMEY and Mr. PECKHAM.

**Physics.**—Properties of matter, fundamental units, British and metric standard measures, mechanics, liquids, gases, heat, introduction to light and sound. Two periods. Mr. LATANÉ.

#### Second Year.

**Machine Drawing.**—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blueprinting. Two periods. Prerequisite, Mechanical Drawing 230. Assistant Professor ELLIS.

**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.

**Power Machinery.**—Descriptive study of the machinery of steam power plants, engines, boilers, condensers, pumps, steam turbines, piping, care and management, study of gas and oil engines. Combustion of fuels. Indicators; indicated, brake, and boiler horse-power problems. Three periods. Mr. MORRIS.

**Algebra.**—Wells' *New Higher Algebra*. A thorough treatment of the fundamental conceptions and operations of Elementary Algebra, embracing the subjects of factoring, fractions, simple equations, simultaneous involution, evolution, theory of exponents, and radical equations in two or more unknowns. Five periods, first and second terms. Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

**Plane Geometry.**—Wentworth's *Plane and Solid Geometry*. Three books of Plane Geometry, including numerous original exercises. Five periods, third term. Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

**Pattern-making.**—A study of pattern-making in its relation to moulding; the practical construction of patterns to prevent warping and twisting; making of special patterns, cores, and core-boxes, introducing draft, shrinkage, finish, and the appliances and usages of modern pattern work. Prerequisite, Woodwork. Elective for second year. Two periods, second and third terms. Mr. CLAY and Mr. MORRIS.

**Algebra.**—Wells' *New Higher Algebra*. Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations, and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; two periods, second term. Prerequisite: For first term, entrance requirements; for second term, the work of the first term, or, in case of failure, a term standing of 60 per cent or more, and a final examination grade of at least 40 per cent on the work of the first term. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

**Plane Geometry.**—Wentworth's *Plane and Solid Geometry*. A complete course in Plane Geometry, including numerous original exercises. Two periods, second term; five periods, third term. Prerequisite, entrance requirements. Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

**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. PECKHAM.

## FOUR-YEAR COURSE IN ELECTRICAL ENGINEERING.

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The four-year course in Electrical Engineering is planned for those who wish a thorough practical preparation for following this profession. Only the most thorough training in the fundamental laws and principles of electricity and magnetism will suffice as a preparation for this branch of engineering in which the art is advancing so rapidly. This training is given by a careful study of text-books and coordinated work in the various laboratories. The department, as will be seen from the equipment described below, is well supplied with dynamos, motors, transformers, and other electrical machines, and with testing instruments and apparatus of all descriptions.

### PHYSICS.

A thorough training in the elements of Physics is necessary as a preparation for entering any engineering profession. The course in Physics is planned with this specific object in view. Instruction in the classroom is accompanied by laboratory courses laid out so as to illustrate the principles taught in the former, and also so as to train the student to observe accurately and to give him considerable facility in the manipulation of scientific instruments. During the first year the subjects of mechanics, hydraulics, pneumatics, heat, light, sound, and electricity and magnetism are taken up. In the second year a more thorough study of general physics is made.

Brief courses in Physics are given for students in Agriculture and Textile Industry and an elementary course is given to students in the short courses in Mechanic and Textile Arts, and Agriculture.

### Equipment.

The laboratories and classrooms for the work in Physics are in the basement of Holladay Hall, practically the whole floor being given up to this department. There are two large, well-equipped classrooms and every facility for giving experimental lectures; and there are two large, well-lighted laboratories, one for the first-year course in Physics and the other for advanced physical measurements. Special attention has been paid to the equipment of these laboratories, the object being to enable the student to determine from his actual experience the truth of the principles which he learns in the classroom.

### FRESHMAN PHYSICS.

280. Properties of matter; fundamental units; English and metric standard measures; definitions of force, work, power; laws of mo-

tion; principles of machines; mechanics and fluids; heat; sound; light; electricity and magnetism. Text-book, Milliken and Gale's *A First Course in Physics*. Four periods. Required of Freshmen in Engineering and Chemistry. MR. LATANÉ, MR. PRITCHETT.

#### FRESHMAN PHYSICAL LABORATORY.

282. Practice in handling units in British and metric systems; composition and resolution of forces; the lever; the inclined plane; the pendulum; density; specific gravity; thermometer calibration; calorimeter; hydrometry; expansion of materials; wave lengths; laws of strings; laws of lenses and mirrors; reflection; magnetism; electrostatics; the electric circuit. One period. Required of Freshmen in Engineering and Chemistry. MR. LATANÉ, MR. PRITCHETT.

#### SOPHOMORE PHYSICS.

281. An advanced course in Physics, particular attention being given to mechanics, fluids, and gases, heat, and electricity and magnetism. Two periods. Required of Sophomores in Engineering and Chemistry. MR. LATANÉ and MR. PRITCHETT.

#### SOPHOMORE PHYSICAL LABORATORY.

283. A course in advanced physical measurements accompanying the class instruction in this subject. More care, greater accuracy, and more elaborate reports are required in this course than in the Freshman laboratory. Work is designed not only to impress the truths and principles taught in the classroom, but to give some facility in the use of scientific instruments. One period. Required of Sophomores in Mechanical and Electrical Engineering and Chemistry. MR. LATANÉ and MR. PRITCHETT.

## ELECTRICAL ENGINEERING.

## 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, 280.....	4	4	4
Physical Laboratory, 282.....	1	1	1
Mechanical Drawing, 330.....	2	2	2
Woodwork, 235.....	2	2	2
Forge-work, 236.....	2	2	--
Foundry, 237.....	--	--	2
Algebra, 340.....	5	3	--
Geometry, 341.....	--	2	5
Composition and Rhetoric, 360.....	3	3	3
Military Drill, 390.....	3	3	2
Totals.....	22	22	21

## Sophomore Year.

Physics, 281.....	2	2	2
Physical Laboratory, 283.....	1	1	1
Descriptive Geometry, 231.....	2	--	--
Mechanical Drawing, 232.....	--	2	2
Geometry, 342.....	5	--	--
Advanced Algebra, 343.....	--	3	--
Trigonometry, 344.....	--	2	5
Inorganic Chemistry, 300.....	3	3	3
Inorganic Chemistry (laboratory), 301.....	2	2	2
Foundry, 237.....	2	--	--
Pattern-making, 238.....	--	2	2
American Literature, 361.....	3	3	3
Military Tactics, 391.....	1	1	1
Military Drill, 390.....	3	3	2
Totals.....	24	24	23

## Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Electrical Engineering, 294.....	3	3	3
Electrical Engineering (laboratory), 289.....	2	2	2
Steam Engines and Boilers, 241.....	2	2	2
Machine-shop Work, 239.....	1	1	1
Machine Design, 233.....	2	2	2
Mechanics, 250.....	2	2	2
Analytical Geometry, 345.....	5	2	..
Calculus, 346.....	..	3	5
English, 362, 363.....	3	3	3
Military Drill, 390.....	3	3	2
Totals.....	23	23	22

## Senior Year.

Alternating Currents, 286.....	3	3	3
Electrical Applications, 287.....	2	2	2
Electrical Transmission, 288.....	..	2	2
Electrical Engineering (laboratory), 291.....	2	2	2
Electrical Design, 292.....	2	2	2
Applied Mechanics, 251.....	3	..	..
Mechanics of Materials, 252.....	..	2	2
Steam Engineering (laboratory), 249.....	1	1	1
Calculus, 346.....	3	..	..
Hydraulics, 215.....	..	2	2
English Literature, 364.....	2	2	2
Economics, 380.....	1	1	1
Elect one subject from the following:			
Military Drill, 390.....	3	3	2
Modern Languages, 370, 371, 372.....	3	3	3
Totals.....	22	22	22

**ELECTRICAL ENGINEERING EQUIPMENT.**

The courses in Electrical Engineering are accompanied by work in the laboratory and the designing-room. The department occupies the western portion of the basement and the first floor of Winston Hall. On the first floor are the classrooms, offices, library, drafting-room, and instrument laboratory. The classrooms are well equipped for demonstrating the principles studied in the text-books. The designing-room is suitably furnished for its purpose and the instrument laboratory is supplied with standardizing apparatus, and instruments provided for quickly determining the accuracy of all the apparatus used in actual measurements and also for advanced measurements in electricity and magnetism. This room is supplied with power, current from single, two- or three-phase sources being available, as well as direct current from the power-house or storage batteries.

In the basement are located the dynamo laboratory, the photometric laboratory, instrument room, the department's machine shop, and rooms for high-tension apparatus, storage battery, and stores.

The dynamo laboratory is a room 90 x 30 feet. Its equipment consists of direct and alternating current dynamos and motors of practically all types and ranging in size from one to thirty-seven kilowatts, the aggregate capacity being about two hundred kilowatts in machines and seventy-five kilowatts in transformers. Power is supplied to the laboratory by means of three independent circuits running from the College power-house. A full complement of ammeters, voltmeters, wattmeters, phasemeters, tachometers, rheostats, condensers, inductances, and other apparatus used in the study of electrical machines is provided. The equipment is arranged so the power is conveniently supplied to a number of independent stations, at each of which a group of students can conduct an experiment without being affected by the work of other sections.

**POWER-HOUSE.**

The College power-house is also available for student instruction. It is a brick building containing an excellent equipment of modern type. This consists of one seventy-five kilowatt, six-hundred volt, three-phase, revolving field alternator directly connected to a high-speed engine; two fifty kilowatt, three-hundred volt, three-phase revolving field alternators, driven by a De Laval steam turbine, with direct-driven exciter; a ten kilowatt, direct connected, direct current generator, a motor-generator exciter set; and a completely equipped switchboard.

The city of Raleigh is unusually well situated for students of Electrical Engineering. The local power company has a fine modernized steam turbine-driven plant which operates in conjunction with the water-power plant at Buck Horn Falls, on the Cape Fear River, from which point the power is transmitted at sixty thousand volts. This company also owns the large plant at Blewetts Falls, from which power is transmitted at one hundred and ten thousand volts. This line crosses the College property, and has an open-air transformer and meter station located within easy reach.

#### LIBRARY.

This department has a small but growing library and takes a number of the leading electrical journals, all of which are at all times available for the students' use.

#### SUBJECTS OF INSTRUCTION.

**284. Direct Current Machinery and Apparatus.**—A thorough study is made of the production and utilization of direct currents, beginning with the theory of the magnetic circuit, electromagnetic induction, electrical measurements, storage batteries, dynamos and motors, and operation and care of direct current machinery. Text-book, Franklin & Esty's *Elements of Electrical Engineering*. Three periods, through the year. Required of Juniors in Electrical Engineering. Prerequisites, Subjects 281, 342, 343, and 344. Professor BROWNE.

**285. Electrical Engineering.**—An introductory course for students in other engineering departments, consisting of the study of the apparatus used in the production, distribution, and utilization of electrical power. Required of Juniors in Mechanical Engineering. Text-book, Timble's *Elements of Electricity*. Two periods. Prerequisites, Subjects 281, 342, 343, and 344. Professor BROWNE.

**286. Alternating Currents and Machinery.**—A study of the flow of periodic currents in circuits containing resistance, inductance, and capacity. The construction, operation, and performance of alternating current machinery. Text-book, Franklin & Esty's *Alternating Currents*. Three periods. Required of Seniors in Electrical Engineering. Prerequisites, Subjects 284, 345, 346. Professor BROWNE.

**287. Industrial Applications of Electricity.**—A detailed study is made of the many industrial applications of electricity, including the various methods of distributing electrical energy, illumination, electric traction, the electric drive in mill and factory, electric power stations, industrial electro-chemistry and electro-metallurgy, telegraphy, and



telephony. Two periods. Required of Seniors in Electrical Engineering. Prerequisites, Subjects 284 and 289. Professor BROWNE and Assistant Professor McINTYRE.

**288. Electrical Transmission of Power.**—A practical study of the problems involved in the transmission of power from the generating station to the consumer. Hydroelectric developments. High-tension transmission. Required of Seniors in Electrical Engineering. Text-book, Ferguson's *The Elements of Electrical Transmission*. Two periods throughout the second and third terms. Prerequisites, Subjects 281, 289. Professor BROWNE.

**289. Direct Current Laboratory.**—This study accompanies that of direct current machinery. It includes use of standardizing apparatus, calibration of instruments, advanced electric and magnetic measurements, and the operation and testing of direct-current dynamos and motors. Text-book, Sever & Townsend's *Laboratory and Factory Tests*. Two periods. Required of Juniors in Electrical Engineering. Prerequisites, Subjects 281 and 283. Assistant Professor McINTYRE.

**290. Electrical Engineering Laboratory.**—This course accompanies Study 285. Instruction is given in the care and operation of direct and alternating current machinery. Required of Juniors in Mechanical Engineering. One period. Prerequisites, Subjects 281, 283. Assistant Professor McINTYRE.

**291. Advanced Dynamo Laboratory.**—This study is taken up simultaneously with the study of alternating currents. It includes practice with alternating currents, measurement of inductance and capacity, experimental study of transformers, alternating current generators and motors, advanced methods of testing electrical apparatus, and shop testing. Text-book, Sever & Townsend's *Laboratory and Factory Tests*. Two periods. Required of Seniors in Electrical Engineering. Prerequisites, Subjects 284 and 289. Assistant Professor McINTYRE.

**292. Electrical Design.**—An introductory course in the designing of electrical apparatus, taking up the design of rheostats and heating devices, controllers, and electromagnets, the design of transformers, direct and alternating current dynamos and motors. Two periods. Required of Seniors in Electrical Engineering. Prerequisite, Subject 284. Professor BROWNE.

## COURSE IN CHEMISTRY.

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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 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 this 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 Chemical Department occupies the whole of the second floor of Winston Hall. There are two classrooms for about thirty students each and one classroom for ninety students. The classrooms are well lighted, have very convenient lecture tables and settees with arm rests for taking notes.

The laboratory for inorganic chemistry can accommodate three hundred and thirty-six students, the laboratory for analytical chemistry ninety-six students, and for organic chemistry twenty students. A small laboratory has been set aside for special work. The laboratories are fitted up with conveniently arranged desks and hoods, each of which has the necessary water and gas connections. The balance room is located between the analytical and organic laboratories.

The department also has a dark room for photographic work, fire-proof rooms for combustion, and ample stockrooms and a preparation room.

The Chemical library, containing an excellent collection of reference books and complete sets of the leading chemical journals, occupies a room convenient to the laboratories for the upper classmen.

The members of the instructing staff have offices adjacent to the laboratories.

**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.
Inorganic Chemistry, 300.....	2	2	2
Inorganic Chemistry (laboratory), 301.....	1	1	1
Physics, 280.....	4	4	4
Physical Laboratory, 282.....	1	1	1
Botany, Elementary, 320.....	3	3	..
Botany, Systematic, 321.....	..	..	3
Algebra, 340.....	5	3	..
Geometry, 341.....	..	2	5
Composition and Rhetoric, 360.....	3	3	3
Military Drill, 390.....	3	3	2
Totals.....	22	22	21

**Sophomore Year.**

Analytical Chemistry, Qualitative, 304.....	3	3	3
Physics, 281.....	2	2	2
Physical Laboratory, 283.....	1	1	1
Physiology, 325.....	2	..	..
Drawing, 230.....	..	2	2
Geometry, 342.....	5	..	..
Advanced Algebra, 343.....	..	3	..
Trigonometry, 344.....	..	2	5
German, 370.....	3	3	3
American Literature, 361.....	3	3	3
Military Tactics, 391.....	1	1	1
Military Drill, 390.....	3	3	2
Totals.....	23	23	22

## Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Organic Chemistry, 303.....	2	2	2
Organic Chemistry (laboratory), 306.....	3	3	3
Analytical Chemistry, Quantitative, 305.....	4	4	4
Bacteriology, 322.....	2	2	2
Soils, 331.....	3	3	3
German, 370.....	3	3	3
Advanced Rhetoric, 362.....	3	3	--
Public Speaking, 363.....	--	--	3
Military Drill, 390.....	3	3	2
Totals.....	23	23	22

## Senior Year.

Inorganic Chemistry, 309.....	2	2	2
Organic Chemistry, 303.....	3	--	--
Organic Chemistry (laboratory), 306.....	2	--	--
Analytical Chemistry, Quantitative, 305.....	6	8	8
Theoretical Chemistry, 310.....	--	3	3
German, 370.....	3	3	3
Elect six periods from the following:			
English Literature, 364.....	2	2	2
Economics, 380.....	1	1	1
Military Drill, 390.....	3	3	2
Advanced Bacteriology, 323.....	3	3	3
Microchemical Analysis (laboratory), 307.....	2	2	2
Soils, Advanced, 332.....	3	--	--
Foods, 335.....	--	3	--
Fertilizers, 333.....	--	--	3
Drawing, 290.....	2	2	2
Analytical Geometry, 345.....	5	2	--
Calculus, 346.....	--	3	5
Totals.....	22	22	22

Other subjects if approved by the Professor of Chemistry.

**300. Inorganic Chemistry.**—Newell's *Inorganic 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 in Engineering. Two periods. Required of Freshmen in Chemistry. Professor WITHERS, Doctor WILLIAMS, Mr. PATE, and Mr. SHERWOOD.

**301. Inorganic Chemistry.**—Laboratory work. Newell's *Inorganic Chemistry*. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the classroom. Two periods. Required of Sophomores in Engineering. One period. Required of Freshmen in Chemistry. Mr. PATE and Mr. SHERWOOD.

**302. Organic Chemistry.**—Remsen's *Organic Chemistry*. The fundamental principles of organic chemistry and the more important compounds are studied. Laboratory work accompanies the lectures and recitations. Two periods. Required of Juniors in Chemistry. Dr. RAY.

**303. Organic Chemistry.**—A continuation of 302. Three periods, first term. Required of Seniors in Chemistry. Professor WITHERS.

**304. Analytical Chemistry.**—W. A. Noyes' *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. Three periods. Required of Sophomores in Chemistry. Doctor WILLIAMS.

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

**306. Organic Chemistry.**—Laboratory work. Orndoff's *Laboratory Manual*. 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. Three periods. Required of Juniors in Chemistry. Two periods, first term. Required of Seniors in Chemistry. Doctor RAY.

**307. Microchemical Analysis.**—Laboratory practice in microchemical analysis, teaching the student the application of microchemical methods in systematic chemical analysis and the tests for the common elements. Rapid qualitative analysis of inorganic compounds, alloys, etc. Two periods a week. Elective for Seniors in Chemistry. Doctor RAY.

309. **Advanced Inorganic Chemistry.**—Lectures and recitations. Two periods. Required of Seniors in Chemistry. Doctor WILLIAMS.

310. **Theoretical Chemistry.**—Three periods, second and third terms. Required of Seniors in Chemistry. Professor WITHERS.

#### BOTANY AND BACTERIOLOGY.

320. **Elementary Botany.**—Weekly lectures, accompanied by laboratory work and reference reading regarding the algae, 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. The student's knowledge is made his own through field work and simple independent investigations. Three periods, first and second terms. Required of Freshmen in Chemistry. Professor FULTON.

321. **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 Freshmen in Chemistry. Mr. NORTON.

322. **Bacteriology.**—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation and 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 FULTON and Mr. NORTON.

323. **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. Three periods. For Seniors in Chemistry. Professor FULTON and Mr. NORTON.

#### SOILS.

331. **Soils.**—Attention is given to the forces that decompose and disintegrate rock and to the influence of these forces and of the various kinds of rock on the resulting soil. The physical characters, such as water-holding capacity, capillarity, drainage, effect of mulches, temperature and weight, and the modification of these characters by tillage, cropping, and all operations of practical soil management, are

discussed and exemplified in the classroom, laboratory, and field. Some attention is given to the classification of soils in the United States and especially in North Carolina. The physical, chemical, and bacteriological soil conditions are discussed in relation to each other and to their effects on soil fertility. Systems of maintaining the permanent productiveness of soils are studied. Three periods throughout the year. Required of Juniors. Prerequisite, Chemistry 300 and Physics 250. Associate Professor SHERWIN.

**332. Advanced Soils.**—In this course the student will be guided in the study of any line of Soils work he may choose, either along practical or scientific lines. Laboratory work will be given. Considerable reference will be made to Experiment Station literature with the aim of acquainting the student with the literature on the subject and with the methods of investigation used. Three periods, first term. Prerequisite, Soils 331. Elective for Seniors in Chemistry. Associate Professor SHERWIN.

**333. Fertilizers.**—Sources, composition, availability and value of various commercial and farm fertilizers. Comparative value of the element of plant food in different carriers as shown by their productive capacity. Fertilization of all the principal crops of the State and of any special crops in which the class is interested will be discussed, considering amount, method, and time of application as well as the most economical formula to use. Two periods, third term. Elective for Seniors in Chemistry. Prerequisite, Soils 331. Associate Professor SHERWIN.

#### STOCK FEEDING.

**335. Stock Feeding.**—A study of the compositions of feeds, and the food requirements of the domestic animals. The student will be required to become familiar with the fundamental principles, so that he can compound suitable rations for the different classes of live stock. Special emphasis will be laid upon practical problems in feeding. Three periods a week, second term. Elective for Seniors in Chemistry. Professor McNUTT.

#### 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 Course, yet 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, with frequent oral and written quizzes.

**340. Algebra.**—Wells' *New Higher Algebra*. Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations, and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; three periods, second term. Required of Freshmen. Prerequisite: For first term, entrance requirements; for second term, the work of the first term; or, in case of failure, a term standing of 60 per cent or more, and a final examination grade of at least 40 per cent on the work of the first term. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

**341. Plane Geometry.**—Wentworth's *Plane and Solid Geometry*. A complete course in Plane Geometry, including numerous original exercises. Two periods, second term; five periods, third term. Required of Freshmen. Prerequisite, entrance requirements. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

**342. Solid Geometry.**—A thorough course in Solid Geometry, with more than two hundred original exercises. Also, the application of Plane Geometry to conic sections. Required of Sophomores. Five periods, first term. Prerequisite, first term Freshman mathematics and 341. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

**343. Advanced Algebra.**—Wells' *New Higher Algebra*. The general theory of equations, the solution of higher equations, determinants, etc. Required of Sophomores. Three periods, second term. Prerequisite, 340 and 341. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

**344. Trigonometry.**—Wells' *Plane and Spherical Trigonometry*. Plane Trigonometry. Definitions of the trigonometric functions; derivation of formulae, with their application. Solution of plane triangles, etc. Spherical Trigonometry. Solution of spherical triangles. This course includes the solution of many practical problems. Required of Sophomores. Two periods, second term; five periods, third term. Prerequisite, 340 and 341. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

**345. Analytical Geometry.**—Nichols' *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 term; two periods, second term. Required of Juniors in Engineering. Prerequisite, 342, 343, and 344. Professor YATES.



**346. 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 indeterminate forms, maxima and minima, radius of curvature, lengths of curves, areas, volumes, etc. Three periods, second term; five periods, third term. Required of Juniors. Three periods, first term. Required of Seniors. Prerequisite: For differential calculus, 342, 343, and 344; for integral calculus, differential calculus and 345. Professor YATES.

#### ENGLISH.

**360. 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 HARRELSON, Doctor SUMMEY, Mr. PECKHAM.

**361. 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 HARRELSON, Doctor SUMMEY, Mr. PECKHAM.

**362. 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. Three periods, first and second terms. Required of Juniors. Professor HARRISON.

**363. Public Speaking.**—The principles governing the preparation and the delivery of public addresses are given in text-books 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. Three periods, third term. Required of Juniors. Professor HARRISON.

**364. 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. Two periods. Elective for Seniors. Professor HARRISON.

**ECONOMICS.**

380. 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 Seniors. One period. Dr. SUMMEY.

**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, humorous 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, by frequent repetitions, and by 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.

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

370. **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; and a scientific reader. Three periods. Elective for Juniors or Seniors. Doctor RUDY.

371. **French.**—Worman's *Modern Languages*, First and Second French books; Worman's *Grammaire Française*; selected short stories from French literature, and scientific readers. This subject may be taken by special petition to the Faculty. Doctor RUDY.

372. **Spanish.**—Worman's *Modern Languages*, First and Second Spanish books; *Introducción a la Lengua Castellana*, by 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.

#### MILITARY SCIENCE.

150. **Drill.**—Callsthenic exercises; bayonet exercises; military signaling; school of the soldier, squad, company, and battalion; ceremonies including inspection, parade, review, and guard mounting; guard duty; marches and minor tactics; attack and defense; gallery and range target practice. Three hours each week for the first and second terms; two hours each week for the third term. Required of all classes except Seniors. Seniors may take either the drill or three extra hours in some other subject instead. Captain PEACE and Cadet Officers of the Battalion.

151. **Tactics.**—Theoretical instructions in infantry drill regulations, field-service regulations, manual for guard duty, and small-arms firing manual. One hour each week. Required of Sophomores. Captain PEACE.

## TEXTILE COURSES.

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### VIII. The Four-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 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, and 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 that of a cotton mill, being an illustration of standard construction in this class of buildings. The basement is fitted up with a laboratory and classroom 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 cotton gin, made by Continental Gin Company, Birmingham, Ala. One thread extractor, made by Kitson Machine Company, Lowell, Mass. One combination opener and breaker lapper, made by Kitson Machine Company, Lowell, Mass. One 40-inch single beater finisher lapper, with patent carding beater, made by Kitson Machine Company, 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 & 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 & Pettee Machine Shops, Newton Upper Falls, Mass. One drawing frame, four deliveries, metallic rolls, made by Saco & Pettee Machine Shops, Newton Upper Falls, Mass. One silver lap machine, one ribbon lap machine, and one six-head combing machine, made by Whitin Machine Works, Whitinsville, Mass. One 36-spindle slubber for 11 x 5½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Company, Woonsocket, R. I. One 48-spindle intermediate roving frame for 9 x 4½-inch bobbin, made by Saco & Pettee Machine Shops, Biddeford, Me. One 64-spindle fine roving frame for 7 x 3½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press

Company, Woonsocket, R. I. One 80-spindle jack roving frame for  $6 \times 2\frac{1}{2}$ -inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Company, 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 Company, Pawtucket, R. I. One 64-spindle spinning frame for warp, one 64-spindle spinning frame for filling, made by Saco & Pettee Machine Shops, Biddeford, Me. One 4S-spindle spinning frame, combination build, made by D. A. Tompkins Company, Charlotte, N. C. One 240-spindle mule spinning frame,  $1\frac{1}{2}$ -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 Company, Charlotte, N. C. One 4S-spindle twister, made by Whitin Machine Works, Whitinsville, Mass. One 100-spindle wet twister, made by Draper Company, Hopedale, Mass. One 4S-spindle twister, one-half for wet, one-half for dry twisting, made by Fales & Jenks Machine Company, Pawtucket, R. I. One 50-spindle reel, one-half live, one-half dead spindles, made by D. A. Tompkins Company, Charlotte, N. C. One 40-spindle reel, made by Draper Company, Hopedale, Mass. One 6-spindle universal winding machine, made by Universal Winding Company, 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. Altman, Philadelphia, Pa. One 4-spindle bobbin winding machine, made by Universal Winding Company, Boston, Mass. One beaming machine, made by Lewiston Machine Company, Lewiston, Me. One beaming machine, complete, made by the T. C. Entwistle Company, 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 dobbie loom, one 24-harness dobbie loom, one 4 x 1 gingham loom, made by Whitin Machine Works, Whitinsville, Mass. One print-cloth loom, one 2 x 1 box loom, one 24-harness dobbie loom, made by Mason Machine Works, Taunton, Mass. One 4-harness twill loom, made by Lowell Machine Shop, Lowell, Mass. One Crompton 4 x 1 box gingham loom, one Crompton 4 x 1 box loom with 20-harness dobbie; one Crompton 2 x 1 box loom with 400-hook Jacquard machine; one Knowles Gem loom with 4 x 4 box; one Stafford single-box loom with 20-harness dobbie, 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 Company, Worcester, Mass. One Whitin loom with 624-hook Halton Jacquard for crochet quilts; one 5-cylinder, 200-hook Jacquard, made by Schaum & Uhlinger, Philadelphia; ten 4 x 4 box hand looms with 30-harness witchheads for narrow fabrics; two 4 x 4 box hand looms with 400-hook and 600-hook Jacquard machines, from Thomas Halton's Sons, Philadelphia.

**Knitting.**—One full automatic knitting machine, made by George D. Mayo Machine Company, Laconia, N. H. One combination ribber and footer, one ribber made by Scott & Williams, Philadelphia. One "Banner" knitting machine, made by Hemphill Manufacturing Company, Pawtucket, R. I. One ribber, made by Wildman Manufacturing Company, Norristown, Pa. One looper, made by Beattie Manufacturing Company, Cohoes, N. Y. One looper, made by Grosser Machine Company, New York.

#### 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 experimental dyeing, dye-testing, color-matching, and the testing of dyed samples to light, acids, alkalis, etc., as well as for 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, and dyeing of raw stock, cops, skeins, warps, and piece goods.

The department has a large collection of dye-stuffs 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 Elberfeld Company, New York.  
 Danker & Marston, Boston, Mass.  
 American Dyewood Company, New York.  
 Berlin Aniline Works, New York.  
 Casella & Co., New York.  
 Bosson & Lane, Boston.  
 Kallé & Co., New York.  
 Geisenheimer & Co., New York.

**Dye-house Equipment.**—Seven dye vats; one Roesler & Hasslacher bleaching vat; one Jefferson high-pressure boiling-out kler; one hand-dyeing jigger; one 10-gallon steam-jacketed copper kettle; one steam aging box; one Fairmount warp dyeing machine; one Textile Finishing Company's warp dyeing machine; one Textile Finishing Company's warp sizing machine; one 5-can upright dryer; one small Light-foot 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.

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

#### Power and Power Transmission.

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

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

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

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

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



## 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, 400†.....	1	1	1
Weaving, 401.....	2	2	2
Mechanical Drawing, 430.....	2	2	2
Woodwork, 431.....	2	2	2
Forge-work, 432.....	2	2	--
Foundry, 433.....	--	--	2
Algebra, 441.....	5	3	--
Geometry, 442.....	--	2	5
Elementary Physics, 440.....	2	2	2
Composition and Rhetoric, 450.....	3	3	3
Military Drill, 480.....	3	3	2
Totals.....	22	22	21

## Sophomore Year.

Carding and Spinning, 400.....	2	2	2
Weaving, 401.....	2	2	2
Textile Designing, 402.....	2	1	1
Cloth Analysis, 403.....	--	1	1
Inorganic Chemistry, 420.....	3	3	3
Inorganic Chemistry (laboratory), 421.....	2	2	2
Geometry, 443.....	5	--	--
Advanced Algebra, 444.....	--	3	--
Trigonometry, 445.....	--	2	5
American Literature, 451.....	3	3	3
Military Drill, 480.....	3	3	2
Military Tactics, 481.....	1	1	1
Totals.....	23	23	22

\*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.
Carding and Spinning, 400.....	4	4	4
Weaving, 401.....	3	3	3
Textile Designing, 402.....	3	2	2
Cloth Analysis, 403.....	—	1	1
Dyeing, 410.....	2	2	2
Dyeing (laboratory), 411.....	3	3	3
Steam Engines and Boilers, 435.....	2	2	2
English, 452, 453.....	3	3	3
Military Drill, 480.....	3	3	2
Totals.....	23	23	22

## Senior Year.

Carding and Spinning, 400.....	4	4	4
Weaving, 401.....	4	4	4
Textile Designing, 402.....	3	3	3
Cloth Analysis, 403.....	1	1	1
Dyeing, 410.....	1	1	1
Dyeing (laboratory), 411.....	3	3	3
Mill Accounting and Mill Costs, 404.....	1	1	1
Machine-shop Work, 434.....	2	2	2
Elect three periods from the following:			
English Literature, 454.....	2	2	2
Economics, 455.....	1	1	1
Military Drill, 480.....	3	3	2
Modern Languages, 460, 461.....	3	3	3
Totals.....	22	22	22

## DESCRIPTION OF SUBJECTS.

400. **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 lap-pers: cards; silver 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.

**401. 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 recipes 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 doobby; 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.

**402. 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.

**403. 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.

**404. Mill Accounting and Cost Finding.**—The general fundamental principles of the various systems of cost-finding as applicable to the different classes of manufactured products are carefully explained, as

well as questions of commissions, discounts, depreciation, inventories, distribution of expenses, etc. As a clear understanding of accounting is necessary for intelligent cost-finding, the method of keeping accounts is studied in detail. The general idea is to impress on the student the relative cost of production for any class of manufactured product and to show how the different processes of manufacturing influence cost. One period, first, second, and third terms. Required of Seniors. Mr. HALSTEAD.

#### 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 dyestuffs, 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, 400.....	1	1	1
Weaving, 401.....	2	2	2
Mechanical Drawing, 430.....	2	2	2
Woodwork, 431.....	2	2	2
Forge-work, 432.....	2	2	--
Foundry, 433.....	--	--	2
Algebra, 441.....	5	3	--
Geometry, 442.....	--	2	5
Elementary Physics, 440.....	2	2	2
Composition and Rhetoric, 450.....	3	3	3
Military Drill, 480.....	3	3	2
Totals.....	22	22	21

Sophomore Year.

Carding and Spinning, 400.....	2	2	2
Weaving, 401.....	2	2	2
Textile Designing, 402.....	2	1	1
Cloth Analysis, 403.....	--	1	1
Inorganic Chemistry, 420.....	3	3	3
Inorganic Chemistry (laboratory), 421.....	2	2	2
Geometry, 443.....	5	--	--
Advanced Algebra, 444.....	--	3	--
Trigonometry, 445.....	--	2	5
American Literature, 451.....	3	3	3
Military Drill, 480.....	3	3	2
Military Tactics, 481.....	1	1	1
Totals.....	23	23	22

## Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Dyeing, 410.....	2	2	2
Dyeing (laboratory), 411.....	5	3	3
Organic Chemistry, 422.....	2	2	2
Analytical Chemistry, 424, 425.....	5	7	7
English, 452, 453.....	3	3	3
Military Drill, 480.....	3	3	2
German, 460.....	3	3	3
Totals.....	23	23	22

## Senior Year.

Dyeing, 410.....	3	3	3
Dyeing (laboratory), 411.....	2	2	2
Organic Chemistry, 423.....	2	2	2
Analytical Chemistry, 425.....	6	6	6
Organic Chemistry (laboratory), 426.....	3	3	3
Elect six periods from the following:			
English Literature, 454.....	2	2	2
Economics, 455.....	1	1	1
Military Drill, 480.....	3	3	2
German, 460.....	3	3	3
Totals.....	22	22	22

## DESCRIPTION OF SUBJECTS.

410. **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, and the action of acids, alkalis, 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, eosin, 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, alkalis, 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.*

**411. 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 pattern 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.\*

420. **Inorganic Chemistry.**—Newell's *Inorganic 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, Doctor WILLIAMS, and Mr. PATE.

421. **Inorganic Chemistry.**—Laboratory work. Newell's *Inorganic Chemistry*. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the classroom. The latter part of the year is devoted to an introductory course in qualitative analysis. Two periods. Required of Sophomores. Mr. PATE and Mr. SHERWOOD.

422. **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 through the aliphatic series. Two periods. Required of Juniors in Dyeing. Doctor RAY.

423. **Organic Chemistry.**—A continuation of 422, beginning with the aromatic series. Two periods. Required of Seniors in Dyeing. Professor WITHERS.

424. **Analytical Chemistry.**—W. A. Noyes' *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. Four periods, first term. Required of Juniors in Dyeing. Doctor WILLIAMS.\*

425. **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. Six periods. Required of Seniors in Dyeing. Doctor WILLIAMS.\*

426. **Organic Chemistry.**—Laboratory work. Orndorff's *Laboratory Manual*. 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. Three periods. Required of Seniors in Dyeing. Doctor RAY.

\* For further information see course in Chemistry.

## MECHANICAL ENGINEERING.\*

430. **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. COBURN.

431. **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.

432. **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.

433. **Foundry.**—Recitations and exercises in foundry work, including moulding, 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.

434. **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.

435. **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 to inertia and tangential pressures; the class also studies the steam-engine indicator, indicator rigging, and steam distribution as disclosed by the indicator.

The various forms of steam boilers are studied, and the methods employed in their construction are noted. The following subjects are studied in detail: 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. Two periods. Required of Juniors in Textile Industry. Mr. VAUGHAN.

\* For further information see course in Mechanical Engineering.

## PHYSICS.\*

In this course special stress is laid upon the subjects of mechanics, liquids, gases, and heat. It includes the study of the fundamental units, British and metric standard measures, definitions of force, work and power, laws of motions, principles of machines, mechanics of fluids, gases, and heat, and brief introductions to the study of sound and light. Two periods. Required of Freshmen. Mr. LATANÉ.

## MATHEMATICS.

441. **Algebra.**—Wells' *New Higher Algebra*. Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutation, combinations, and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; three periods, second term. Required of Freshmen. Prerequisite: For first term, entrance requirements; for second term, the work of the first term, or, in case of failure, a term standing of 60 per cent or more, and a final examination grade of at least 40 per cent, on the work of the first term. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

442. **Plane Geometry.**—Wentworth's *Plane and Solid Geometry*. A complete course in Plane Geometry, including numerous original exercises. Two periods, second term; five periods, third term. Required of Freshmen. Prerequisite, entrance requirements. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

443. **Solid Geometry.**—A thorough course in Solid Geometry, with more than two hundred original exercises. Also, the application of Plane Geometry to conic sections. Required of Sophomores. Five periods, first term. Prerequisite, first-term Freshman mathematics and 442. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

444. **Advanced Algebra.**—Wells' *New Higher Algebra*. The general theory of equations, the solution of higher equations, determinants, etc. Required of Sophomores. Three periods, second term. Prerequisite, 441 and 442. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

445. **Trigonometry.**—Wells' *Plane and Spherical Trigonometry*. Plane Trigonometry. Definitions of the trigonometric functions;

\* For further information see course in Electrical Engineering.

derivation of formulæ, with their application. Solution of plane triangles, etc. Spherical Trigonometry. Solution of spherical triangles. This course includes the solution of many practical problems. Required of Sophomores. Two periods, second term; five periods, third term. Prerequisite, 441 and 442. Professor YATES, Mr. HARRISON, Mr. ANGEL, and Mr. TUCKER.

#### ENGLISH.

450. **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. Professor HARRISON, Doctor SUMMEY, and Mr. PECKHAM.

451. **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. PECKHAM.

452. **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. Three periods, first and second terms. Required of Juniors. Professor HARRISON.

453. **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. Three periods, third term. Required of Juniors. Professor HARRISON.

454. **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. Two periods. Elective for Seniors. Professor HARRISON.

**ECONOMICS.**

455. 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. Open to Seniors. Doctor SUMMEY.

**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, by frequent repetitions, and by 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.

460. **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; and a scientific reader. Elective for Juniors and Seniors. Doctor RUDY.

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

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

#### MILITARY SCIENCE.

480. **Drill.**—Callsthenic exercises; bayonet exercises; military signaling; school of the soldier, squad, company and battalion; ceremonies including inspection, parade, review and guard mounting; guard duty; marches and minor tactics; attack and defense; gallery and range target practice. Three hours each week for the first and second terms; two hours each week for the third term. Captain PEACE and Cadet Officers of the Battalion.

**Tactics.**—Theoretical instructions in infantry drill regulations, field-service regulations, manual for guard duty, and small-arms firing manual. One hour each week required of Sophomores. Captain PEACE.

## TWO-YEAR COURSE IN TEXTILE INDUSTRY.

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
Totals.....	22	22	21

#### 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
Totals.....	22	22	21

## 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 on 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 dobbie on loom; fixing dobbie. 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. 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 first and second-year students. Professor NELSON and Mr. STEED.

#### DRAWING AND SHOP WORK.

**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. CONVERN.

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

#### MATHEMATICS.

**Arithmetic.**—Milne's *Standard Arithmetic*. A thorough consideration of the fundamental methods and operations of Arithmetic, beginning with decimal fractions and completing the subject. Five periods, first term. Required of first-year students. Mr. HARBELSON and Mr. TUCKER.

**Algebra.**—Wells' *New Higher Algebra*. A thorough treatment of the fundamental conceptions and operations of Elementary Algebra, with special attention to factoring, fractions, simple equations, simultaneous equations in two or more unknowns, and problem solving. Five periods, second and third terms. Required of first-year students. Mr. HARRISON, Mr. ANGEL, and Mr. TUCKER.

**Drill.**—Calisthenic exercises; bayonet exercises; military signaling; school of the soldier; squad, company and battalion; ceremonies including inspection, parade, review and guard mounting; guard duty; marches and minor tactics; attack and defense; gallery and range target practice. Three hours each week for the first and second terms; two hours each week for the third term. Captain PEACE and Cadet Officers of the Battalion.

#### ENGLISH.

**Short-course English.**—This is a thoroughly practical course in the elements of grammar, and of composition, especially spelling, sentence and paragraph structure, and letter-writing. Some reading is done in class and supplementary reading also is assigned for private study. Three hours a week. Required of first-year students. Doctor SUMMEY and Mr. PECKHAM.

#### 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.

#### ENGLISH.

**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. PECKHAM.

## NORMAL COURSES.

### I. For Rural Teachers:

- (a) Two-year Course.
- (b) One-year Course.
- (c) 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 there is 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 are devoted largely to agriculture and nature study, and include also 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 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
{Animals.....	3	3	3
English.....	3	3	3
Mathematics.....	5	5	5
Horticulture.....	3	3	3
Military Drill.....	3	3	2
Totals.....	23	23	22

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
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
Military Drill.....	3	3	2
Totals.....	19	19	18

(b) ONE-YEAR COURSE.

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
Totals.....	20	20	20

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

## THE MAY SCHOOL FOR TEACHERS.

MAY 14 TO 26, 1913.

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**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 who desire to devote all of their time to Agriculture and Nature Study can do so, while those teachers who wish 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. H. R. FULTON.

School Management, Supt. Z. V. JUDD.

School Gardens, Supt. F. M. HARPER.

Farm Crops, Prof. C. L. NEWMAN.

Farm Animals, Prof. J. C. McNUTT.

Horticulture, Prof. J. P. PILLSBURY.

Soils, Prof. M. E. SHERWIN.

Insects, Mr. Z. P. METCALE.

Poultry, Mr.

Arithmetic, English, History, etc., are taught by the regular professors and instructors of the College.

No fees are charged for this course. Board may be had at \$2.75 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

**THE REGISTRAR,**

**A. and M. College, West Raleigh.**

## DONATIONS.

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### To the Textile Department.

*Universal Winding Company, Boston, Mass.*—One filling winder; supplies for winding and doubling machine.

*Hampton Manufacturing Company, Easthampton, Mass.*—Mercerized cotton yarns.

*Ivey Manufacturing Company, Hickory, N. C.*—Picker-sticks, lug straps.

*L. H. A. Schwartz & Co., Boston, Mass.*—Samples of foreign cottons.

*Wm. C. Robinson & Son Co., Baltimore, Md.*—Lubricating oils.

*Stuart W. Cramer, Charlotte, N. C.*—Four volumes. Useful Information for Cotton Manufacturers.

*Textile Manufacturer, Charlotte, N. C.*

*Mill News, Charlotte, N. C.*

*Southern Textile Bulletin, Charlotte, N. C.*

*Wool and Cotton Reporter, Boston, Mass.*

*Fibre and Fabric, Boston, Mass.*

*New York Journal of Commerce, New York.*

*Kallé & Co., New York.*—Collection of dyestuffs and pattern cards.

*Cassella & Co., New York.*—Collection of dyestuffs and pattern cards.

*Farbenfabriken of Elberfeld Company, New York.*—Collection of dyestuffs and pattern cards.

*H. A. Metz & Co., New York.*—Collection of dyestuffs and pattern cards.

*Berlin Aniline Works, New York.*—Collection of dyestuffs and pattern cards.

### To the Department of Mechanical Engineering.

*Frank A. Patterson & Co.*—One 25-horse-power Berryman closed feed water heater.

*Warren Webster & Co., Camden, N. J.*—Samples of new radiator valves.

*William Powell Company, Cincinnati, Ohio.*—Sample of Star Globe valve.

*American Steel and Wire Company, Chicago, Ill.*—A set of 91 lantern slides on "Steel Making," with lecture.

*A. Leschen & Sons, St. Louis, Mo.*—Samples of wire ropes and cables.

*Cosgrove-Cosgrove Manufacturing Company, Philadelphia, Pa.*—Samples of "Elasto" flexible lead fittings.

*The Jefferson Union Company, Lexington, Mass.*—Sectioned samples of unions.

*Patterson Allen Engineering Company.*—Sample of special pipe flange and pipe.

*Robbins Conveying Belt Company, Passaic, N. J.*—Lantern slides.

*C. W. Hunt & Co., West New Brighton, N. Y.*—Lantern slides.

*Jeffrey Manufacturing Company, Columbus, Ohio.*—Lantern slides.

*J. H. Williams & Co., Brooklyn, N. Y.*—A set of forgings, showing the steps in drop forging.

Copies of text-books from the following publishers:

*McGraw-Hill Book Company.*

*The Macmillan Company.*

*D. C. Heath & Co.*

*Henry Holt & Co.*

*Domestic Engineering Company.*

*D. Van Nostrand Company.*

*American Book Company.*

*Ginn & Co.*

Magazines from the following publishers:

*Cold Storage and Ice Trade Journal.*

*Southern Machinery.*

Especially low prices on equipment bought from the following:

*Kelly Foundry and Machine Company, Goshen, Ind.*—Rocking and dumping grate for 200-horse-power Atlas boiler.

*The Ohio Blower Company, Cleveland, Ohio.*—Rotary ball-bearing ventilators for forge shop.

*The William Poucell Company, Cincinnati, Ohio.*—Steam valves.

*The Kennicott Company, Chicago Heights, Ill.*—An 8,000-pound automatic water weigher.

*Motsinger Device Manufacturing Company, LaFollette, Ind.*—On magnetos for gas engine ignition.

*Samuel C. Rogers & Co., Buffalo, N. Y.*—On planer knife grinder with saw gumming attachment.

*Foos Gas Engine Company, Springfield, Ohio.*—On an 11-horse-power gasoline engine.



To the Department of Physics and Electrical Engineering.

*Southern Power Company.*—A fine collection of high-tension line material, consisting of cross-arms, insulators of various types, cable clamps and other devices used in line construction; photographs and a set of drawings of poles, substations, and engineering details.

*Carolina Power and Light Company.*—A set of high-tension line insulators.

*National Carbon Company.*—An exhibition case of carbon products, including battery electrodes; arc-lamp electrodes; dynamo brushes; furnace electrodes; telephone parts; lightning arresters, etc.

*Electric Storage Battery Company, Philadelphia.*—Exhibit of storage battery plates and material.

*John A. Roebling's Sons & Co., Trenton, N. J.*—A case of high-tension cables and a case of telephone cables.

*Union Carbide Company, Niagara Falls, N. Y.*—Samples and containers for calcium carbide.

*International Acheson Graphite Company, Niagara Falls, N. Y.*—Samples of graphite, electrodes, powders, and lubricants.

*General Electric Company, Schenectady, N. Y.*—A set of pictures.

*Westinghouse Electric and Manufacturing Company, Pittsburg, Pa.*—A set of pictures.

*Crocker-Wheeler Company, Ampere, N. J.*—A set of pictures.

*Wagner Electric and Manufacturing Company, St. Louis, Mo.*—A set of pictures.

*Allis-Chalmers Company, Milwaukee, Wis.*—A set of pictures.

*Kellogg Switchboard and Supply Company, Chicago.*—A set of pictures.

*McGraw-Hill Book Company, New York.*—A set of portraits of distinguished engineers and physicists.

The following publishers have presented the department with books:

*The Van Nostrand Company.*

*The Macmillan Company.*

*D. C. Heath & Co.*

*Longmans, Green & Co.*

*Allyn & Bacon.*

*Ginn & Co.*

*Walker Electric Company.*

*Macbeth-Evans Glass Company.*

The following publishing companies have donated periodicals :

*Electrical Review and Western Electrician Publishing Company.*

*McGraw Publishing Company.*

*Technical Publishing Company, San Francisco.*

*Southern Electrician.*

*Cotton Publishing Company, Atlanta, Ga.*

*General Electric Company.*

*Illuminating Engineering Publishing Company.*

#### To the Civil Engineering Department.

W. K. Carr, Washington, D. C.—A 5-inch equatorial telescope.

#### Books Given to the Library, 1911-1912.

Col. J. Bryan Grimes (author and editor).—*Notes on Colonial North Carolina; Great Seal of the State of North Carolina; Abstract of North Carolina Wills.*

Dr. T. P. Harrison.—*Essentials of Aesthetics in Painting*, G. L. Raymond; *Orator's Manual*, G. L. Raymond; *Art of Debate*, R. M. Alden; *Selections from Southern Poets*, W. L. Weber.

Miss Louie Sherwood.—*Kentucky Cardinal*, James Lane Allen; *Aftermath*, James Lane Allen.

Trinity College.—*Inauguration of President Few*, Trinity College publication.

State of North Carolina.—*Natural History of North Carolina*, John Brickell.

Harwood Frost (author).—*Good Engineering Literature.*

J. B. Hubbell (author).—*Lives of Franklin Plato Eller and John Carlton Eller.*

Coworkers' Fraternity of Boston.—*Legal Doctrine and Social Progress*, Frank Parsons.

Professor C. L. Newman.—Seventy-five volumes of agricultural books.

Executive Committee of the American Society for Testing Materials.—*The Life and Life-work of Charles B. Dudley.*

Dr. F. L. Stevens.—*Plant Relations*, by Coulter.

#### To the Soils Department.

American Coal Products Company, New York, N. Y.—Exhibition case of coal and its by-products.

Pomona Terra-cotta Company, Pomona, N. C.—Twelve hundred feet of 4-inch clay drain tile; also samples of clay drain tile for exhibition.

*Contentnea Concrete Company, Wilson, N. C.*—Samples of cement drain tile for exhibition.

*Bureau of Soils, Washington, D. C.*—Plane table, tripod, compass, alidade, auger, hammer, and odometer donated for use in soil survey during the year.

#### To the Modern Language Department.

*Spanish Class, 1913.*—One middle piece Globe-Wernicke bookcase.

To the Vorwärts Verein—Messrs. *Bergthold, Detjen, and Klein.*—One bulletin-board.

*Members of the Vorwärts Verein.*—One top, one bottom, and one middle piece Globe-Wernicke bookcase.

*Senior Class in Modern Languages.*—One middle piece Globe-Wernicke bookcase.

*Dr. A. Rudy.*—*Berlitz Methode*, 1st and 2d part; *Commercial German*, Arnold Kutner; *Ein Nordischer Held*, H. H. Boll; *Elementary German Grammar*, Worman; *Erustes und Heiteres*, J. Schrakamp; *Foundations of German*, Kaiser and Monteser; *Germelshausen-Gerstücker*, A. Busse; *German Prose*, Osthaus and Biermann; *Geschichten aus der Tonne*; *Glück Auf*, Müller and Wenckeback; *Grundzüge der Naturlehre*, Wallentin; *Helmholtz's Populäre Vorträge*, Shumway; *Lessing's Minna von Barnhelm*; *Macmillan's Progressive German Course*; *Märchen und Erzählungen für Anfänger*, Guerber; *Verdeutschungsbücher VII, Die Schule*; *Wagner's Entwicklungslehre*; *Wildermuth's Der Einsiedler*.

## CATALOGUE OF STUDENTS.

### Graduates.

<i>Name.</i>	<i>Post Office.</i>	<i>Course.</i>
CHARLES EDWARD BELL, B.S.,	Kinston,	Chem.
JAMES HOWARD BROWN, B.S.,	Charlotte, R. 4,	Agr.
JOHN DOWNIE COOPER, JR., B.E.,	Henderson,	M. E.
PAUL EVERETT COWGILL, M. E.,	Columbus, Ohio,	C. E.
JAMES LEONIDAS DUNN, B.S.,	Scotland Neck,	Agr.
JOHN WILLIAM HARRELSON, B.E.,	Lawndale,	M. E.
WILLIAM FLAUD MORRIS, B.E.,	Asheboro,	M. E.
WILLIAM FRANKLIN PATE, B.S.,	West Raleigh,	Chem.
DUANE B. ROSENKRANS, A.B.,	West Raleigh,	Agr.
THOMAS BARNES STANSEL, B.S.,	Allenton,	Chem.

### Senior Class.

NEELY ORMOND ALEXANDER,	Matthews, R. 17,	Agr.
ALLISON HODGES BOND,	Fayetteville,	M. E.
ALAN THURMAN BOWLER,	Sanford, Fla.,	C. E.
CLAYTON EDWARD BROWN,	Chocowinity,	C. E.
STEPHEN COLE BRUNER,	Raleigh,	Agr.
BRUCE LEGRIER CALDWELL,	Concord,	Chem.
CHARLES LEE CRUSE,	Salisbury,	Agr.
RALPH CAMPBELL DEAL,	Concord,	E. E.
ERNEST COFIELD DERBY,	Rocky Mount,	C. E.
MCNEELY DUBOSE,	Morganton,	E. E.
NEVIN GOULD FETZER,	Concord,	Chem.
THOMAS FENNER GIBSON,	Red Springs,	C. E.
RICHARD FREDERICK GIERSCH, JR.,	Raleigh,	E. E.
WILLIAM HAYWOOD GRAHAM, JR.,	Rowland,	E. E.
CHARLES GANZER HALL,	Wilmington,	Tex.
ROBERT MCKENZIE HARDISON,	Morven,	C. E.
NATHANIEL DAVID HARGROVE,	Richmond, Va.,	Agr.
HARRY HARTSELL,	Asheville,	E. E.
WILLIS ASKEW HOLDING,	Raleigh,	Chem.
CARL HORN,	Rutherfordton, R. 3,	Tex.
SAMUEL BENJAMIN HOWARD,	Morganton,	M. E.
RALPH WILKINSON HOWELL,	Belhaven,	Agr.
JOHN GORDON KELLOGG,	Sunbury,	Agr.

<i>Name.</i>	<i>Post Office.</i>	<i>Course.</i>
SAM. JONES KIRBY,	Selma, R. 1,	Agr.
CARL JOSHUA LAMBETH,	Thomasville,	M. E.
CURTIS WILLIAMS LEE,	Monroe,	M. E.
THOMAS PINKNEY LOVELACE,	Henrietta,	E. E.
JAMES EDWARD MCGEE,	Mount Olive,	Tex.
THOMAS HUNT MACKIE,	Yadkinville,	Agr.
NEILL MCQUEEN,	Fayetteville,	Tex.
WALTER RAY MANN,	Aberdeen,	Agr.
HENRY BASCOM MERCER,	Wilmington,	C. E.
SIMON TURNER MITCHNER,	Garner,	M. E.
JAMES RICHARD MULLEN,	Charlotte,	Chem.
CHARLES MCKEE NEWCOMB,	Raleigh,	C. E.
CHARLIE WASHINGTON OWENS,	Saratoga, R. 1,	C. E.
ALEXANDER HOLLADAY PICKEL,	Raleigh,	E. E.
BRYANT MONROE POTTER,	Southport,	C. E.
LOUIS NAPOLEON RIGGAN,	Raleigh,	C. E.
ARCHIE KNIGHT ROBERTSON,	Rowland,	Agr.
DAVID WALTER SEIFERT,	New Bern,	C. E.
FLEMING BATES SHERWOOD,	Raleigh,	Chem.
WILLIAM TALMAGE SHULL,	Beaufort,	C. E.
JAMES MCCREE SMITH,	Rutherfordton, R. 4,	Agr.
ORUS WILDER SMITH,	Kipling,	M. E.
EDWARD PINKNEY SPEER,	Boonville,	E. E.
TALMAGE HOLT STAFFORD,	West Raleigh,	Agr.
CLARENCE ALEXANDER STEDMAN,	Greensboro,	Chem.
NEDHAM BRYAN STEVENS,	Goldsboro,	Agr.
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.
HERBERT LEE TAYLOR,	Raleigh,	M. E.
GEORGE LOGAN THOMPSON,	Goldsboro,	E. E.
JOHN SAM THOMPSON,	Lewiston,	Agr.
GEORGE REID TROTTER,	Charlotte,	E. E.
HARRY MOORE WALTON,	Morganton,	E. E.
HUGH POWELL WHITTED,	Mebane,	C. E.
FRED. BARNETT WHEELER,	High Point,	M. E.
WALLACE WOODSON WILLIAMS,	Raleigh,	Chem.

<i>Name.</i>	<i>Junior Class.</i>	<i>Post Office.</i>	<i>Course.</i>
LEWIS ALLEN AMMON,		Marshall, R. 4,	Agr.
CHARLES SIDNEY ANDREWS,		Kinston,	M. E.
GILBERT LUTHER ARTHUR, JR.,		Morehead City,	Chem.
CHARLES ALBION BACHE,		Live Oak, Fla.,	E. E.
ROGER MOORE BAILEY,		Elm City,	Agr.
GRADY LEE BAIN,		Greensboro,	C. E.
EDWIN DENNIS BOWDITCH,		Toecane,	Agr.
RODNEY LAW BOYLIN,		Wadesboro,	Agr.
GEORGE WALLACE BRICE,		Charlotte,	E. E.
HERMAN BURKE BRIGGS,		West Raleigh,	M. E.
AMOS BAXTER CLEMENT,		Oxford, R. 1,	E. E.
WILLIAM RANDOLPH CLEMENTS,		Raleigh,	E. E.
THOMAS ALEXANDER COLE,		Cole's Mills,	Agr.
JOHN BURKE COWARD,		Webster,	E. E.
LISTON LLOYD DAIL,		Chinquapin,	Chem.
JAMES MADISON DAVIS,		Asheboro,	E. E.
PAUL DEXTER DAVIS,		Fremont,	C. E.
JOHN BARTLETT FEARING,		Elizabeth City,	Chem.
DANIEL BURNIE FLOYD,		Fairmont,	M. E.
ROY DURANT GOODMAN,		Concord, R. 2,	Agr.
CICERO FRED GORE,		Wilmington,	C. E.
WILLIAM HENRY GRIFFIN, JR.,		Goldsboro,	C. E.
FELIX STANTON HALES,		Wilson,	C. E.
LEROY CORBETT HAND,		Chadbourn,	Tex.
HENRY SPOONER HARRISON, JR.,		Enfield,	Agr.
THOMAS ROY HART,		Monroe,	Tex.
ERNEST ECCLES HEDRICK,		Lexington,	Tex.
THOMAS JASPER HEWITT,		New Bern,	C. E.
RILEY WEAVER HIGGINS,		Leicester, R. 1,	Agr.
PETER ARMSTRONG HOLT,		Graham,	Agr.
WALTER CLEARLY HOPKINS,		Newport News, Va.,	C. E.
ERNEST JUDSON JEFFRESS,		Canton,	E. E.
DOUGLAS CREELMAN JEFFREY,		West Raleigh,	C. E.
JAMES WRIGHT JOHNSON,		Garland,	E. E.
HARVEY LANGILL JOSLYN,		Farm School,	Agr.
JOSEPH DREWRY JOYNER,		Franklinton,	E. E.
SIR KEITH KELLER,		Lilesville,	C. E.
GEORGE EDISON KIDD,		Charlotte,	E. E.
LOUIS BRASWELL KNIGHT,		Tarboro, R. 1,	Agr.

<i>Name.</i>	<i>Post Office.</i>	<i>Course.</i>
WILLIAM CORNELIUS LASSITER,	Potocasi,	Tex.
NATHAN WILSON LEGRAND,	Rockingham,	E. E.
MORRIS LIFEROCK,	Yonkers, N. Y.,	C. E.
JAMES IVON MCCALLUM,	Charlotte,	C. E.
FRANK WHITESIDE McCOMB,	Hickory,	M. E.
ROBERT SYLVANUS MAUNEY,	Murphy, R. 1,	E. E.
ROBERT TOLAR MELVIN,	White Oak,	Agr.
LEWIS LARKINS MERRITT,	Wilmington,	C. E.
RONALD EARL MEWBORN,	Kinston,	E. E.
THOMAS KENNETH MIAL,	Raleigh,	M. E.
WILLIAM TIMOTHY NIXON,	Sunbury,	Agr.
WALTER HERBERT PARKER,	Rocky Mount,	M. E.
THAD. ROWLAND PARRISH,	Middleburg,	E. E.
HENRY AUBREY QUICKEL,	Lincolnton,	Tex.
JOHN OLAN RANKIN, JR.,	Gastonia,	Agr.
WALTER EUGENE REDDEN,	Horea Path, S. C.,	M. E.
GARLAND THOMAS ROWLAND,	Middleburg,	E. E.
WILLIAM DUDLEY SIMPSON,	Raleigh,	C. E.
ROBERT LEE SLOAN,	Charlotte, R. 5,	Agr.
FRANCIS CLARK SMITH,	New Bern,	C. E.
COLIN GEORGE SPENCER,	Asheboro,	Agr.
JOHN BROWN STEELE,	Yadkin Valley,	Agr.
WILLIAM BEAVER STOVER,	Granite Quarry,	E. E.
CHARLIE BERRYHILL STOWE,	Charlotte, R. 4,	Agr.
WILLIAM HENRY SULLIVAN,	Greensboro,	C. E.
STANTON BANKS SYKES,	Efland, R. 2,	E. E.
ALVIN CHESLEY WILSON,	Raleigh,	E. E.

**Sophomore Class.**

GRAHAM HUDSON ANTHONY,	Shelby,	M. E.
BASCUM OTTO AUSTIN,	Charlotte,	E. E.
WALTON AVERY,	Morganton,	C. E.
CLARE RUSSELL BAILEY,	Chadbourn,	Agr.
HUGH BAILEY,	Woodleaf,	Agr.
RICHARD GRIFFIN BALL,	Raleigh,	Chem.
THOMAS LEAVINGSTON, BAYNE, JR.,	Manchester,	Agr.
GEORGE ERNEST BEAL,	Rocky Mount, R. 3,	Agr.
HERMAN VON BIBERSTEIN,	Charlotte,	C. E.
ENOS CLARKSON BLAIR,	Raleigh,	Agr.
JULIAN CHRISHOLM BRANTLEY,	Spring Hope,	Agr.

<i>Name.</i>	<i>Post Office.</i>	<i>Course.</i>
VICTOR WINFRED BREEZE,	Durham,	C. E.
CHARLEY MEEKINS BRICKHOUSE.	Columbia,	Agr.
JAMES RAMSEY BUCHANAN,	Dillsboro,	E. E.
HARLEY WILSON BULLARD,	Chadbourn,	Agr.
HENRY BURLESON,	Plumtree,	E. E.
GEORGE DOWELL BURROUGHS,	Everett,	Agr.
ROBERT OLIN CALDWELL,	Concord,	Agr.
WALTER GRAHAM CALDWELL.	Huntersville,	Agr.
JAMES ALBRIGHT CHAMBERS,	Asheville,	C. E.
EDWARD LAMAR CLOYD,	Lenoir,	M. E.
EDWIN LACY COBLE,	Greensboro,	Agr.
BURTIS O. CONE,	Spring Hope,	Agr.
HOWARD MILTON COOL,	Cleveland, Ohio,	Agr.
DAVID DAVIES COX,	Cullowhee,	M. E.
St. JOHN COX,	Cullowhee,	M. E.
ALLEN BACON COZART,	Stem,	Agr.
LELAND MIOT CRAIG,	Charlotte,	C. E.
IRL RAYMOND CRANE,	Marshville,	E. E.
FRANKLIN LEE CRAWFORD,	Winston-Salem,	Agr.
WOODPIN GRADY CREDELE,	Swan Quarter, R. 2,	Agr.
JOHN JENNINGS DUNLAP,	Wadesboro,	Agr.
WILLIAM ROBERT EVERETT,	Palmyra, R. 1,	Agr.
ARCHIE ARRINGTON FARMER,	Wilson,	E. E.
JOHN EDMUND FEREBEE,	Camden,	Agr.
KARL MCARTEE FETZER,	Reidsville,	E. E.
JAMES FONTAINE,	Woodsdale,	E. E.
WILLIAM BENJAMIN FOSTER,	Winston-Salem,	M. E.
JAMES ROSCOE FRANCK,	Richlands,	Agr.
ROGER JEROME FRANKLIN,	Winston-Salem,	Agr.
JOHN GEORGE HARVEY GETTNER, JR.,	Hickory,	Tex.
RALPH ALLISON GILL,	Statesville,	E. E.
CHARLES BURGWYN GORRELL,	Ore Hill, R. 1,	Agr.
JOHN WESLEY GRIFFITH,	Winston-Salem,	E. E.
WINSTON PAYNE GWATHNEY,	Richmond, Va.,	C. E.
JACK WILSON HARDIE,	Brown Summit, R. 2,	M. E.
DREW SUGG HARPER,	Snow Hill,	Agr.
JOHN HARVEY, JR.,	Snow Hill,	C. E.
WILLIAM SNELLING HICKS,	Raleigh,	Chem.
RONEY MELTON HIGH,	Kenly,	E. E.
HUBERT ROYSTER HOLDING,	Raleigh,	Agr.



<i>Name.</i>	<i>Post Office.</i>	<i>Course.</i>
FRANK HENRY HOUCK,	Hickory,	C. E.
WILLIAM TISDALE HURTT,	New Bern,	M. E.
WILLIAM LEON JEWELL,	Wilmington,	C. E.
LACY JOHN,	Lumber Bridge, R. 1,	Agr.
WILLIS NEAL JOHNSTON,	Moorestville,	M. E.
WILLIAM MANLEY JONES,	Raleigh,	M. E.
CHARLES MARTIN KEPHART,	High Point,	E. E.
JOHN LINDON KNOX,	Town Creek,	Agr.
FABIUS HENRY KOHLSS,	Columbia,	E. E.
NATHAN SAMPSON LACHICOTTE,	Waverly Mills, S. C.,	Agr.
ARCHIE RHEM LANE,	Hertford,	C. E.
WILLIAM ALBERT LANE,	Goldsboro,	M. E.
EDGAR CLARK LATHAM,	Plymouth,	E. E.
DOUGLAS ALLEN LEARD,	Raleigh,	C. E.
LAWRENCE TYSON LEE,	Raleigh,	Chem.
FRED. BENNETT LEGGETT,	Wadesboro,	Agr.
JOSEPH RAOUL LEGUENEC,	Abbeville, S. C.,	C. E.
WILLIAM DIXON LEWIS,	Gastonia, R. 2,	Agr.
WILLIAM BENNETT LITTLE, JR.,	Wadesboro,	Agr.
MARION LAMAR LIVERMAN,	Roxobel,	C. E.
ALBERT LYTCH,	Laurinburg,	Agr.
THOMAS ROBERT MCDDEARMAN,	Rocky Mount,	C. E.
ROBERT RUSSELL McIVER,	Sanford,	Agr.
JAMES EDGAR McNEELY,	Moorestville,	M. E.
HARVEY CAMPBELL McPHAIL,	Mount Olive,	Agr.
SHERROD ERVIN MENZIES,	Hickory,	M. E.
JOSEPH EDWARD MICHAEL,	Gibsonville,	Agr.
THOMAS GUY MONROE,	Eagle Springs,	Agr.
WARREN LAFAYETTE MOODY,	Concord,	Chem.
OTIS CORCORAN MOORE,	Bennettsville, S. C.,	E. E.
FRANK BULLOCK MORTON,	Townsville,	E. E.
JOHN COLIN MURCHISON, JR.,	Charleston, S. C.,	Agr.
HENRY KOLLOCK NASH, JR.,	Wilmington,	Agr.
JULIUS ISAAC NEAL,	Madison, R. 1,	Agr.
THOMAS WILLIAMSON NICHOLLS,	Edenton,	E. E.
EDGAR BYRON NICHOLS,	Mount Airy, R. 3,	M. E.
LEE RABOTEAU PAGE,	Aberdeen,	Agr.
RICHARD EASTWOOD PAGE,	Biscoe,	Agr.
PEYTON HOGUE PARK,	West Raleigh,	C. E.
FITZGERALD ELIZUR PATTON,	Pisgah Forest,	Agr.

<i>Name.</i>	<i>Post Office.</i>	<i>Course.</i>
WILL. ROBERT PATTON,	Morganton,	C. E.
MILTON VANCE PERRY,	Durant's Neck, R. 3,	M. E.
LINDSAY M. PHELPS,	Plymouth,	C. E.
HENRY MARRIOTT PHILIPS,	Battleboro, R. 2,	Agr.
ARTHUR JEFFERSON PHILLIPS, JR.,	Portsmouth, Va.,	M. E.
JOSEPH JENNINGS PHILLIPS,	Portsmouth, Va.,	C. E.
ROBERT AVERY PLYLER,	Monroe, R. 5,	E. E.
FRED. DAVIS POISSON,	Wilmington,	Chem.
TRACY WINCHESTER PORTER,	Charlotte,	Agr.
WILLIAM OWEN POTTER,	Cash Corner,	M. E.
CHARLES LONDON PROFFITT,	Bald Creek,	Agr.
THOMAS HECTOR PURCELL,	Maxton, R. 2,	Tex.
MILLARD REED QUINERLY,	Grifton, R. 1,	Agr.
JOHN BARTOW REES,	Lincolnton,	E. E.
WADE HAMPTON REINHARDT,	Stanley,	Agr.
THURMAN LESTER ROBERSON,	Robersonville,	M. E.
DANIEL ERNEST ROBERTS,	Red Springs,	Agr.
JOE WILLIAM ROSS,	Fort Mill, S. C.,	Agr.
EMORY PELL ROUSE,	LaGrange,	E. E.
JOHN FRANKLIN SCHENCK, JR.,	Lawndale,	M. E.
WILLIAM THOMAS SHAW, JR.,	Weldon,	Tex.
PRICE ELIAS SHERRILL,	Mount Ulla,	Agr.
FRANK STEED SMITH,	Greensboro,	M. E.
PHIL. CLARKE SMITH,	Tettington, Va.,	Agr.
WALTER HERBERT SMITH,	Prospect Hill, R. 1,	E. E.
WHITEFOORD INGERSOLL SMITH,	Asheville,	Tex.
ROY CLINTON STOCKWELL,	Raleigh,	Chem.
REDDING STANCILL SUGG,	Rocky Mount, R. 5,	Agr.
LOYD ERSKINE SUTTON,	Monroe, R. 5,	E. E.
RAY SUTTON,	LaGrange,	E. E.
WALTER CLYBURN TAYLOR,	Rhodhiss,	Tex.
ZEB. WHITEBURST TAYLOR,	Tarboro,	E. E.
ARTHUR LEE TEACHEY,	Teachey,	Agr.
DANIEL WOOD THORP, JR.,	Rocky Mount, R. 4,	C. E.
JAMES RICHARD TOWNSEND,	Greensboro,	C. E.
THOMAS SETTLE TUCKER,	Fair Bluff,	C. E.
CLYDE LOREINE VANN,	Fayetteville,	E. E.
EDWARD WILLIAM WALDRUP,	Hayesville,	E. E.
JAMES HUGH WARD,	Rocky Mount,	C. E.
JAMES WIGGINS WATTS, JR.,	Williamston,	E. E.

<i>Name.</i>	<i>Post Office.</i>	<i>Course.</i>
EDWARD HOWERTON WEATHERSPOON,	Sanford,	E. E.
MEBANE STRANGE WHITE,	Mebane, R. 3,	M. E.
TOM. BREM WILLIAMS,	Moorestville,	Agr.
OWEN ZELOTES WRENN,	Durham,	C. E.
CLEM COVENINGTON YARBROUGH,	Locust Hill,	M. E.

**Freshman Class.**

CALVIN MONROE ADAMS,	Statesville,	Agr.
HENRY MILTON ALEXANDER,	Matthews, R. 17,	E. E.
LEWIS CARROLL ATKISSON,	Greensboro,	Tex.
EARLE AXLEY,	Statesville,	Chem.
GRANVILLE VERNON BAUM,	Norfolk, Va.,	E. E.
MILLS EURE BELL,	Wilmington,	C. E.
BEVERLY MOSS BLOUNT,	Washington,	E. E.
JAMES FRANKLIN BRAWLEY,	Moorestville,	Agr.
HARRY ESKRIDGE BROOKS,	Sunbury,	Chem.
RALPH BROOKS,	Alliance,	Tex.
JOSEPH BRANDON BRUNER,	Raleigh,	Agr.
WALTER FREDERICK BULLA,	Asheboro,	Agr.
LINGURN SKIDMORE BURKHEAD,	Whiteville,	C. E.
WILLIAM BUCHANAN CALHOUN,	Laurinburg,	Agr.
JOHN CLINE CARPENTER,	Charlotte, R. 12,	C. E.
JOHN MANN CARTER,	Washington,	E. E.
LOUIS GORHAM CHERRY,	Raleigh,	E. E.
AMBROSE SCHENCK CLINE,	Lincolnton, R. 2,	Agr.
GEORGE DEWEY COLLIER,	Goldsboro,	C. E.
LESTER DURKETT COLTRANE, JR.,	Concord,	E. E.
GUY WINSTON COMMANDER,	Elizabeth City,	Agr.
HENRY BACON CONSTABLE,	Charlotte,	E. E.
AUGUSTUS BUELL COOKE,	Littleton,	E. E.
EDWARD LIVINGSTON COTTON,	New London,	M. E.
CLIFFORD COX,	Richlands,	Agr.
RAYMOND CROWDER,	Raleigh,	E. E.
EUGENE GOOCH CURRIN, JR.,	Durham,	Agr.
HOSEA CURTICE,	Raleigh,	Agr.
DALLAS DAILY,	Elizabeth City,	C. E.
RICHARD KELLY DAVENFORT, JR.,	Mount Holly,	Agr.
SAMUEL FREDERICK DAVIDSON,	Swannanoa,	Agr.
LEONIDAS POLK DENMARK,	Raleigh,	E. E.
HERBERT JENNINGS DOCKERY,	Wadesboro,	E. E.

<i>Name.</i>	<i>Post Office.</i>	<i>Course.</i>
AUBREY CLAYTON DOGGETT,	Brown Summit,	M. E.
ROBERT BRUCE DONALDSON,	Charlotte, R. 8,	Agr.
LONDON ANDERSON DOUB,	Clayton, R. 2,	Agr.
CHARLES PATTERSON ELDRIDGE,	Raleigh,	C. E.
WILLIAM KING ELDRIDGE,	Burkeville, Va.,	M. E.
WILLIAM RAIFORD EWING,	Manchester,	Agr.
WILLIAM DEVANE FAISON,	Faison,	Agr.
WILLIAM HERBERT FARMER,	Bailey,	Agr.
RUTLEDGE HUGHES FEILD,	Raleigh,	Agr.
ROLAND FIELDS,	LaGrange,	Agr.
WHEELER MARTIN FIELDS,	LaGrange, R. 4,	Agr.
JULIAN JUDSON FLEETWOOD,	Hertford,	Agr.
AARON CONARD FLUCK,	Lexington,	E. E.
HERSEY CECL FOREHAND,	South Mills,	E. E.
LOUIS WILLIAM GARDNER,	Shelby,	E. E.
WILLIAM HOWARD GASKILL, JR.,	Morehead City,	C. E.
WALTER ALEXANDER GIBSON,	Richmond, Va.,	C. E.
PETER MELVIN GILCHRIST,	Laurinburg, R. 4,	M. E.
CHARLES ERDMAN GRANTHAM,	Fairmont, R. 3,	M. E.
FRANK TEMPLE GRAY,	Cullasaja,	M. E.
WILLIAM TULL GRIMSLEY,	Greensboro,	Chem.
JAMES HOLMES HADDOCK,	Richmond, Va.,	C. E.
JOHN HUBBARD HALL, JR.,	Raleigh,	Agr.
HARRY EARL HAMILTON,	Raleigh,	Chem.
ROBERT WILLIAMS HAMILTON, JR.,	Jonesville, S. C.,	Agr.
DREW SUGG HARPER,	Snow Hill,	Agr.
JOHN FLEMING HARRIS,	Mapleville, R. 1,	Agr.
RUSSELL PEYTON HARRIS,	Louisburg,	Agr.
HENRY MERCER HARSHAW,	Murphy,	E. E.
JAMES LAFAYETTE HASSELL,	Edenton,	Agr.
RONDO K. HATTON,	Charlestown, W. Va.,	C. E.
JOSEPH ALFRED HELMS,	Unionville,	E. E.
HARRY BENJAMIN HENDERLITE,	Raleigh,	E. E.
GEORGE GARLAND HENDRICKS, JR.,	Greensboro,	C. E.
VERNON RAY HERMON,	Conover, R. 1,	Agr.
DAVID LEE HOOVER,	Cullowhee,	M. E.
HERNDON HOPKINS,	Greensboro,	Agr.
JOHN STUART HOWARD,	Salemburg,	Agr.
WILLIAM STEVENS HOWELL,	New Bern,	Agr.
JESSE FRANK HUETTE,	Thomasville,	M. E.

<i>Name.</i>	<i>Post Office.</i>	<i>Course.</i>
JAMES HERBERT HUMPHREY,	Shannon, R. 1,	Agr.
TRACEY WALSH HUNTLEY,	Charlotte, R. 1,	M. E.
SAMUEL O'KELLEY IRELAND,	Elon College, R. 1,	Agr.
LONA ALVIN JAYNES,	Fonta Flora,	M. E.
GEORGE LINWOOD JEFFERS,	Richmond, Va.,	E. E.
VERNON JUNIUS JOHNSON,	Hendersonville, R. 5,	M. E.
RAYMOND ALLEN JONES,	Charlotte,	C. E.
CHARLES MARVIN KANoy,	Biscoe,	E. E.
JOHN DAVID KERNODLE, JR.,	Graham,	E. E.
WAVERLY F. KILPATRICK,	Asheville,	Agr.
ROBERT VERNON KNIGHT,	Tarboro, R. 1,	Agr.
FRED. HENRY KNOWLES,	Wallace, R. 1,	Agr.
WILLIAM CLOSS KNOX,	Town Creek,	Agr.
MARVIN BURKE KOONCE,	Richlands,	Agr.
FRANK KIPP KRAMER,	Elizabeth City,	M. E.
CRAVEN EARL LEE,	Newton Grove,	Chem.
HUGH SHAW LEE,	Raleigh,	C. E.
IRVIN TRACY LEWIS,	Gastonia, R. 2,	Agr.
JESSE WEBB LINDLEY,	Siler City,	Agr.
RISDEN TYLER BENNETT LITTLE,	Wadesboro,	Agr.
DONALD GRATTAN McARN,	Laurinburg,	E. E.
LEEWOOD McCALLUM,	Rowland,	Agr.
JAMES ALEXANDER McCOLMAN,	Gibson,	Agr.
HADDON SPURGEON MACKIE,	Granite Falls,	M. E.
ANGUS BLUE McKINNON,	Laurinburg,	Agr.
MALCOLM LEE McLEOD,	Maxton,	Agr.
JAMES ALEXANDER McPHERSON,	Cameron,	M. E.
JAMES AMBROSE MADISON,	Cullowhee,	Agr.
ROBERT EDWARD MADISON,	Cullowhee,	E. E.
PIERRE MALLETT,	Etowah,	M. E.
RUFUS ALEXANDER MALLOY,	Raleigh,	C. E.
WILLIAM DANIEL MARTIN,	Pelham,	M. E.
JOHN DANIEL MILLER,	New London,	C. E.
GEORGE HAROLD NASH,	Durham,	M. E.
ROBERT TIMBERLAKE NEWCOMB,	Raleigh,	Agr.
HERBERT BURNS NORRIS,	Raleigh,	M. E.
CARL OSBORNE,	Cleveland Mills,	C. E.
REID ALLISON PAGE,	Biscoe,	Agr.
ROBERT LOGAN PATTON, JR.,	Morganton,	C. E.
OSCAR PEARSALL, JR.,	Wilmington,	Agr.

<i>Name.</i>	<i>Post Office.</i>	<i>Course.</i>
WILLIAM VICTOR PEARSALL,	Wilmington,	Chem.
THOMAS CLAYTON PEGRAM,	Asheville, R. 4,	Tex.
JOHN GAY PINNER,	Columbia, R. 1,	Agr.
FRANK WILSON PROCTOR,	Raleigh,	E. E.
CARL CLAWSON PROFFITT,	Bald Creek,	Agr.
HARRY WILSON RANKIN,	Concord, R. 2,	Agr.
GEORGE WILLIAM RAWLINS,	Raleigh,	Tex.
JOHN DUNCAN RAY,	Sanford,	Agr.
THOMAS JEFFERSON REEVES,	Canto,	Agr.
LEROY LEO ROBERSON,	Robersonville,	E. E.
CHAUNCEY HARDWICK ROBERTS,	Fletcher,	Agr.
JOHN MORGAN ROBERTS,	Louisville, Ga.,	Agr.
JOHN PAUL ROBERTSON,	Rowland,	Agr.
FRED. LEE ROLAND,	Casida,	M. E.
LONDON COATS ROSSER,	Jonesboro, R. 1,	E. E.
LINDLEY MURREY ROWE,	Burgaw,	C. E.
BROOKS WALKER SETZER,	Troutman,	E. E.
JOHN FRANKLIN SMITH,	Wilmington,	C. E.
WALTER JOHNSTON SMITH, JR.,	Charlotte,	Agr.
PAUL ELWOOD SNEAD,	Reidsville,	E. E.
JOSEPH MCKAY SPEARS,	Lillington,	C. E.
JAMES LENNIE STEPHENS,	Holly Springs, R. 2,	Agr.
JOHN WOROE STEPHENS,	Leasburg,	Agr.
PELHAM MARION STOCTON,	Charlotte, R. 3,	Agr.
WILBUR SUMNER,	Asheville,	E. E.
BANKS COOPER TALLEY,	Statesville,	Agr.
DANIEL MCGILVARY TATE,	Littleton,	Agr.
JESSE ERNEST TREVATHAN,	Rocky Mount, R. 1,	Agr.
GEORGE EUGENE TRUST,	East Arcadia,	E. E.
CHARLES HENRY WADSWORTH,	Concord,	Agr.
WILL MILLER WATSON,	Swan Quarter,	E. E.
ELBRIDGE LEE WEATHERS,	Shelby, R. 5,	Agr.
CHARLES WRIGHT WEAVER,	Franklin, R. 1,	M. E.
BUXTON WHITE,	Elizabeth City,	Agr.
LEONARD WHITE, JR.,	Statesville,	C. E.
DON CLAIR WHITLEY,	Albemarle,	Agr.
GEORGE WHITSON,	Swannanoa,	E. E.
RASSIE EWERT WICKER,	Pinchurst,	C. E.
FRED. CARL WIGGINS,	Middleburg,	E. E.
JOHN BYNUM WIGGINS,	Sunbury,	Agr.

<i>Name.</i>	<i>Post Office.</i>	<i>Course.</i>
STEPHEN VANCE WILKINS,	Rose Hill, R. 1,	Agr.
EDGAR DONALD WILLIAMS,	Greensboro, R. 3,	Agr.
JOHN RODMAN WILLIAMS,	Sanford,	C. E.
MARSHALL MCDIARMID WILLIAMS, JR.,	Faison,	M. E.
JOHN WILDS WILSON,	Johnson City, Tenn.,	Tex.
HENRY KOLLOCK WITHERSPOON,	Greensboro,	E. E.
MOSES WASHINGTON WOODARD, JR.,	Raleigh,	Chem.
LESTER DONALD WOOTEN,	LaGrange,	Agr.
EDWIN S. WRIGHT,	Boardman,	Chem.

**Irregular.**

BARNETTE WILLIAM ALLEN,	Creedmoor,	Nor'l.
DAVIS AYDELETTE ROBERTSON,	Portsmouth, Va.,	Agr.
WILLIAM ALEXANDER SMITH,	Raleigh,	Agr.
ARCH COLUMBET YOW,	Greensboro,	Agr.

**TWO-YEAR COURSES.****First Year.**

WILLIAM CROCKER ALBRIGHT,	Mount Airy,	M. A.
LEA SANDERS ALBRITTON,	Kinston,	Tex.
WALTER HOLT BELL,	Morehead City,	M. A.
RALPH MARTIN CALDWELL,	Campobello, S. C.,	M. A.
HENRY QUINN COVINGTON,	Laurinburg,	M. A.
ROBERT WYLIE DALL,	Kinston,	M. A.
WILLIAM ALLEN DARDEN, JR.,	Ayden, R. 1,	M. A.
ARCHIE SCHERRER DEAL,	Spencer,	M. A.
JOHN HULON DUNN,	Scotland Neck,	M. A.
HENRY GRADY FARTHING,	Boone, R. 1,	M. A.
BION FORMYDUVAL,	Whiteville,	M. A.
FRED. HARLEE FREEZE,	Mooreville,	M. A.
FREDERICK CHARLES GEESE,	Norfolk, Va.,	M. A.
CLARENCE AUGUSTUS HASTY,	Maxton, R. 1,	M. A.
CHARLES HAYWOOD HAUGHTON,	Mount Airy,	M. A.
WILLIAM STEPHEN HAYWOOD,	Mount Gilead,	M. A.
RICHARD SEAWELL HINTON,	Raleigh,	M. A.
DEAN RONEY HOLT,	Graham,	M. A.
THOMAS JEFFERSON INGRAM,	Wadesboro,	M. A.
SIDNEY EARLE JENNETTE,	Lake Landing,	M. A.
RANGWALD OLIVER JOHNSON,	Southport,	M. A.

<i>Name.</i>	<i>Post Office.</i>	<i>Course.</i>
FITZHUGH CURRIE JONES,	Red Springs,	M. A.
RUSSELL HENDERSON KALE,	Mount Holly,	Tex.
LUTHER WILLIAM KIDD,	Rhodhiss,	M. A.
ROBERT BRUCE LENNON,	Skyco,	M. A.
CHARLES DENNIS LOANE,	Charlotte,	M. A.
CHARLES JOHNSON McLEOD,	Biscoe, R. 1,	M. A.
FRANK JUDSON MIXON,	Washington,	M. A.
THOMAS JERRY MOODY,	East Laporte,	M. A.
JAMES GASTON MURRAY,	Fairfield,	M. A.
RUFUS GWYN PARLIER,	Ronda,	M. A.
GEORGE FLETCHER PATE,	Gibson, R. 1,	M. A.
THOMAS CARLYLE PATE,	Gibson,	M. A.
JERE PEARSALL,	Dunn,	M. A.
JOSEPH WILLIAMS PEDEN,	Wilkesboro,	M. A.
ASA GRAY PHELPS,	Merry Hill,	M. A.
LENOX DANIEL RAWLINGS,	Wilson,	M. A.
PENN CARRIGAN SCOTT,	Greensboro,	Tex.
CLEM OSCAR SEIFERT,	New Bern,	M. A.
PAUL DUNSTON SMITH,	Merry Hill,	M. A.
BRUCE STROWD,	Chapel Hill,	M. A.
JOHN RALPH WATSON,	Portsmouth, Va.,	M. A.

**Second Year.**

WILEY GRAY JOHNSON,	Germanton, R. 1,	M. A.
DURWOOD BELMONT KEARNEY,	Franklinton,	M. A.
CHARLES DUNCAN McIVER,	Greensboro,	Tex.
ALBERT CALDWELL MORRISON,	Charlotte,	M. A.
FRED. MURRAY POYNER,	Moyock,	M. A.
CLARENCE ELMER STONE,	Pinnacle,	M. A.
WILLIAM COBB TOLER,	Goldsboro,	M. A.

**ONE-YEAR COURSE IN AGRICULTURE.**

HENRY HOWARD BASS,	Latta, S. C.
HENRY PERRINE BILYEU,	Southern Pines.
ROY LUREN BOWMAN,	Liberty.
LEMUEL REDMOND BROOME,	Kinston.
GORDON MCGREGOR CAMERON,	Manly.
HERBERT LEWIS DARDEN,	Wilmington.
HOWARD DONOVAN,	McIver.
JARRELL DONOVAN,	McIver.



<i>Name.</i>	<i>Post Office.</i>
WILLIE HIGHT DUVAL,	Pollockville, R. 1.
ROBERT SAMUEL EDMISTON,	Mount Ulla.
BURGESS WOOD GAITHER,	Hertford.
BENJAMIN FRANK GAITLEY,	Rowland.
SIMMONS AB GANDY,	Darlington, S. C.
GREY CABE GARRISS,	Pikeville, R. 2.
WILTON RALPH GURLEY,	Goldsboro, R. 1.
RICHARD WATTS HARRIS,	Stem.
ALBERT PEARSON HOFFER,	Hammonton, N. J.
WALTER MONTAGUE HOOKER, JR.,	Aurora, R. 2.
WILLIAM R. HOOTS,	Jennings.
EWEN ADDISON HOWARD,	St. Pauls.
GILMER HUGHES,	Jackson.
BRAXTON FLETCHER JOHNSON,	Rose Hill.
JAMES TROY KING,	St. Pauls, R. 1.
CHARLES LAMPSON LEHMANN,	New York, N. Y.
JOHN DUNCAN McARTHUR,	Parkton, R. 1.
LEROY BAXTER MILLER,	Rowland, R. 2.
SIM AARON NATHAN,	Wilmington.
ED. SPEAR PHILLIPS,	Ingalls.
ALFRED ROWLAND PITTMAN,	Fairmont.
IRA CLAYTON ROBINSON,	Clinton, R. 2.
CLINTON SEAWELL,	Carthage, R. 1.
PETER EVANS SHIELDS,	Scotland Neck.
HERBERT SPENCER,	National Soldiers' Home, Va.
JOHN ALEXANDER STILWELL,	Charlotte, R. 3.
GRADY LEE STROUP,	Gastonia, R. 2.
WILLIAM CRATON WALTERS,	Barnesville, R. 1.
JESSE BURNS WARD,	Rowland.
WILLIAM MILES WELLS, JR.,	Wilson.
EDMUND HARMON WILLCOX,	Carthage, R. 4.
DAN ARTHUR WILLEY,	Gates.

## WORK COURSE—AGRICULTURE.

JOHN BAINES,	Spring Hope, R. 1.
JAMES O. BRANTLEY,	Spring Hope, R. 1.
JOHN MILNOR CAMP,	Rutherfordton, R. 2.
LIONEL TENNYSON DANIELS,	Oriental.
FOY FISHER,	Concord.
EDGAR LEE GRIFFITH,	Charlotte, R. 2.

<i>Name.</i>	<i>Post Office.</i>
JOHN HENRY HARDIN,	Waynesville, R. 3.
MALCOLM PERSON HOOVER,	Woodleaf.
WARREN MEWBORN LAUGHINGHOUSE,	Grifton, R. 1.
ISAAC CHAUNCEY MEEKINS, JR.,	Manteo.
HARRY PARKS NORMAN,	Oxford, R. 3.
WILLIAM ARTHUR PRUITT,	Thomasville.
JOHN WHITE RAMSEUR,	Kings Mountain.
CHARLES COMPTON RICHARDSON,	Snow Camp.
WILLIAM ELMON ROWLAND,	Willow Springs.
ROBERT JORDEN BLYTHE SECREST,	Waxhaw.
OSCAR DARIUS SEITZ,	Newton.
ADLAI CLINGMAN SHUFORD,	Barnardsville.
ROY DAVIS UNDERWOOD,	Salemburg.
MAHON DARE WETMORE,	Woodleaf.
LYMAN ABBOTT WHITE,	Salemburg.

## WINTER COURSE—AGRICULTURE.

WILLIAM JOHNSTON ANDREWS,	Raleigh.
DALLAS MALONE ANDERSON,	Burlington.
MARTIN CLINTON AUMAN,	Seagrove.
BERTON HAYWOOD BERRY,	Swan Quarter.
JOHN HENRY BOST,	Rockwell.
WILLIAM BUELL BOSCHEN,	New York, N. Y.
VICTOR BULLARD,	Fayetteville.
HERBERT STANLEY CLARK,	Manchester.
CHARLES RANSOM EMBRY,	Weldon.
JAMES OTIS EVANS,	Greenville.
CARSON MAXWELL FISHER,	Rockwell.
HORACE CLEVELAND FUTRELL,	Rich Square.
BENJAMIN HARRISON GURLEY,	Old Fort.
SETH BLOUNT HARRIS,	Swan Quarter.
ANDREW GRANT HENDREN,	Straw.
HENRY WHITE JESSUP,	Rich Square.
RUSSELL MONROE KEE,	McAdenville.
ROBERT NUTON LOOPER,	Samarcand.
JAMES BAITY McKEITHAN,	Regan.
ANDREW JACKSON MAY,	Reese.
ROBERT LEE NEAL,	McIver.
OSCAR HUGH PHILLIPS,	Salisbury.
SAM LESTER PHILLIPS,	Trinity, R. 1.

<i>Name.</i>	<i>Post Office.</i>
GEORGE GEBEN REESE,	Reese.
WILLIE EPHIRD RHYNE,	Mount Holly.
BASCOM LEE RICHARDSON,	Randleman.
ARTHUR WHITNEY ROSE,	Beasley.
CLIFTON PENDLETON SAWYER,	Weeksville.
ADAM HENRY SCOTT,	Winston-Salem, R. 3.
JACK SHARPE,	Statesville.
GEORGE REESE SHERRILL,	Reese.
EARLIE WRIGHT SMITH,	Willow Springs.
WILLIE LANGDON STALLINGS,	Spring Hope.
HOWARD ALVA THACKER,	Winston-Salem.
BRAC MILTON WESTON,	Swan Quarter.
JETHRO WILSON,	Reese.

**WINTER COURSE—TEXTILE.**

SEABURY TREADWELL DANIEL,	Wilson.
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## MAY SCHOOL FOR TEACHERS.

<i>Name.</i>	<i>Address.</i>
MAMIE ARBOLD,	Cameron.
PATRICK BENTON LAMM,	Lucama.
CAREY CLYDE BRANSON,	Burlington, R. 7.
SARAH ELIZABETH BLEDSOE,	Raleigh.
ANNIE LAURA BRYAN,	Moncure.
OLLIE ANNA COOK,	Concord.
OSCAR CREECH,	Castalia.
CAREY ESTELLE DORSETTE,	Siler City.
CHRISTINE DOWD,	Wallace.
JAMES EDWARD DOWD,	Wallace.
LUCY FRANCIS EDWARDS,	Elm City, R. 3.
ELVIRA WORTH FOUST,	Mt. Vernon Springs.
ARDEE LESLIE GRAHAM,	Mt. Gilead.
ERNEST LELAND GREEN,	Lucama.
MAUD HARRIS,	Garysburg.
LAURA OLIVIA HUFF,	East Bend.
MYRA LEWIS HUNTER,	Raleigh.
AUGUSTA LEMONS,	Reidsville, R. 2.
KENNETH HENRY MCINTYRE,	Holly Springs.
FLOSSIE BELLE MCLEAN,	Eagle Springs.
THADDEUS MATTHEWS,	Cardenas.
PAUL HARRIS NANCE,	Rocky Mount.
ANNIE PEARLE PARKER,	Knightdale, R. 1.
MINOR RICHARDSON,	Neuse.
JULIA MARGARET ROSEY,	Pine Bluff.
MAGGIE SMITH,	Maxton.
SALLIE CAMPBELL SMITH,	Maxton.
LYDIA SORRELL,	Raleigh, R. 6.
ANNA CHRISTINE STUTTS,	Eagle Springs.
SALLIE SMITH WALL,	Stoneville, R. 1.
JOSEPH ADOLPHUS WILLIAMS,	Spencer.
WILLIAM LARKIN WINKLER,	Lenoir.

**SUMMARY.****By Classes.**

Graduate.....	10
Senior.....	62
Junior.....	66
Sophomore.....	136
Freshman.....	162
Short Courses:	
Mechanic Arts, 2 years.....	45
Textile, 2 years.....	4
Agricultural, 1 year.....	40
Agricultural, irregular.....	3
Agricultural, work, 2 years.....	21
Agricultural, winter, 7 weeks.....	36
Agricultural Normal, 1 year.....	1
Textile, winter.....	1
May School, 2 weeks.....	32
Total.....	619

**By Courses.**

Agricultural, including short courses.....	293
Chemical.....	27
Civil Engineering.....	77
Mechanical Engineering, including Mechanic Arts.....	106
Electrical Engineering.....	90
Textile, including short courses.....	26
Total.....	619

# TWENTY-SECOND ANNUAL COMMENCEMENT

MAY 30, 1911.

## DEGREES CONFERRED.

### BACHELORS OF SCIENCE.

#### In Agriculture.

JOHN MANN BEAL,	ROBERT WALTER GRAEBER,
JOEL EDWARD BROWN,	FRED. TAYLOR PEDEN,
JAMES HOWARD BROWN,	JOSEPHUS PLUMMER QUINERLY,
HENRY ROY CATES,	GEORGE ROMULUS ROSS,
JOHN IVEY EASON,	JAMES MORGAN SHERMAN,
	WALTER BOOKER WINFREE.

#### In Chemistry.

CHARLES EDWARD BELL,	CHARLES MCKIMMON, JR.
EDWIN SEXTON DEWAR,	JAMES HUNTER WATSON.

### BACHELORS OF ENGINEERING.

#### In Civil Engineering.

JOHN BENJAMIN BRAY,	THOMAS DEVIN HARRIS,
WILLIAM BACHMAN BROWN,	JACOB LEE MARTIN,
GUY KEDAR BRYAN,	ROBERT LEE MORRISON,
KIT BRYAN,	CHARLIE AUGUSTINE SPEAS,
	FRED. GOODE TUCKER.

#### In Electrical Engineering.

WILLIAM BAILEY,	PAUL NATHANIEL PITTENGER,
WILLIAM HURD DAVIS,	JOHN WESLEY ROLLINSON,
ELMO VERNON FREEMAN,	GRAEME ROSS,
GEORGE WILLIAM GILLETTE,	LUCIUS ESEK STEERE, JR.
JOHN TAYLOR PEDEN, JR.	EDWIN THOMAS WADSWORTH.

#### In Mechanical Engineering.

VON PORTER BYRUM,	ORIN MORROW SIGMON,
HENRY CALEB CLAY,	THOMAS WHITMELL THORNE,
IRA SHORT,	MARION FULLER WYATT.

#### In Textile Industry.

TOLLIE CHESTER BARBER,	EUGENE RICHARD McCracken,
DAVID RAYMOND HINKLE,	LOYD HURST SWINDELL.

LOUIS REINHOLD DETJEN, Course in Agriculture, Master of Science.  
FRANK WEBBER SHERWOOD, Course in Chemistry, Master of Science.

**HONORS.****HONORS IN SCHOLARSHIP.****For Four Years.**

C. E. BELL,  
J. H. BROWN,

R. W. GRAEBER,  
J. P. QUINERLY.

**FOR 1910-1911.****Senior Class.**

J. M. BEAL,  
C. E. BELL,  
J. H. BROWN,  
W. B. BROWN,  
KIT BRYAN,

H. R. CATES,  
R. W. GRAEBER,  
T. D. HARRIS,  
F. T. PEDEN,  
J. T. PEDEN, JR.

P. N. PITTENGER,  
J. P. QUINERLY,  
G. R. ROSS,  
GRAEME ROSS.

**Junior Class.**

McNEELY DuBOISE,  
N. G. FETZER,  
T. F. GIBSON,  
R. M. HARDISON,

R. W. HOWELL,  
J. G. KELLOGG,  
J. E. MCGEE,  
W. R. MANN,  
L. N. RIGGAN,

F. B. SHERWOOD,  
O. W. SMITH,  
A. W. TAYLOR,  
H. L. TAYLOR.

**Sophomore Class.**

E. D. BOWDITCH,  
H. B. BRIGGS,  
C. E. BROWN,  
J. B. COWARD,  
P. D. DAVIS,

C. F. GORE,  
F. S. HALES,  
L. C. HAND,  
T. R. HART,  
T. J. HEWITT,  
R. T. MELVIN,

T. K. MIAL,  
W. D. SIMPSON,  
F. C. SMITH,  
W. H. SULLIVAN,  
A. C. WILSON.

**Freshman Class.**

B. O. AUSTIN,  
C. R. BAILEY,  
H. VON BIBERSTEIN,  
E. C. BLAIR,  
V. W. BREEZE,  
J. R. BUCHANAN,  
E. L. CLOYD,

L. M. CRAIGE,  
K. M. FETZER,  
JAMES FONTAINE,  
MORRIS LIFEROCK,  
M. L. LIVERMAN,  
H. K. NASH, JR.  
P. H. PARK,  
M. R. QUINERLY,

J. B. REES,  
D. E. ROBERTS,  
W. H. SMITH,  
D. W. THORP,  
J. R. TOWNSEND,  
E. W. WALDROUP,  
O. Z. WRENN.

**First-year Textile.**

J. S. PICKETT.

**One-year Course in Agriculture.**

J. DEAL,

C. L. RHYNE,

S. V. WILKINS.

**Work Course in Agriculture.**

J. S. BARNARD,

RALPH SHARPE,

W. R. O'BRIANT,

J. B. WETHINGTON.

**Honors for Punctuality.**

B. O. AUSTIN,

R. W. HIGGINS,

E. P. ROUSE,

C. A. BACHE,

L. JOHN,

J. E. SCOTT,

J. S. BARNARD,

G. E. KIDD,

RAMAH SITTEKSON,

G. W. BRICE,

C. J. LAMBETH,

F. C. SMITH,

J. R. BUCHANAN,

C. W. LEE,

O. W. SMITH,

H. BURLESON,

E. G. LEE,

J. A. STILWELL,

W. G. CALDWELL,

A. LYTCH,

C. E. STONE,

W. R. CLEMENTS,

F. W. McCOMB,

A. W. TAYLOR.

T. J. CROOM,

J. E. MCGEE,

H. L. TAYLOR,

E. M. DEATON,

J. E. McNEELY,

R. G. THOMAS,

R. C. DIXON,

A. McNEILL,

C. L. UNDERWOOD,

T. F. EATON,

T. K. MIAL,

E. W. WALDRUP,

J. B. FEARING,

F. G. PATE,

J. B. WETHINGTON,

F. S. HALES,

OSCAR PEARSALL,

H. P. WHITTED,

R. M. HARDISON,

C. L. RHYNE,

H. J. WILKINSON.

F. O. HARTSHORN,

F. L. ROLAND,

**Medals Awarded.**

National Association of Cotton Manufacturers, D. R. HINKLE.

**Graduating Oration.**

J. P. QUINERLY.



## REGISTER OF ALUMNI.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
DURANT STEWART ABERNETHY, Resident Engineer, Southern Ry.	B.E. 1906,	Lynchburg, Va.
LEROY FRANKLIN ABERNETHY, Abernethy Hardware Co.	B.Agr. 1905,	Hickory, N. C.
NELSON ADAMS,	B.E. 1904, Farmer.	McColl, S. C.
HAYWOOD LEWIS ALDERMAN, Division Superintendent in Operating Department, Southern Power Co.	B.E. 1904,	High Point, N. C.
KEMP ALEXANDER, Superintendent Acme Hosiery Mills.	B.E. 1900,	Asheboro, N. C.
WILLIAM DAVIDSON ALEXANDER, JR., Engineer Mecklenburg Drainage Commission.	B.S. 1899,	Charlotte, N. C.
DANIEL ALLEN, Farming and Real Estate.	B.S. 1896,	Raleigh, N. C.
GEORGE GILDEROY ALLEN, Overseer of Dyeing, Erwin Cotton Mills.	B.E. 1906,	Cooleemee, N. C.
LESLIE LYLE ALLEN,* Cotton Merchant.	B.E. 1900,	Spartanburg, S. C.
ROBERT WILSON ALLEN, Superintendent of Schools.	B.E. 1893,	Sanford, N. C.
JOHN CAMILLUS APP, Real Estate, Insurance.	B.S. 1908,	Charleston, W. Va.
JOHN ALLEN AREY, M.S., 1910. Farmer.	B.S. 1909,	Elmwood, N. C.
DORSEY FROST ASBURY,* Leading Ordnance Draftsman, U. S. Naval Gun Factory.	B.S. 1898,	Washington, D. C.
GEORGE PAGE ASBURY, Draftsman U. S. Naval Gun Factory.	B.E. 1906,	Washington, D. C.
SAMUEL ERSON ASBURY, M.S., 1896. Assistant State Chemist.	B.S. 1893,	College Station, Tex.
SYDNEY WOODWARD ASBURY, Heating Engineer, American Machine and Manufacturing Co.	B.E. 1904,	Charlotte, N. C.
THOMAS MARTIN ASHE,†	B.E. 1895,	Raleigh, N. C.
ROBERT JAMES AVERY,* Superintendent Steam Shovel, Holston River Railway Co.	B.Agr. 1905,	Church Hill, Tenn.

\*Not heard from this year. †Deceased.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
ROBERT KENNETH BABINGTON, Engineering Department, Piedmont Telephone and Telegraph Co.	B.E. 1910,	Gastonia, N. C.
OSCAR LUTHER BAGLEY, Manager Coca-Cola Bottling Works.	B.S. 1905,	Weldon, N. C.
EUGENE CLEVELAND BAGWELL, Chief Engineer's Office, Seaboard Air Line Ry.	B.E. 1904,	Portsmouth, Va.
EDWARD PAR BAILEY, President Wilmington Iron Works.	B.E. 1904,	Wilmington, N. C.
WILLIAM BAILEY, Carolina Power and Light Co.	B.E. 1911,	Raleigh, N. C.
FRANK OSCAR BALDWIN,* Chemist Mathieson Alkali Works.	B.S. 1908,	Saltville, Va.
WILLIAM HERBERT DOUGHTY BANCK, Junior Engineer, U. S. Engineer's Office.	*B.E. 1909,	Havana, Cuba.
IRA WILSON BARBER, Superintendent Electric Light and Power Plant and Waterworks.	B.S. 1899,	Mount Airy, N. C.
JAMES CLAUDIUS BARBER, Farmer.	B.E. 1904,	Barber, N. C.
TOLLIE CHESTER BARBER, Henrietta Mills.	B.E. 1911,	Caroleen, N. C.
WILLIAM WALTER BARBER, Farmer.	B.E. 1904,	Barber, N. C.
FLETCHER HESS BARNHARDT, Heine Safety Boiler Co.	B.E. 1901,	Phoenixville, Pa.
WILLIAM ALEXANDER BARRETT,* Electrical Engineer, Missoula Light and Water Co.	B.E. 1904,	Missoula, Montana.
GEORGE FRANCIS BASON, Specification Department, Crocker-Wheeler Co.	B.E. 1908,	Ampere, N. J.
HERBERT SCANDLIN BATTIE, Resident Engineer, Pennsylvania Steel Co.	B.E. 1907,	Steelton, Pa.
JOHN MANN BEAL, Instructor in Botany, Miss. Agricultural and Mechanical College.	B.S. 1911,	Agr. College, Miss.
JAMES CLAUDIUS BEAVERS, Dept. of Soils and Crops, Purdue Agricultural Experiment Station.	B.Agr. 1906,	Lafayette, Ind.
SIDNEY HAMILTON BECK,* Marine Engine and Boiler Draftsman, Navy Department.	B.S. 1898,	Washington, D. C.
JOHN LELAND BECTON, Humphreys, Becton & Allen, Civil Engineers.	B.E. 1908,	Wilmington, N. C.
HARWOOD BEEBE, Farming and Milling.	B.E. 1908,	Spies, N. C.

\*Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
CHARLES EDWARD BELL, Assistant Food Chemist, N. C. Department of Agriculture.	B.S. 1911,	Raleigh, N. C.
NEEHDAM ERIC BELL, Soil Surveyor, State of Alabama.	B.S. 1906,	Montgomery, Ala.
WILLIAM OSBORNE BENNETT, JR., Manager Elbe Manufacturing Co.	B.E. 1901,	Maxton, N. C.
ROBERT LINN BERNHARDT, Secretary-Manager Salisbury Hardware and Furniture Co.	B.S. 1900,	Salisbury, N. C.
LESLIE GRAHAM BERRY, Manager Southern Engineering Co.	B.E. 1900,	Charlotte, N. C.
JOHN HENDERSON BIRDSONG, Chief Chemist and Metallurgist, The National Malleable Castings Co.	B.S. 1899,	Chicago, Ill.
JOE PITTMAN BIVENS, Engineering Department, New York and Queens Electric and Power Co.	B.E. 1907,	New York, N. Y.
JAMES ADRIAN BIZZELL, M.S., 1903. Ph.D., Cornell Univ. Assistant Prof. Soil Technology, N. Y. State College of Agriculture.	B.S. 1895,	Ithaca, N. Y.
FRED. McCULLOUGH BLACK, Engineering Apprentice Westinghouse Electric and Manufacturing Co.	B.E. 1910,	Wilksburg, Pa.
KENNETH LEON BLACK, Superintendent and Engineer, I. J. Smith & Co., Inc.	B.E. 1906,	Richmond, Va.
WILLIAM LAMAR BLACK, Southern Power Co.	B.E. 1908,	Charlotte, N. C.
JOHN ISHAM BLOUNT, C.E., 1897. Owner J. I. Blount & Co., and The Blount Specialty Co.	B.E. 1895,	Birmingham, Ala.
WILLIAM MORTON BOGART, Chief Engineer, General Fire Extinguisher Co. of Texas.	B.E. 1903,	Dallas, Tex.
THOMAS SAWYER BOND, Assistant Engineer of Location, National Railways of Mexico. Home Address, Windsor, N. C.	B.E. 1910,	Estacion Buenavista, Mexico, D. F.
LESLIE NORWOOD BONEY, Architect.	B.E. 1903,	Florence, S. C.
FRED. WILHELM BONITZ, Lawyer.	B.E. 1901,	Wilmington, N. C.
HENRY EMIL BONITZ, Architect.	B.E. 1893,	Wilmington, N. C.
WILLIAM DAVID BOSEMAN, Farmer, with R. H. Ricks.	B.E. 1902,	Rocky Mount, N. C.
ZOLLY MOSBY BOWDEN, Electrician, Florida Mining Co.	B.E. 1901,	Mulberry, Fla.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
ROY BOWDITCH, Operator, Southern Power Co.	B.E. 1910,	Charlotte, N. C.
ASA GRAY BOYNTON,* Landscape Engineer, Vanderbilt Estate.	B.E. 1908,	Biltmore, N. C.
CARL RAY BRADLEY, Motor Engineering Dept., Wagner Electric Manufacturing Co.	B.E. 1910,	St. Louis, Mo.
JAMES WASHINGTON BRAWLEY, Director of Agents, Southern Life and Trust Co.	B.S. 1895,	Greensboro, N. C.
JOHN BENJAMIN BRAY, Locating Department, Norfolk Southern R. R.	B.E. 1911,	Raleigh, N. C.
THOMAS JOHNSON BREVARD,* Twin City Transportation Co.	B.S. 1910,	St. Paul, Minn.
BENJAMIN ALEXANDER BROOM, Mechanical Inspector, Chicago, Burlington and Quincy R. R. Co.	B.E. 1905,	Lincoln, Neb.
CECIL DEWITT BROTHERS, National Railways of Mexico.	B.E. 1909,	Ajuno, Michoacan, Mex.
BEDFORD JETHRO BROWN, In charge of Meter Department, Southern Power Co.	B.E. 1901,	Charlotte, N. C.
FRANK HAMILTON BROWN, Teacher of Science, Cullowhee Normal and Industrial School.	B.Agr. 1908,	Cullowhee, N. C.
JOEL EDWARD BROWN,*	B.S. 1911,	Pendleton, S. C.
JAMES HOWARD BROWN, Instructor in Zoology, N. C. College of Agriculture and Mechanic Arts.	B.S. 1911,	West Raleigh, N. C.
WILLIAM BACHMAN BROWN, Piedmont Traction Co.	B.E. 1911,	Williamston, S. C.
THOMAS KINCAID BRUNER, Assistant Manager and Assistant Superintendent Francis Cotton Mills.	B.E. 1910,	Biscoe, N. C.
CARNEY JOHN BRYAN, Wholesale Fish Dealer.	B.E. 1907,	Panama City, Fla.
JOHN HARVEY BRYAN, Sales Department, Westinghouse Machine Co.	B.E. 1908,	Wilkinsburg, Pa.
GUY KEDAR BRYAN, Florida East Coast R. R., Key West, Fla.	B.E. 1911,	Key West, Fla.
KIT BRYAN, Greenville, Spartanburg and Anderson Ry. Co.	B.E. 1911,	Williamston, S. C.
ELTON ELROY BUCK,*	B.E. 1910,	Hampton, Va.
JOSEPH SAMUEL BUFFALOE, Physician.	B.S. 1897,	Garner, N. C.
JOEL W. BULLOCK,*	B.Agr. 1905,	Dabney, N. C., R. 1. Farmer.

\*Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
WALTER AUSTIN BULLOCK, Superintendent Porto Rico Leaf Tobacco Company's Cayey Plantations.	B.S. 1895,	Cayey, Porto Rico.
JAMES HARRY BUNN,* Superintendent Henderson Cotton Mills.	B.E. 1900,	Henderson, N. C.
WILLIAM BRYANT BURGESS, Electrical Draftsman, Government Navy Yard, Norfolk.	B.E. 1908,	Portsmouth, Va.
WILLIAM ANDREWS BUYS, Civil Engineer, The Interstate Cooperage Co.	B.E. 1906,	Belhaven, N. C.
VON PORTER BRYUM,	B.E. 1911,	Charlotte, N. C.
LINDSAY FERGUSON CARLTON, Westinghouse Electric and Manufacturing Co.	B.E. 1907,	Wilkesburg, Pa.
JOHN SAMUEL P. CARPENTER, Member Board of Directors and Superintendent Melville Manufacturing Co	B.E. 1903,	Cherryville, N. C.
JOHN WILLIAM CARROLL,* Physician.	B.S. 1897,	Wallace, N. C.
ROBERT HILL CARTER, Electrician, Isthmian Canal Commission.	B.E. 1907,	Corozal, Canal Zone.
HENRY BROZIER CARTWRIGHT, Assistant Engineer, Seaboard Air Line Ry.	B.E. 1905,	Jacksonville, Fla.
HENRY ROY CATES, Assistant Instructor and Student, Cornell University.	B.S. 1911,	Ithaca, N. Y.
JUNIUS SIDNEY CATES, M.Agr. 1904. Editor Southern Planter.	B.S. 1902,	Richmond, Va.
WILLIAM MILLER CHAMBERS, Payroll Clerk, W. M. Ritter Lumber Co.	B.E. 1905,	Maben, W. Va.
MARK HOPKINS CHESBRO, Farmer.	B.Agr. 1906,	Claremont, Va.
CONNOR CALHOUN CLARDY, Los Angeles Office, General Electric Co.	B.E. 1936,	Los Angeles, Cal.
CHARLES EDWARD CLARK, County Commissioner of Agriculture, Mecklenburg Co.	B.S. 1897,	Charlotte, N. C., R. 9.
DAVID CLARK, M.E. 1896, C.E. 1897. Owner and Editor Southern Textile Bulletin.	B.E. 1895,	Charlotte, N. C.
JAMES DUNCAN CLARK, President Peninsular Paper Co.	B.S. 1906,	Tampa, Fla.
JOHN WASHINGTON CLARK, Superintendent of Erwin Bleaching and Furnishing Plant.	B.E. 1906,	West Durham, N. C.
THORNE MCKENZIE CLARK,* Resident Engineer, Piedmont Traction Co.	B.E. 1909,	Greenville, S. C.

\*Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
WALTER CLARK, JR.,	B.E. 1903, Lawyer.	Raleigh, N. C.
WILLIAM ALEXANDER GRAHAM CLARK,	B.S. 1897, M.E. 1899. Textile Expert to the Tariff Board, U. S. Government.	Washington, D. C.
SAMUEL HERBERT CLARKE,	B.E. 1906, With H. Clarke & Sons.	Richmond, Va.
HENRY CALEB CLAY,	B.E. 1911, Neuse River Cotton Mills.	West Raleigh, N. C.
WILEY THEODORE CLAY,	B.E. 1906, M.E. 1909. Instructor N. C. College of Agriculture and Mechanic Arts.	West Raleigh, N. C.
ROBERT BANTER COCHRAN,	B.E. 1902, Chief Inspector, Bullock Electric Manufacturing Co.	Norwood, Ohio.
ANSON ELIHEM COHOON,	B.S. 1898, Forest Surveyor, U. S. Department of Agriculture.	Eugene, Oregon.
JOHN ELIOT COIT,	B.Agr. 1903, Assistant Professor of Pomology, University of California.	Riverside, Cal.
PAUL COLLINS,	B.S. 1901, Analytical and Consulting Chemist.	New Haven, Conn.
GEORGE WASHINGTON CORBETT, JR.,	B.E. 1895, Corbett & Corbett, Saw and Planing Mills.	Currie, N. C., R. 2.
SUMMEY CROUSE CORNWELL,	B.E. 1903, Civil Engineer, Solomon-Norcross Co., Civil Engineers, Atlanta, Ga.	Gastonia, N. C.
CHARLES EDWARD CORPENING,	B.E. 1894, Former.	Lenoir, N. C., R. 3.
LEWELLYN HILL COUCH,	B.E. 1908, Southern Bell Telephone and Telegraph Co.	Hamlet, N. C.
WALTER MILLER COWLES,	B.E. 1909, Chalmers Motor Co.	San Francisco, Cal.
DAVID COX,	B.E. 1894, County Surveyor and General Manager Yeopim Lumber Co.	Hertford, N. C.
DUNCAN ARCHIBALD COX,	B.S. 1906, Hardware Business.	Rowland, N. C.
WILLIAM PESCUD CRAIGE,	B.S. 1901,	Marion, N. C.
WILLIAM LOIS CRAVEN,	B.E. 1901, Designer and Estimator, York Bridge Co.	York, Pa.
CHARLES LESTER CREECH,	B.S. 1903, Sales Manager Spaul Brothers Wagon Works.	Winston-Salem, N. C.
ALEXANDER DOANE CROMAFTIE,	B.Agr. 1906, Farmer.	Garland, N. C.

\*Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
WILLIAM HENRY CROW,* Merchant and Farmer.	B.E. 1910.	Monroe, N. C. Superintendent Electric Plant.
FELIX GRAY CRUTCHFIELD,* Secretary and Treasurer Maynard-Crutchfield Co., Plumbers, etc.	B.E. 1901.	Winston-Salem, N. C.
EUGENE ENGLISH CULBRETH, Commercial National Bank.	B.E. 1903.	Raleigh, N. C.
HUGH McCULLOM CURRAN, Forestry Service, Philippine Government.	B.S. 1898.	Manila, P. I.
EDWIN SPEIGHT DARDEN,* Jones & Darden, Farmers and Warehousemen.	B.S. 1895.	Wilson, N. C.
WALTER LEE DARDEN, Chief Draftsman, Seaboard Air Line Ry.	B.E. 1903.	Portsmouth, Va.
JOSEPH FRANK DAVIDSON, Electrical Testing, Allis-Chalmers Co.	B.E. 1909.	Milwaukee, Wis.
GEORGE MASLIN DAVIS,* Draftsman, Mechanical Engineer's Office, N. and W. Ry.	B.E. 1901.	Roanoke, Va.
WILLIAM HURD DAVIS, General Electric Co.	B.E. 1911.	Schenectady, N. Y.
WILLIAM EARLE DAVIS, Westinghouse Electric and Manufacturing Co.	B.E. 1910.	East Pittsburg, Pa.
WILLIAM KEARNEY DAVIS, Superintendent Marion Manufacturing Co.	B.E. 1895.	Marion, S. C.
CLAUD COUNCIL DAWSON, Overseer of Carding, Morganton Manufacturing Co.	B.E. 1908.	Morganton, N. C.
THOMAS THEODORE DAWSON,* Florida East Coast Railway.	B.E. 1910.	Knight's Key, Fla.
WILLIAM SAMUEL DEAN, Overseer of Carding, Locke Erwin Mills.	B.E. 1909.	Concord, N. C.
LEWIS REINHOLD DETJEN, N. C. Agricultural Experiment Station.	M.S. 1911.	West Raleigh, N. C.
EDWIN SEXTON DEWAR, Assistant Chemist, E. L. Parker & Co.	B.S. 1911.	Mt. Pleasant, Tenn.
JOSEPH CHARLES DEY,*	B.S. 1895.	New Orleans, La.
JUNIUS FRANKLIN DIGGS, Planter and Merchant.	B.S. 1903.	Rockingham, N. C.
CARLTON O'NEAL DOUGHERTY, Farmer.	B.E. 1909.	North, S. C.
FRED. ATHA DUKE, Civil Engineer, Seaboard Air Line Ry.	B.E. 1909.	Portsmouth, Va.

\*Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JAMES LEONIDAS DUNN,	B.S. 1910,	Scotland Neck, N. C.
	Farmer.	
ALVIN DEANS DUFREE,	B.E. 1908,	Greenville, N. C.
	Manager Insurance Department, H. A. White's Agency.	
RAYMOND ROWE EAGLE,	B.E. 1908,	New Bern, N. C.
	Civil Engineer.	
MINNIC LUTHER EAGLE,	B.Agr. 1908,	Columbia, S. C.
	The Brady-Eagle Co., Real Estate.	
JOHN IVEY EASON,	B.S. 1911,	Stantonsburg, N. C.
	Farmer.	
JACOB TATUM EATON,	B.Agr. 1907,	Thomasville, N. C.
	Dairyman, Baptist Orphanage.	
WILLIAM HUNT EATON,	B.S. 1909,	Raleigh, N. C.
	State Dairyman, Department of Agriculture.	
LATTA VANDERION EDWARDS,	B.E. 1906,	Pullman, Wash.
	Professor of Railroad and Highway Engineering, Washington State College.	
SEBA ELDRIDGE,	B.E. 1907,	New York, N. Y.
	Investigator Charity Organization Society.	
TIMOTHY ELDRIDGE,	B.E. 1904,	Mount Olive, N. C.
	Superintendent Electric Light Plant and Waterworks.	
THEOPHILUS THOMAS ELLIS,	B.E. 1903,	Henderson, N. C.
	Farmer.	
WELDON THOMPSON ELLIS,	B.E. 1906,	West Raleigh, N. C.
	M.E. 1908. Assistant Professor of Mechanical Engineering, N. C. College of Agriculture and Mechanic Arts.	
LEE BORDEN ENNETT,	B.S. 1895,	Cedar Point, N. C.
	Superintendent of County Public Schools and Farmer.	
ALBERT EDWARD ESCOTT,	B.E. 1906,	Charlotte, N. C.
	Secretary and Treasurer, The Mill News.	
WILLIAM CARLYLE ETHERIDGE,	B.Agr. 1906,	Ithaca, N. Y.
	Graduate Student Cornell University, on leave from N. C. Experiment Station.	
BENJAMIN BRYAN EVERETT,	B.Agr. 1907,	Madison, Wis.
	Graduate Student in Soils, University of Wisconsin.	
JAMES BECKETT EWART,	B.E. 1905,	Hawthorne, Ill.
	Western Electric Co.	
RALPH RINGGOLD FAISON,	B.S. 1909,	Manila, P. I.
	Lieutenant, Philippine Constabulary.	
WILLIAM ALEXANDER FAISON,	B.E. 1909,	Indiana Harbor, Ind.
	Special Apprentice, American Steel Foundries.	
ISAAC HERBERT FARMER,	B.E. 1908,	Sarasota, Fla.
	Civil Engineer, Seaboard Air Line Ry.	



<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JAMES WILLIAM FARRIOR,* General Electric Co., Testing Department.	B.E. 1904.	Schenectady, N. Y.
WILLIAM DOLLISON FAUCETTE, C.E. 1910. Chief Clerk to President Seaboard Air Line Ry.	B.E. 1901.	New York, N. Y.
ISAAC HENRY FAUST, Farmer and Contractor.	B.E. 1895.	Ramseur, N. C.
BENJAMIN CAREY FENNELL, M.E. 1900. Supt. Hankinson & Hagler, Manufacturing Vitrified Paving Brick.	B.S. 1898.	Augusta, Ga.
JAMES LUMSDEN FEREBEE, Engineer, T. Chalkley Hatton, Drainage Construction.	B.E. 1902.	Atlantic City, N. J.
BENJAMIN TROY FERGUSON, Farmer and Manager, Dr. S. H. Crocker.	B.Agr. 1908.	Stantonsburg, N. C.
JOHN DANIEL FERGUSON,†	B.E. 1903.	Bladenboro, N. C.
JOHN LINDSAY FERGUSON, Electrician, Isthmian Canal Commission.	B.E. 1907.	Corozal, Canal Zone.
WALTER GOSS FINCH, Junior Engineer, U. S. War Department.	B.E. 1905.	Washington, D. C.
WILLIAM WALTER FINLEY, Breeder and Importer of Percheron Horses and Jersey Cattle.	B.S. 1904.	No. Wilkesboro, N. C.
FRANK FULLER FLOYD, Vice President and Sales Manager, Jellico Coal Mining Co.	B.E. 1893.	Knoxville, Tenn.
FRANK LINDSAY FOARD, Reid Grocery Co.	B.S. 1909.	Winston-Salem, N. C.
RUFUS EUGENE FORBIS, Draftsman, Peter S. Gilchrist, Consulting Engineer.	B.E. 1910.	Charlotte, N. C.
HUGH PIERCE FOSTER,†	B.E. 1903.	Person Co.
SHIRLEY WATSON FOSTER, Entomological Assistant, U. S. Department of Agriculture.	B.Agr. 1906.	Washington, D. C.
GEORGE WASHINGTON FOUSHEE,* Bookkeeper, Dicks Laundry Co.	B.E. 1904.	Greensboro, N. C.
ELIAS VAN BUREN FOWLER, Merchant and Farmer.	B.E. 1907.	Glenville, N. C.
ROSCOE LOOMIS FOX, Broker.	B.E. 1909.	Kansas City, Mo.
FRANCIS MARION FOY,†	B.S. 1899.	Scott's Mill, N. C.
CHARLES DUFFY FRANCKS,* Superintendent Richlands Graded Schools.	B.E. 1893.	Richlands, N. C.

\*Not heard from this year.

†Deceased.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
GEORGE STRONACH FRAPS, Ph.D. Johns Hopkins University. State Chemist of Texas. Vice President Association of Official Agricultural Chemists.	B.S. 1896.	College Station, Tex.
ELMO VERNON FREEMEN, Apprentice Westinghouse Electric and Manufacturing Co.	B.E. 1911.	Wilksburg, Pa.
PERCY LEIGH GAINY, M.S. 1910. Instructor in Botany, University of Missouri.	B. Agr. 1908.	Columbia, Mo.
EDGAR WILLIAM GAITHER, First Assistant Chemist, Ohio Agricultural Experiment Station.	B.S. 1904.	Wooster, Ohio.
JAMES JERVEY GANTT, Paving Inspector and Draftsman, City of Augusta.	B.E. 1910.	Augusta, Ga.
JUNIUS TALMAGE GARDNER, Shelby Insurance and Realty Co.	B.E. 1908.	Shelby, N. C.
OLIVER MAX GARDNER, Lawyer.	B.S. 1903.	Shelby, N. C.
CLEMENT LEINSTER GARNER, United States Coast and Geodetic Survey.	B.E. 1907.	Manila, P. I.
LEWIS PRICE GATTIS,* Civil Engineer, Atlantic Coast Line R. R.	B.E. 1909.	Wilmington, N. C.
EDWARD MOORE GIBBON,* Engineering.	B.E. 1893.	Jacksonville, Fla.
NICHOLAS LOUIS GIBBON, General Engineer, Leonard Tufts.	B.S. 1897.	Lakeview, N. C.
SETH MANN GIBBS,* Civil Engineer, Seaboard Air Line Ry.	B.E. 1908.	Jacksonville, Fla.
LAMAR CARSON GIDNEY, Superintendent Rutherfordton Light and Waterworks.	B.E. 1903.	Rutherfordton, N. C.
LOVIC RODGERS GILBERT, Overseer Carding and Spinning, Caraleigh Mills Co.	B.E. 1907.	Raleigh, N. C.
RANSOM EATON GILL, General Electric Co.	B.E. 1910.	Pittsfield, Mass.
ROY JOSEPH GILL, Surveyor, Bureau of Lands, Insular Government.	B.E. 1907.	Manila, P. I.
GEORGE WILLIAM GILLETTE, Assistant Superintendent Traction Department, Tidewater Power Co.	B.E. 1911.	Wilmington, N. C.
MAURICE MORDECAI GLASSER,*	B.E. 1908.	Charleston, S. C.
JOHN HOWARD GLENN,†	B.E. 1903.	Crowder's Creek, N. C.

\*Not heard from this year  
†Decensed.

## REGISTER OF ALUMNI.

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<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
CHARLES WILLIS GOLD, Secretary and Superintendent of Agencies, Jefferson Standard Life Insurance Co.	B.S. 1895,	Raleigh, N. C.
MOSES HENRY GOLD, Civil Engineer, Seaboard Air Line Ry.	B.E. 1908,	Raleigh, N. C.
ALBERT SIDNEY JOHNSTON GOSS, Staff of Assistant Chief Engineer Southern Power Co.	B.E. 1909,	Charlotte, N. C.
JOHN DAVID GRADY, Farmer and Merchant.	B.Agr. 1908,	Resaca, N. C.
ROBERT WALTER GRAEBER, Assistant Dairyman, N. C. Department of Agriculture.	B.S. 1911,	Raleigh, N. C.
ROBERT STRICKLER GRAVES, Meter Specialist, General Electric Co.	B.E. 1907,	Cincinnati, Ohio.
CHARLIE POOL GRAY,* Principal of Buxton Academy.	B.E. 1909,	Buxton, N. C.
GEORGE PENDER GRAY,* Commercial Traveler, Read Phosphate Co., of Nashville, Tenn.	B.S. 1893,	Tarboro, N. C.
JAMES MILLER GRAY, Assistant Director Farmers Institutes, N. C. Department of Agriculture.	B.S. 1910,	Raleigh, N. C.
STERLING GRAYDON, Superintendent Atherton Mills.	B.E. 1905,	Charlotte, N. C.
ANDREW HARTSFIELD GREEN, JR., Commercial National Bank.	B.S. 1909,	Raleigh, N. C.
MARION JACKSON GREEN, Pattern-maker, The Cole Manufacturing Co.	B.S. 1896,	Charlotte, N. C.
ARTHUR WYNNS GREGORY,* British-American Tobacco Co.	B.S. 1906,	Shanghai, China.
PAUL STIREWALT GRIERSON, Draftsman, Charles Cory & Son, New York.	B.E. 1904,	Newport News, Va.
JAMES PERRIN GULLEY, Traveling Salesman, Federal Gas Fixture Works, of Philadelphia.	B.E. 1904,	Raleigh, N. C.
EMIL GUNTER,* Engineering Department, Edison Electric Illuminating Co.	B.E. 1903,	Boston, Mass.
DORSEY YATES HAGAN, Salesman, The American Tobacco Co.	B.E. 1908,	Greensboro, N. C.
HORACE LESTER HAMILTON, Technical Writer, N. W. Ayer & Son.	B.E. 1906,	Philadelphia, Pa.
WILLIAM ROY HAMPTON, Owner firm of W. H. Hampton & Son, Inc., Merchants and Bankers.	B.S. 1909,	Plymouth, N. C.

\*Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
SAMUEL MERRILL HANFF, Episcopal Clergyman.	B.S. 1900,	Duke, N. C.
JOHN FREDERICK HANSELMAN,* Northern Alabama Reduction Co.	B.E. 1906,	Sheffield, Ala.
GEORGE ROM. HARDESTY, Chief Engineer, State Hospital.	B.E. 1907,	Goldsboro, N. C.
PHILIP WILLIAM HARDIE, Surveyor.	B.E. 1907,	Greensboro, N. C.
JARVIS BENJAMIN HARDING,* C.E. 1909. Reconnaissance Engineer, National Railways of Mexico.	B.E. 1904,	Mexico City, Mexico.
RICHARD HUGH HARPER, Gwyn-Harper Manufacturing Co.	B.S. 1905,	Patterson, N. C.
GEORGE ROLAND HARRELL,* The Grasselli Chemical Co.	B.S. 1900,	Grasselli, N. J.
JOHN WILLIAM HARRELSON, Instructor, N. C. College of Agriculture and Mechanic Arts.	B.E. 1909,	West Raleigh, N. C.
CEBURN DODD HARRIS,* Assistant to President, Strater Brothers Tobacco Co.	B.S. 1897,	Anchorage, Ky.
GORDON HARRIS, Lighting Engineering Department, General Electric Co.	B.E. 1909,	Schenectady, N. Y.
THOMAS DEVIN HARRIS, Transitman, Greenville, Spartanburg and Anderson Ry.	B.E. 1911,	Williamston, S. C.
WILLIAM HENRY HARRIS, M.E. 1896. Treasurer and Agent, Slater Manufacturing Co.	B.E. 1895,	Pawtucket, R. I.
FRANK HAWKS, Special Apprentice, Atlantic Coast Line R. R.	B.E. 1910,	Rocky Mount, N. C.
EDMUND BURKE HAYWOOD, Norfolk Southern R. R.	B.E. 1910,	Raleigh, N. C.
THOMAS FREDERICK HAYWOOD, Assistant Engineer, L. and N. R. R.	B.E. 1909,	Louisville, Ky.
JOKTON LAFAYETTE HEMPHILL, Commercial Engineer, General Electric Co.	B.E. 1907,	Schenectady, N. Y.
LEONARD HENDERSON, Raleigh, Charlotte and Southern R. R.	B.E. 1909,	Raleigh, N. C.
MAURICE HENDRICK, Cliffside Mills.	B.E. 1908,	Cliffside, N. C.
LAWRENCE JAMES HERRING, Practicing Veterinary Medicine. D.V.S. Kansas City Veterinary College.	B.Agr. 1907,	Wilson, N. C.

\*Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JERE. ISAAC HERRITAGE,* Surveyor and Timber Estimator, John L. Roper Lumber Co.	B.E. 1905,	Jacksonville, N. C.
CLARENCE WILSON HEWLETT, M.A. Johns Hopkins. Department of Terrestrial Magnetism, Carnegie Institution.	B.E. 1906,	Washington, D. C.
RUFUS WILLIAMS HICKS, JR., Draftsman, American Machine and Manufacturing Co.	B.E. 1910,	Greenville, S. C.
Bascombe Britt Higgins, M.S. 1910. Assistant and Graduate Student in Botany, Cornell University.	B.S. 1909,	Ithaca, N. Y.
LYDA ALEXANDER HIGGINS, Scientific Assistant, Dairy Division, U. S. Department of Agriculture.	B.S. 1910,	Brookhaven, Miss.
JAMES ALLEN HIGGS, JR., C.E. 1910. Assistant Engineer, Southern Railway.	B.E. 1906,	Norcross, Ga.
JERE. EUSTIS HIGHSMITH, Farmer.	B.S. 1897,	Parkersburg, N. C.
DAVID RAYMOND HINKLE, P. H. Hanes Knitting Co.	B.E. 1911,	Winston-Salem, N. C.
DANIEL HARVEY HILL, JR., Associate Editor, Southern Textile Bulletin.	B.S. 1909,	Charlotte, N. C.
GUY FRANCIS HINSHAW, City Engineer of Winston.	B.E. 1907,	Winston-Salem, N. C.
GEORGE HERBERT HODGES, Engineer Mechanical Department, H. C. Frick Coke Co.	B.E. 1904,	Scottsdale, Pa.
LABAN MILES HOFFMAN, JR., Cashier, The Bank of Dallas.	B.E. 1905,	Dallas, N. C.
CHARLES BOLLING HOLLADAY, The DuPont Co.	B.E. 1893,	Wilmington, Del.
WILLIAM NORMAN HOLT, Civil Engineer, with J. W. Wright, Jr.	B.E. 1907,	Evergreen, Ala.
BENJAMIN OLIVER HOOD, Structural Engineer, F. A. Burdett & Co., Consulting Engineers.	B.E. 1901,	New York, N. Y.
LOUIS LEE HOOD, Structural Steel Draftsman, Virginia Bridge and Iron Co.	B.E. 1910,	Roanoke, Va.
WAYNE ARINGTON HORNADAY, M.S. 1910. D.V.M. Kansas City Veterinary College, Veterinarian.	B.S. 1909,	Burlington, N. C.
JOHN HOWARD, Attorney at Law.	B.S. 1896,	Middlesboro, Ky.
JESSE McRAE HOWARD, Overseer Dyeing, Gibson Manufacturing Co.	B.E. 1904,	Concord, N. C.

\*Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
ROBERT IRVING HOWARD,	B.E. 1904(Tex.),	Ajuno, Michoacan, Mexico.
Assistant Resident Engineer, National Railways of Mexico.		
BRANTON FAISON HUGGINS,	B.E. 1904,	Macon, Ga.
Salesman, Willingham Sash and Door Co.		
HENRY ALLEN HUGGINS,	B.S. 1900,	Wilmington, N. C.
Bookkeeper, George W. Huggins, Jeweler.		
CHRISTOPHER MILLER HUGHES,	B.E. 1895,	Richmond, Va.
B.S. 1899. Sales Manager, Montague Manufacturing Co.		
LLOYD RAINEY HUNT,	B.E. 1905,	Lexington, N. C.
Electrical Engineer, Yadkin River Power Co.		
HILL McIVER HUNTER,	B.E. 1904,	Greensboro, N. C.
Purchasing Agent, Proximity Manufacturing Co. and White Oak Mills.		
MALCOLM BEALL HUNTER,	B.E. 1895,	Charlotte, N. C.
President Acme Plumbing and Heating Co.		
JOHN WILLIAM IVEY,	B.E. 1909,	Dublin, Ga.
Central of Georgia Ry. Co.		
WILLIAM COLBERT JACKSON,	B.S. 1896,	Middlesex, N. C.
Farmer.		
EUGENE COLISTUS JOHNSON,	B.E. 1903,	Ingold, N. C.
Sawmilling and Farming.		
WILLIAM FLADGER R. JOHNSON,	B.E. 1909,	Dilton, S. C.
Firm of Johnson & Johnson, Civil Engineers.		
ALBERT CARL JONES,	B.Agr. 1907,	High Point, N. C.
D.V.S. Kansas City Veterinary College. Veterinarian, Meat and Milk Inspector.		
FREDERICK JOHN JONES,	B.E. 1909,	Hartsells, Ala.
Assistant Engineer, Louisville and Nashville R. R.		
GARLAND JONES, JR.,	B.S. 1900,	Raleigh, N. C.
ROBERT FRANK JONES,	B.E. 1910,	Wilmington, N. C.
Instrument Man, Atlantic Coast Line R. R.		
WILLIAM WHITMORE JONES,	B.E. 1907,	Franklin, N. C.
Manager, Franklin Telephone and Electric Co.		
CLYDE RAYMOND JORDAN,	B.E. 1910,	Currie, N. C.
Owner and Operator of Lumber Plant.		
MARTIN KELLOGG,	B.Agr. 1901,	Sunbury, N. C.
Farmer.		
CLYDE BENNETT KENDALL,	B.S. 1897,	Washington, D. C.
Assistant Topographer, U. S. Geological Survey.		
ALPHEUS ROUNTREE KENNEDY,	B.S. 1898,	Quincy, Mass.
Ship Draftsman, Fore River Shipbuilding Co.		

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JAMES MATTHEW KENNEDY,	B.E. 1903.	Raleigh, N. C.
	Architect.	
SYDNEY G. KENNEDY,	B.S. 1897,	Sanford, Fla.
	Shop Foreman, Atlantic Coast Line R. R.	
ARTHUR TEMPLETON KENTON,	B.E. 1905,	Bradley Beach, N. J.
WILLIAM KERR,	B.S. 1904,	Blacksburg, Va.
	Assistant in Animal Husbandry, Va. Agricultural Experiment Station.	
LUTHER HILL KIRBY,	B.E. 1910,	Manila, P. I.
	Bureau of Lands.	
WILLIAM FRANKLIN KIRKPATRICK,	B.E. 1904,	Agr'l College, Miss.
	B.Agr. 1905. Poultry Husbandman, Miss. A. and M. College Experiment Station.	
JOSEPH LAWRENCE KNIGHT,*	B.S. 1897,	Dewey, Fla.
	Pas Manufacturing Co., Naval Stores.	
STARR NEELY KNOX,*	B.E. 1905,	Charlotte, N. C.
	Assistant Engineer, Southern Railway Co.	
WILLIAM GRAHAM KNOX,	B.S. 1906,	New York, N. Y.
	Assistant Chemical Engineer, Western Electric Co.	
JAMES HERITAGE KOONCE,	B.E. 1905,	Hartsville, S. C.
	With W. R. Dousal & Co.	
LAFAYETTE FRANCK KOONCE,	B.Agr. 1907,	Raleigh, N. C.
	Veterinary Surgeon. D.V.S. Kansas City Veterinary College.	
HERRERT WILLIAM KUEFFNER,	B.E. 1908,	Tamaqua, Pa.
	Assistant Resident Engineer, Lehigh and New England R. R.	
FREDERICK CREECY LAMB,	B.S. 1898,	El Paso, Tex.
	Health Office (Chemist).	
CLAUDE MILTON LAMBE,	B.E. 1908,	Rockingham, N. C.
	Civil Engineer, Yadkin River Power Co.	
BENNETT LAND, JR.,	B.E. 1903,	Jacksonville, Fla.
	Division Engineer, Seaboard Air Line Ry.	
JOSEPH THOMAS LAND,	B.E. 1903,	Jacksonville, Fla.
	Assistant Engineer, Seaboard Air Line.	
MARK CLINTON LASSITER,*	B.E. 1910.	Halifax, N. C.
	Halifax County Highway Engineer.	
JAMES EDWARD LATHAM,	B.S. 1909,	Manila, P. I.
	Philippine Constabulary, Third Lieutenant.	
CHARLES EDWARD LATTI,*	B.E. 1908,	Raleigh, N. C.
	Greer.	
EUGENE TALMAGE LEE,	B.E. 1910,	Dunn, N. C.

\*Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JESSE JULIAN LILES, Salesman, Power and Mining Department, General Electric Co.	B.E. 1901,	Pittsburg, Pa.
HENRY MARVIN LILLY, Civil Engineer.	B.E. 1905,	Albemarle, N. C.
ERNEST EDWIN LINCOLN, Draftsman, The Phoenix Bridge Co.	B.E. 1904,	Phoenixville, Pa.
DAVID LINDSAY, Assistant Superintendent German-American Co.	B.E. 1908,	Spray, N. C.
JOHN HENRY LITTLE,* Student Engineer, General Electric Co.	B.E. 1908,	Schenectady, N. Y.
ULPHIAN CARR LOFTIN, Assistant to Entomologist, Florida Agricultural Experiment Station	B.S. 1910,	Gainesville, Fla.
RALPH LONG, Salesman, P. Lorillard Co.	B.S. 1909,	Greensboro, N. C.
LOUIS EDGAR LOUGEE,* Jones & Laughlin Steel Co.	B.S. 1907,	Pittsburg, Pa.
LEWIS OMER LOUGEE, Civil and Mining Engineer, with George S. Baton & Co.	B.E. 1901,	Pittsburg, Pa.
JOE POINDEXTER LOVILL, Resident Engineer, Oregon-Washington Railroad and Navigation Co.	B.E. 1906,	Perry, Wash.
GEORGE LAFAYETTE LYERLY, Manager and Partner, Shuford Hardware Co.	B.E. 1908,	Hickory, N. C.
LIPSCOMBE GOODWIN LYKES,* Lykes Brothers.	B.E. 1905,	Havana, Cuba.
THOMPSON MAYO LYKES,* Secretary, The Lykes Co.	B.E. 1906,	Tampa, Fla.
GEORGE GREEN LYNCH, JR.,* Draftsman, Atlantic Coast Line R. R.	B.E. 1905,	Wilmington, N. C.
ALBERT SYDNEY LYON, Superintendent, Rocky Mount Public Works.	B.S. 1899,	Rocky Mount, N. C.
EDMOND SHAW LYTCH,* Partner, Laurinburg Machine Co.	B.E. 1903,	Laurinburg, N. C.
WILLIAM McNEIL LYTCH, Partner, Laurinburg Machine Co.	B.E. 1893,	Laurinburg, N. C.
HENRY KREIGER McCONNELL, Assistant Chemist, Kentucky Tobacco Products Co.	B.S. 1907,	Louisville, Ky.
EUGENE RICHARD McCracken, Pomona Mills (Inc.).	B.E. 1911,	Greensboro, N. C.

\*Not heard from this year.



<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
FRANK NEELY McDOWELL,	B.S. 1910, Farmer.	Charlotte, N. C., R. 3.
MALCOLM ROLAND MCGIRT,	B.Agr. 1905, Farmer.	Fayetteville, N. C.
JOHN FAIRLY MCINTYRE,*	B.E. 1904, Farmer.	Laurinburg, N. C.
WALTER HOGE MCINTYRE, Associate Chemist and Agronomist, University of Tennessee.	B.S. 1905,	Knoxville, Tenn.
SAMUEL CHRISTOPHER MCKEOWN, Chief Engineer, Sumter Telephone Manufacturing Co.	B.E. 1895,	Sumter, S. C.
CHARLES MCKIMMON, JR., N. C. Agricultural Experiment Station.	B.S. 1911,	Raleigh, N. C.
JAMES MCKIMMON, General Bookkeeper, Raleigh Banking and Trust Co.	B.E. 1904,	Raleigh, N. C.
JOHN LUTHER MCKINNON, Farmer.	B.Agr. 1902,	Laurinburg, N. C.
JAMES WILLIAM MCKOY, Civil Engineer and Merchant.	B.E. 1893,	Black Mountain, N. C.
HORACE SMITH McLENDON, Farm Superintendent, Einstein Brothers.	B.Agr. 1906,	Sanford, Fla., R. 2.
LENNOX POLK McLENDON, Student, Law School of the University of N. C.	B.S. 1910,	Chapel Hill, N. C.
WALTER JONES McLENDON, JR., President and General Manager, Capitola Manufacturing Co.	B.S. 1897,	Marshall, N. C.
OSCAR FRANKLIN McNAIRY, Engineer Inspector, Seaboard Air Line Ry. Home Address, Greensboro, N. C.	B.E. 1907,	Great Falls, S. C.
SAMUEL HUXLEY McNEELY, Commercial Engineer, General Electric Co.	B.E. 1909,	Pittsburg, Pa.
CHARLES HARDEN McQUEEN, Inspector Bitulithic Pavements, Warren Brothers Co.	B.E. 1901,	Boston, Mass.
SAMUEL MACON MALLISON,*	B.E. 1909,	Washington, N. C.
CARROLL LAMB MANN, C.E. 1906. Civil Engineer and Assistant Professor, N. C. College of Agriculture and Mechanic Arts.	B.S. 1899,	West Raleigh, N. C.
LOUIS HENRY MANN, Dentist.	B.E. 1900,	Washington, N. C.
WILLIAM LEAKE MANNING, Rosemary Manufacturing Co.	B.E. 1910,	Rosemary, N. C.

\*Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
CLARENCE TALMAGE MARSH, First Lieutenant, Coast Artillery Corps, U. S. A.	B.E. 1908.	Fort Wint, P. I.
WILLIAM ROYDAN MARSHALL, Salesman, Westinghouse Machine Co. of East Pittsburg, Pa.	B.E. 1909.	New York.
JACOB LEE MARTIN, Engineering Department, Florida East Coast Ry	B.E. 1911.	Marathon, Fla. Home Address, Graham, N. C.
RALPH CECIL MASON, Farmer.	B.S. 1909.	Edenton, N. C.
ARTHUR BALLARD MASSEY, Instructor in Botany and Bacteriology in Clemson Agricultural College.	B.S. 1909.	Clemson College, S. C.
WALTER JEROME MATHEWS,* Machine Broker.	B.E. 1893.	Goldsboro, N. C.
RAYMOND MAXWELL,* Civil Engineer, Mattamuskeet Railway Co.	B.E. 1906.	Belhaven, N. C.
MELVIN SOLOMON MAYES, Stem Power Co.	B.E. 1910.	Stem, N. C.
FRANK THEOPHILUS MEACHAM, M.S. 1894. Superintendent Experiment Station, U. S. Department of Agriculture.	B.S. 1893.	Statesville, N. C.
EUGENE FRANKLIN MEADOR, Machinist, Riverside Mills.	B.E. 1907.	Danville, Va.
REPTON HALL MERRITT, Secretary-Treasurer, Powell & Powell, Inc., Coal, Ice and Wood.	B.S. 1897.	Raleigh, N. C.
ROBERT GRAHAM MEWBORNE,* Chemist, Kentucky Tobacco Product Co.	B.S. 1896.	Louisville, Ky.
BENNETT TAYLOR MIAL, McClintic-Marshall Construction Co. of Pittsburg, Pa.	B.E. 1907.	Connellsville, Pa.
FRANK CURTIS MICHAEL, Erecting Engineer, Consolidated Engine Stop Co.	B.E. 1907.	New York, N. Y.
DAVID JOHN MIDDLETON, Superintendent, Oak Grove Stock Farm for E. B. Craddock.	B.Agr. 1908.	Cluster Springs, Va.
JOSEPH ALFRED MILLER, JR., Manager, Miller Supply Co.	B.E. 1904.	Brevard, N. C.
WALKER MOREHEAD MILLNER, Assistant Superintendent, Rhode Island Mills Co.	B.E. 1909.	Spray, N. C.
JOHN MAPLE MILLS, Raleigh and Southport Railway Co.	B.E. 1907.	Raleigh, N. C.
BENJAMIN FRANKLIN MONTAGUE, Civil Engineer.	B.E. 1909.	Winston-Salem, N. C.

\*Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
HENRY STARDUCK MONTAGUE,* Assistant Chemist, Mississippi Agricultural College.	B.S. 1907,	Agr'l College, Miss.
LEON DAVIS MOODY, Chief Engineer, Interstate Chemical Corporation.	B.E. 1910,	Charleston, S. C.
EUGENE BOISE MOORE,* Apprentice, Allis-Chalmers Co.	B.E. 1910,	Norwood, Ohio.
LACY MOORE, Assistant Engineer, Southern Ry.	B.E. 1906,	Washington, D. C.
JAMES OSCAR MORGAN, Professor of Agronomy, Texas A. and M. College.	B.Agr. 1905,	College Station, Tex.
ROBERT LEE MORGAN,	B.E. 1910,	Bailey, N. C.
JESSE JOHN MORRIS, Farmer.	B.E. 1903,	Weeksville, N. C.
WILLIAM FLAUD MORRIS, Instructor, N. C. College of Agriculture and Meehanic Arts.	B.E. 1909,	West Raleigh, N. C.
JOSEPH GRAHAM MORRISON, Farming.	B.Agr. 1906,	Stanley, N. C.
ROBERT HALL MORRISON, Highland Park Manufacturing Co.	B.E. 1900,	Charlotte, N. C.
ROBERT LEE MORRISON, Civil Engineer, Laurel River Logging Co.	B.E. 1911,	Stackhouse, N. C.
JOHN LIGHTFOOT MORSON,* Civil Engineer, Seaboard Air Line Ry.	B.E. 1907,	Raleigh, N. C.
WILLIAM FIELD MORSON,* Assistant Engineer, Ral. Char. and Sou.	B.E. 1904,	Raleigh, N. C.
LAURIE MOSELEY, Southern Agent, Owego Bridge Co., also President Carolina Concrete Co.	B.E. 1902,	Greensboro, N. C.
VASSAR YOUNG MOSS, Draftsman, Fort Pitt Bridge Works.	B.E. 1902,	Canonsburg, Pa.
HARRY YOEMANS MOTT,* Farmer.	B.S. 1910,	Mooreville, N. C.
LINDSLEY ALEXANDER MURR,* Assistant Engineer, Seaboard Air Line Ry.	B.E. 1905,	Birmingham, Ala.
GARLAND PERRY MYATT, Works Chemist, Thomsen Chemical Co.	B.S. 1905,	Baltimore, Md.
O'KELLY W. MYERS, Assistant Engineer, Board of Water Supply, City of New York.	B.S. 1899,	Brooklyn, N. Y.
JESSE CLARENCE MYRICK, Norfolk Navy Yard, Electrical Department.	B.E. 1906,	Norfolk, Va.

\*Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
LEON ANDREWS NEAL, Resident Engineer, Virginia Iron, Coal and Coke Co.	B.E. 1904,	Roanoke, Va.
WILLIAM McCORMICK NEALE, Draftsman, Elevator and Conveyor Department The Jeffrey Manufacturing Co.	B.E. 1910,	Columbus, Ohio.
CHARLES ARTHUR NICHOLS, Manager, Third Street Grocery Co.	B.E. 1902,	Muskogee, Okla.
CHARLES FRANKLIN NIVEN, Professor of Agriculture, North Georgia Agricultural College.	B.Agr. 1906,	Dahlonega, Ga.
LOLA ALEXANDER NIVEN, Assistant Professor of Horticulture, Clemson Agricultural College.	B.Agr. 1906,	Clemson College, S. C.
LEWIS MILTON ODEN, Proprietor, Raleigh Creamery, Merchant and Trucker.	B.Agr. 1906,	Raleigh, N. C.
THOMAS JEFFERSON OGBURN, JR., Everett Wadley Co.	B.E. 1906,	Richmond, Va.
ALBERT HICKS OLIVER, Farmer.	B.S. 1897,	Mount Olive, N. C.
SAMUEL LOFTIN OLIVER, Hardware Department, Stranahan & Co.	B.E. 1909,	Fort Lauderdale, Fla.
JAMES ELWOOD OVERTON, Manager Ahsokie Ice and Cold Storage Co.	B.Agr. 1907,	Ahsokie, N. C.
DAVID STARR OWEN,* Superintendent Standard Turpentine Co.	B.E. 1903,	Fayetteville, N. C.
EDWIN BENTLEY OWEN, Registrar, N. C. College of Agriculture and Mechanic Arts.	B.S. 1898,	West Raleigh, N. C.
JOHN ALSEY PARK, Business Manager, The Raleigh Times.	B.E. 1905,	Raleigh, N. C.
B. MOORE PARKER, Assistant Professor, N. C. College of Agriculture and Mechanic Arts.	B.S. 1898,	West Raleigh, N. C.
CLYDE ESTER PARKER, Firm of Parker Bros. & Co., Cotton Brokers and Merchants.	B.S. 1906,	Raleigh, N. C.
EUGENE LEROY PARKER, Chemist and Manager, E. L. Parker & Co.	B.S. 1899,	Mt. Pleasant, Tenn.
JOHN HARVEY PARKER,* Secretary-Treasurer and Manager, Jacksonville Pepsi-Cola Co.	B.E. 1903,	Jacksonville, Fla.
JAMES LAFAYETTE PARKER, Assistant Engineer, Herbert C. Keith, Consulting Engineer.	B.E. 1902,	New York, N. Y.
JULIUS MONROE PARKER, Resident Engineer, Louisville and Nashville Railroad Co.	B.E. 1909,	Harlan, Ky.

\*Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
THOMAS FRANKLIN PARKER, M.S. 1908. Assistant in Corn Clubs, State and National Departments of Agriculture.	B.Agr. 1907,	Raleigh, N. C.
FRED. MAYNARD PARKS,* Engineering Department, Westinghouse Electric and Manufacturing Co.	B.E. 1907,	Wilksburg, Pa.
JOHN GILBERT PASCHAL, Lumber Manufacturer.	B.E. 1909,	Goldston, N. C.
ARTHUR LEE PASCHALL, Superintendent Agricultural Experiment Station, State of Texas.	B.Agr. 1907,	Lubbock, Tex.
WILLIAM FRANKLIN PATE, Instructor in Chemistry, N. C. College of Agriculture and Mechanic Arts.	B.S. 1901,	West Raleigh, N. C.
MANN CABE PATTERSON, Firm of Patterson & Rouch, Machine Works.	B.E. 1895,	Durham, N. C.
ROBERT DONNELL PATTERSON, M.S. 1898. President The First State Bank	B.S. 1894,	Chase City, Va.
WILLIAM JOEL PATTON,* Lumber Business.	B.E. 1904,	Brevard, N. C.
CHARLES PEARSON, Member of Firm. Pearson Construction Co., General Contractors.	B.E. 1894,	Dothan, Ala.
FRED. TAYLOR PEDEN, Farmer.	B.S. 1911,	Wilkesboro, N. C.
JOHN TAYLOR PEDEN, JR., Apprentice, Westinghouse Electric and Manufacturing Co.	B.E. 1911,	Wilksburg, Pa.
JAMES HICKS PIERCE, J. H. Peirce Lumber Co.	B.S. 1905,	Warsaw, N. C.
WILLIAM CASPER PENNINGTON, The Amazon Cotton Mills.	B.E. 1910,	Thomasville, N. C.
SAMUEL OSCAR PERKINS, Soil Scientist, N. C. Department of Agriculture.	B.S. 1906,	Burgaw, N. C.
EUGENE GRAY PERSON,* Train Dispatcher, Central of Georgia Ry.	B.S. 1899,	Macon, Ga.
WILLIAM MONTGOMERY PERSON, Night Superintendent, By-product Coke Plant, Tenn. Coal, Iron and Railroad Co.	B.E. 1900,	Corey, Birm'g'm, Ala.
FREDERICK COLWELL PHELPS,* Second Lieutenant, 12th U. S. Infantry.	B.E. 1904,	Monterey, Cal.
WILLIAM RANSOME PHILLIPS, Apprentice, General Electric Co.	B.E. 1910,	Schenectady, N. Y.
PETER PENICK PIERCE, Engineering Department, Florida East Coast Ry.	B.E. 1909,	Marathon, Fla.

\*Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
GUY PINNER, Structural Engineer, H. C. Keith.	B.E. 1907,	New York.
WINSLOW GERALD PITMAN, City Lighting Plant.	B.E. 1907,	Lumberton, N. C.
PAUL NATHANIEL PITTENGER, Engineering Department, Pittsburg Gage and Supply Co.	B.E. 1911,	Pittsburg, Pa.
BENJAMIN FRANKLIN PITTMAN, Engineer, Western Electric Co.	B.E. 1908,	Morton Park, Ill.
LAWRENCE LYON PITTMAN,* Civil Engineer.	B.E. 1908,	Whitakers, N. C.
PAUL MILLER PITTS,* Machinist, Jackson Lumber Co.	B.E. 1909,	Lockhart, Ala.
ANGELO BETTELENA PIVER, Structural Draftsman, Phoenix Bridge Co.	B.E. 1906,	Phoenixville, Pa.
WILLIAM CRAWFORD PIVER, Partner, Riches, Piver & Co., Chemical and Color Manufacturers, Hoboken, N. J.	B.S. 1906,	New York, N. Y.
JAMES KEMP PLUMMER, Assistant Chemist, State Department of Agriculture.	B.S. 1907,	Raleigh, N. C.
PLEASANT H. POINDEXTER, JR., Manager, C. E. Sharp Lumber Co.	B. Agr. 1905,	Hackberry, Okla.
RUBLE ISAAC POOLE, Instructor, N. C. College of Agriculture and Mechanic Arts.	B.E. 1908,	West Raleigh, N. C.
EDWARD GRIFFITH PORTER, Transitman, Isthmian Canal Commission.	B.E. 1905,	Balboa, Canal Zone, Panama.
JUNIUS EDWARD PORTER, General Manager and Treasurer, J. E. Porter & Co., Railroad Contractors.	B.E. 1900,	Weldon, N. C.
HARRY ALEXANDER POWELL,* Turpentine Business.	B.E. 1908,	Melbourne, Fla.
JAMES ALEXANDER POWELL, Engineer, Condenser Department, Westinghouse Machine Co.	B.E. 1908,	Pittsburg, Pa.
JOEL POWERS, Draftsman, Dewey Brothers.	B.E. 1903,	Goldsboro, N. C.
THOMAS MILTON POYNER, W. R. Bonsal & Co.	B.E. 1908,	Oakton, S. C.
JAMES BRUCE PRICE, Apprentice, Westinghouse Electric and Manufacturing Co.	B.E. 1910,	Wilkinsburg, Pa.
JOHN MOIR PRICE, Sales Department, Bethlehem Steel Co.	B.E. 1909,	South Bethlehem, Pa.

\*Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
HUGH WILLIAMS PRIMROSE, †	B.S. 1897, M.S. 1900.	Raleigh, N. C.
ABRAM HINMAN PRINCE, Special Agent, U. S. Department of Agriculture.	B.S. 1895,	San Augustine, Tex.
CHARLES MARCELLUS PRITCHETT,* C.E. 1896. Chief Division Engineer, Insular Government.	M.E. 1895,	Manila, P. I.
VICTOR VASHTI PRIVOTT,* Merchant.	B.E. 1895,	Suffolk, Va.
JOSEPHUS PLUMMER QUINERLY, Southern Railway, Land and Industrial Department.	B.S. 1911,	Washington, D. C.
WILLIAM WALTER RANKIN,* Professor of Mathematics, Fredericksburg College.	B.E. 1904,	Fredericksburg, Va.
RISDEN PATTERSON REECE, Mechanical Engineer, American Portable Band-Saw Mill Co.	B.E. 1904,	Winston-Salem, N. C.
ROBERT RICHARD REINHARDT, D.V.M. Kansas City Veterinary College.	B.S. 1909,	Lincolnton, N. C.
WILLIAM BENEDICT REINHARDT, Electrician, Northern Light, Power and Coal Co.	B.E. 1902,	Dawson, Y. T., Canada.
ROGER FRANCIS RICHARDSON,* Construction Engineer, Tennessee Coal, Iron and Railroad Co.	B.E. 1900,	Ensley, Ala.
WILLIAM RICHARDSON, JR., Coal Mining Mechanical Engineer, Tennessee Coal, Iron and Railroad Co.	B.E. 1904,	Birmingham, Ala.
EDWARD HAYS RICKS, Assistant Cashier, Bank of Roanoke Rapids.	B.E. 1903,	Roanoke Rapids, N. C.
ALFRED PRATTE RIGGS,* Florida East Coast Ry., West Summerland Camp.	B.E. 1909,	Knight's Key, Fla.
DURANT WAITE ROBERTSON,* Special Agent, Bureau of the Census.	B.E. 1906,	Washington, D. C.
JOSEPH HENRY ROBERTSON, Superintendent Light and Power and Railways, North Carolina Public Service Co.	B.E. 1909,	Salisbury, N. C.
JAY FREDERICK ROBINSON, Architectural Draftsman, W. J. Wilkins & Co., Architects.	B.E. 1910,	Florence, S. C.
GASTON WILDER ROGERS, Physician and Surgeon.	B.E. 1903,	Birmingham, Ala.
ZEBBIE GEORGE ROGERS, Ferguson & Rogers, Contracting and Engineering.	B.E. 1894,	Newark, Ohio.
JOHN WESLEY ROLLINSON, Apprentice, Westinghouse Electric and Manufacturing Co.	B.E. 1911,	Wilksburg, Pa.

\*Not heard from this year.

†Deceased.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
WILLIAM EDWIN ROSE,*	B.E. 1900,	Newport News, Va. Newport News Shipbuilding and Dry Dock Co.
CHARLES BURDETTE ROSS,	B.E. 1903,	Charlotte, N. C. Contractor.
FLOYD DE ROSS,	B.E. 1900,	Lawton, Okla. Owner and Manager, Lawton Coca-Cola Bottling Co.
GRAEME ROSS,	B.E. 1911,	Wilkesburg, Pa. Apprentice, Westinghouse Electric and Manufacturing Co.
GEORGE ROMULUS ROSS,	B.S. 1911,	Jackson Springs, N. C. Manager Farm for Roger A. Derby.
CARL COLLINS SADLER,	B.E. 1910,	Mulberry, Fla. Civil Engineer, Prairie Pebble Phosphate Co.
JAMES OLIN SADLER,	B.E. 1909,	Jackson, Ky. Bridge Inspector, Seaboard Air Line Ry., Portsmouth, Va.
WILLIS HUNTER SANDERS,	B.S. 1897,	Roanoke Rapids, N. C. Superintendent Power Plants, Roanoke Navigation and Water Power Co.
JOHN HYER SAUNDERS,*	B.E. 1894,	Rocky Mount, N. C. Locomotive Engineer, Atlantic Coast Line R. R.
IRA OBED SCHAUB,	B.S. 1900,	West Raleigh, N. C. Professor of Agricultural Extension, N. C. College of Agriculture and Mechanic Arts.
LEON JACOB SCHWAR,	B.E. 1907,	Savannah, Ga. Engineer, U. S. Engineering Department.
ROBERT WALTER SCOTT, JR.,	B. Agr. 1905,	Rocky Mount, N. C. Superintendent Edgecombe Test Farm, N. C. Department of Agriculture.
EARLE ALOYSIUS SEIDENSPINNER,	B.S. 1910,	Manila, P. I. Lieutenant, Philippine Constabulary.
CARL DEWITT SELLARS,	B.E. 1893,	Greensboro, N. C. Sales Department, Cone Export and Commission Co.
JOHN WALDORF SEXTON,	B.E. 1910,	Birmingham, Ala. Field Engineer, Tennessee Coal, Iron and Railway Co.
CHARLES EDGAR SEYMORE,†	B.S. 1893,	Raleigh, N. C.
JAMES MORGAN SHERMAN,	B.S. 1911,	Madison, Wis. Graduate Student, University of Wisconsin. Home Address, McLean, Va.
FRANK WEBBER SHERWOOD,	B.S. 1909,	West Raleigh, N. C. M.S. 1911. Instructor in Chemistry, N. C. College of Agriculture and Mechanic Arts.
ROBERT ARNOLD SHOPE,*	B.E. 1909,	Manila, P. I. Lieutenant, Philippine Constabulary, Insular Government.

\*Not heard from this year.

†Deceased.



<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JOHN WADE SHORE, Cashier, Commercial and Savings Bank.	B.S. 1900,	Boonville, N. C.
IRA SHORT, Machinist, Waccamaw Lumber Co.	B.E. 1911,	Wallace, N. C.
JOHN HOUSTON SHUFORD, Expert and Salesman, Berlin Aniline Works.	B.S. 1903.	Charlotte, N. C.
JOHN OSCAR SHUFORD,* Superintendent Electric Plant, Town of Lincolnton.	B.E. 1907,	Lincolnton, N. C.
ORIN MORROW SIGMON, Treasurer, Piedmont Wagon and Manufacturing Co.	B.E. 1911,	Hickory, N. C.
GEORGE GRAY SIMPSON, Editor, Textile Manufacturer.	B.E. 1909,	Charlotte, N. C.
FREDERICK ERASTUS SLOAN, General Agent, The Security Life and Annuity Co.	B.S. 1899,	Charlotte, N. C.
WILLIAM NEVILLE SLOAN, Field Assistant, U. S. Government Forest Service.	B.E. 1909,	Blairville, Ga.
ANDREW THOMAS SMITH, Leading Draftsman, New York Shipbuilding Co. of Camden, N. J.	B.S. 1899,	Woodbury, N. J.
EDGAR ENGLISH SMITH,* U. S. Coast and Geodetic Survey.	B.E. 1908,	Greensboro, N. C.
EDWIN HARRISON SMITH, Transitman, Atlantic Coast Line R. R.	B.E. 1910,	Weldon, N. C.
EDWARD OSCAR SMITH, Special Draftsman, Newport News Shipbuilding and Dry Dock Co.	B.E. 1901,	Newport News, Va.
JAMES LAWRENCE SMITH, JR.,* Assistant Engineer, Seaboard Air Line Ry.	B.E. 1908,	Portsmouth, Va.
JONATHAN RHODES SMITH,* Structural Steel Engineer, The Eastern Steel Co.	B.E. 1905,	Pottsville, Pa.
WILLIAM TURNER SMITH,* Manager and Partner, Georgia Hydraulic Stone Co.	B.E. 1900,	Dublin, Ga.
THOMAS JEHU SMITHWICK, Consulting and Erecting Engineer.	B.S. 1897,	Mount Airy, N. C.
RUSSELL ELSTNER SNOWDEN, Civil Engineer and General Manager, Reynolds Farms.	B.E. 1902,	Winston-Salem, N. C.
CHARLIE AUGUSTINE SPEAS, Florida East Coast Ry.	B.E. 1911,	Knight's Key, Fla.
JOHN FRANCIS SPEIGHT,†	B.E. 1910,	Whitakers, N. C.
JOHN DAVIDSON SPINKS, Junior Engineer, U. S. Engineering Department.	B. E. 1905,	Wilmington, N. C.

\*Not heard from this year.

†Deceased.

## REGISTER OF ALUMNI.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JESSE PAGE SPOON, M.S. 1909. Veterinarian.	B. Agr. 1908, D.V.S.	Burlington, N. C. Kansas City Veterinary College.
ST. JULIAN LACHICOTTE SPRINGS,	B.S. 1910,	Lake Waccamaw, N.C.
	Farming for H. B. Short.	
ERVIN BLACKENEY STACK, Member of Firm, J. E. Stack & Co.	B.E. 1905,	Monroe, N. C.
CHARLES BURT STAINBACK,* Apprentice, Westinghouse Electric and Manufacturing Co.	B.E. 1910,	Wilkinsburg, Pa.
EDWARD ROE STAMPS, Superintendent, F. S. Royster Guano Co.	B.E. 1903,	Macon, Ga.
HARRIS INGRAM STANBACK, With Engineering Department, Electric Co.'s Lamp Works at Harrison, N. J.	B.E. 1910,	Newark, N. J.
NUMA REID STANSEL, E.E. 1901. Commercial Engineer, General Electric Co.	B.S. 1898,	Schenectady, N. Y.
THOMAS BARNES STANSEL, Assistant Chemist, N. C. Agricultural Experiment Station.	B.S. 1910,	West Raleigh, N. C.
ALEXIS PRESTON STEELE, Mechanical Engineer, Firm of J. C. Steele & Sons.	B.S. 1899,	Statesville, N. C.
Hugh Stuart Steele, Engineering Department, Florida East Coast Ry.	B.E. 1909,	Marathon, Fla.
LUCIUS ESEK STEERE, JR.,* Apprentice, Wagner Electric Manufacturing Co.	B.E. 1911,	St. Louis, Mo.
SAMUEL FATIO STEPHENS, Civil Engineer, Raleigh, Charlotte and Southern R. R.	B.E. 1909,	Raleigh, N. C.
GEORGE YATES STRADLEY, Roanoke Bridge Co., Inc.	B.E. 1903,	Roanoke, Va.
JOHN SNIPES STROUD,* Locke Cotton Mills.	B.E. 1908,	Concord, N. C.
WALTER STEPHEN STURGILL, Student Office, Mounted Service School. First Lieutenant Regiment of Field Artillery.	B.E. 1901,	Fort Riley, Kan.
WILLIAM CLARK STYRON, With William Bragaw & Co.	B.E. 1910,	Washington, N. C.
TEISAKU SHUGISHITA,*	B.S. 1898,	Japan.
BEVERLY NATHANIEL SULLIVAN, Superintendent Winston-Salem Light and Fuel Co.	B.S. 1901,	Winston-Salem, N. C.
THOMAS BRYAN SUMMERLIN, Albritton & Summerlin, General Merchants.	B.E. 1910,	Calypso, N. C.
HENERY NEWBOLD SUMNER, Lieutenant Coast Artillery Corps, U. S. Army.	B.E. 1909,	Fort Dade, Fla.

\*Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
LLOYD HURST SWINDELL, Microscopist, State Board of Health.	B.E. 1911,	Raleigh, N. C.
VANCE SYKES, Assistant Civil Engineer, Seaboard Air Line Ry.	B.E. 1907,	Wilmington, N. C.
GEORGE FREDERICK SYME, C.E. 1907. Locating Engineer, Norfolk Southern Ry.	B.S. 1898,	Raleigh, N. C.
WILLIAM ANDERSON SYME, † M.S. 1903. Ph.D. Johns Hopkins University.	B.S. 1899,	Raleigh, N. C.
FREDDIE JACKSON TALTON,* Farmer.	B.Agr. 1906,	Pikeville, N. C., R. 2.
CLAUDE STRATON TATE, Secretary, Tate Machinery and Supply Co.	B.E. 1909,	Littleton, N. C.
JAMES CLARENCE TEMPLE, M.S. 1908. Bacteriologist, Georgia Experiment Station.	B.S. 1904,	Experiment, Ga.
MALVERN HILL TERRELL, Chief Engineer, U. S. Post Office and Courthouse.	B.E. 1909,	Atlanta, Ga.
FRANK MARTIN THOMPSON, Athletic Coach.	B.E. 1910,	Wake Forest, N. C.
THOMAS HAMPTON THOMPSON, Cashier, Southern Railway.	B.E. 1910,	Thomasville, N. C.
BUXTON WILLIAMS THORNE, †	B.E. 1893,	Holly Springs, Miss.
THOMAS WHITNELL THORNE, Salesman, National Tube Co.	B.E. 1911,	Pittsburg, Pa.
LUTHER RUSSELL TILLET,* Assistant Engineer, Moro Province.	B.E. 1907,	Zamboanga, P. I.
RICHARD HENRY TILLMAN, Industrial Engineer, Consolidated Gas, Electric Light and Power Co.	B.E. 1906,	Baltimore, Md.
WILLIAM SIDNEY TOMLINSON, Civil Engineer, Shand Engineering Co.	B.E. 1906,	Columbia, S. C.
JAMES EDWIN TOOMER, Assistant Chemist, Tennessee Experiment Station.	B.S. 1909,	Knoxville, Tenn.
CHARLES EDWARD TROTTER, † M.D. Johns Hopkins University.	B.S. 1903,	Franklin, N. C.
WILLIAM BROOKS TRUITT, Standard Boiler and Machine Co.	B.E. 1907,	Greensboro, N. C.
FRED. GOODE TUCKER, Wisconsin State Highway Commission.	B.E. 1911,	Madison, Wis.
ISAAC NORRIS TULL, Testing Department, General Electric Co.	B.E. 1910,	Schenectady, N. Y.

\*Not heard from this year.

†Deceased.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
REID TULL, Resident Engineer, Piedmont and Northern Lines.	B.E. 1906,	Mount Holly, N. C.
JOHN EDWIN TURLINGTON, Adjunct Professor, State College of Agriculture.	B.Agr. 1907,	Athens, Ga.
JOSEPH PLATT TURNER, Vice President and Superintendent Lily Mills.	B.E. 1902,	Spray, N. C.
WILLIAM HARRISON TURNER, Wholesale Mill Feed, Hay and Grain.	B.E. 1893,	Winston-Salem, N. C.
JACKSON CORPENING TUTTLE, Engineering Department, General Electric Co.	B.E. 1906,	Schenectady, N. Y.
ROBERT PEELE UZZELL,* Farmer.	B.Agr. 1906,	Goldsboro, N. C.
PETER VALEAR, JR., Assistant Chemist, Bureau Internal Revenue.	B.S. 1906,	Washington, D. C.
LILLIAN LEE VAUGHAN, M.E. 1909. M.E. 1911, Columbia University. Instructor in Mechanical Engineering, N. C. College of Agriculture and Mechanic Arts.	B.E. 1906,	West Raleigh, N. C.
SOLOMON ALEXANDER VEST, B.Agr. 1901. Secretary and Treasurer, The Smith Laboratory.	B.S. 1900 (Chem.),	Mount Pleasant, Tenn.
SYLVESTER MURRAY VIELE, Pennsylvania R. R. Co.	B.E. 1905,	Altoona, Pa.
JOHN LAWRENCE VON GLAHN, President, Clarendon Construction Co.	B.E. 1908,	Wilmington, N. C.
EDWIN THOMAS WADSWORTH, Student Engineer, General Electric Co.	B.E. 1911,	Schenectady, N. Y.
ROSCOE MARVIN WAGSTAFF, Marine Engine and Boiler Draftsman, U. S. Navy Department, Machinery Division.	B.E. 1900,	Norfolk, Va.
JOSEPH KENDALL WAITT,* Chief Engineer, Prairie Pebble Phosphate Co.	B.E. 1904,	Mulberry, Fla.
WALTER JENNINGS WALKER,* General Electric Co. Home Address, Winston-Salem, N. C.	B.E. 1905,	Schenectady, N. Y.
STEVEN DOCKERY WALL,†	B.E. 1905,	Rockingham, N. C.
CHARLES EMMETTE WALTON, Specification Department, Crocker-Wheeler Co.	B.E. 1910,	Ampere, N. J.
BENJAMIN FRANKLIN WALTON, Farmer.	B.S. 1894,	Raleigh, N. C., R. 1.
EDMUND FARRIS WARD, Abell & Ward, Lawyers.	B.Agr. 1907,	Smithfield, N. C.
HUGH WARE, Farmer.	B.S. 1899,	Kings Mountain, N. C.

\*Not heard from this year.

†Deceased.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
CHARLES AUGUSTUS WATSON, †	B.S. 1901,	Raleigh, N. C.
JAMES HUNTER WATSON,	B.S. 1911,	Raleigh, N. C.
JORDAN LEA WATSON, †	B.S. 1897,	Atlanta, Ga.
	M.E. 1899.	
WALTER WELLINGTON WATT, JR.,	B.E. 1905,	Charlotte, N. C.
	Salesman, Saco-Petree Co.	
LINDSAY MARADE WEAVER,	B.E. 1907,	Lexington, N. C.
	Dacotah Cotton Mills, Inc.	
MARION EMERSON WEEKS,	B.E. 1904,	Washington, D. C.
	Draftsman, Navy Department, Bureau of Steam Engineering.	
HOWARD WALDO WELLES, JR.,	B.E. 1910,	Philadelphia, Pa.
	Apprentice, Commercial Truck Company of America.	
JOHN JACKSON WELLS,	B.E. 1907,	Rocky Mount, N. C.
	Civil Engineer.	
CLEVELAND DOUGLAS WELSH,	B.E. 1902,	Mayesworth, N. C.
	Superintendent, Mayes Manufacturing Co.	
ALBERT CLINTON WHARTON, JR.,	B.S. 1904,	Clemmons, N. C.
	Farmer, Live Stock.	
DAVID LYNDON WHITE,*	B.Agr. 1907,	Greensboro, N. C., R. 2.
	Dairyman, Greensboro Creamery.	
JONATHAN WINBORNE WHITE,	B.S. 1903,	State College, Pa.
	Pennsylvania Agricultural Experiment Station.	
ROYALL EDWARD WHITE,	B.E. 1908,	Aulander, N. C.
	Engineer.	
CECIL BERNARD WHITEHURST,	B.E. 1907,	Richmond, Va.
	Salesman, Western Electric Co.	
JOSEPH SLAUGHTER WHITEHURST,	B.E. 1909,	Elizabeth City, N. C.
	Civil Engineer, Norfolk Southern Ry.	
EDWIN SEYMORE WHITING, †	B.E. 1903,	Hamlet, N. C.
GAITHER HALL WHITING, †	B.S. 1900,	Richmond, Va.
LEVI ROMULUS WHITTED,	B.S. 1896,	Roswell, New Mexico.
	C.E. 1897. Superintendent of Construction, U. S. Public Buildings.	
	With U. S. Treasury Department.	
ARCHIE CARRAWAY WILKINSON,*	B.E. 1905,	Oklahoma City, Okla.
	Assistant Engineer, Adams Engineering Co.	
CHARLES BURGESS WILLIAMS,	B.S. 1893,	West Raleigh, N. C.
	M.S. 1896. Director N. C. Agricultural Experiment Station.	
CLAUDE B. WILLIAMS,	B.S. 1899,	Elizabeth City, N. C.
	Physician.	

\*Not heard from this year.

†Deceased.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
HENRY LLOYD WILLIAMS, Superintendent Mills, Cofield Manufacturing Co.	B.S. 1896,	Gates, N. C.
JOHN C. WILLIAMS, Transitman, Eastern Construction Co.	B.E. 1908,	Pensacola, Fla.
JAMES HARLEY WILLIAMS, General Secretary, South Chattanooga Y. M. C. A.	B.E. 1906,	Chattanooga, Tenn.
Arthur John Wilson, Professor of Chemistry, Lombard College, Galesburg, Ill.	B.S. 1907,	Knoxville, Ill.
JOHN McCAMY WILSON,* Mechanical and Electrical Engineer, Clinton Mills Co.	B.E. 1894,	Clinton, S. C.
JOHN SPICER WILSON, Inspector and Engineer, Commonwealth Edison Co.	B.E. 1909,	Chicago, Ill.
WALTER BOOKER WINFREE, Farmer.	B.S. 1911,	Wadesboro, N. C., R. 3.
EDWARD LEIGH WINSLOW, Civil Engineer, United Fruit Co.	B.E. 1910,	Puerto Barrios, Guatemala. Home Address, Hertford, N. C.
LEWIS TAYLOR WINSTON, Accountant, General Offices, Stonega Coke and Coal Co., Inc.	B.Agr. 1906,	Big Stone Gap, Va.
HOWARD WISWALL, JR., Civil Engineer, Tuxbury Lumber Co.	B.E. 1895,	Charleston, S. C.
PAUL ADAMS WITHERSPOON,* Student at Lehigh University.	B.E. 1909,	South Bethlehem, Pa.
BRADLEY JEWETT WOOTEN,†	B.S. 1897,	Wilmington, N. C.
BENJAMIN VADEN WRIGHT, Engineer of Maintenance of Way, N. O. M. and C. R. R.	B.E. 1901,	Laurel, Miss.
MARION FULLER WYATT, Member Job P. Wyatt & Sons Co.	B.E. 1911,	Raleigh, N. C.
ROBERT JOB WYATT, Member Job P. Wyatt & Sons Co.	B.E. 1909,	Raleigh, N. C.
CHARLES GARRETT YARBROUGH, District Superintendent of Service Department, Westinghouse Electric and Manufacturing Co.	B.E. 1895,	Los Angeles, Cal.
LOUIS THOMAS YARBROUGH, Register Clerk, Raleigh Post Office.	B.E. 1893,	Raleigh, N. C.
WOODFIN BRADSHAW YARBROUGH,* Farmer.	B.E. 1908,	McIver, N. C.
SAMUEL MARVIN YOUNG,* Traveling Salesman, Supplee Hardware Co. of Philadelphia.	B.E. 1893,	Raleigh, N. C.
JOHN FRANKLIN ZIGLAR, Assistant Engineer, Maintenance of Way Department, Southern Railway.	B.E. 1908,	Charlotte, N. C.

\*Not heard from this year.

†Deceased.

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