1895

Annual Report 1895

University of Rhode Island

Seventh Annual Report

OF THE

CORPORATION, BOARD OF MANAGERS

OF THE

R. I. College of Agriculture and Mechanic Arts,

MADE TO THE

GENERAL ASSEMBLY,

AT ITS

JANUARY SESSION, 1895.

PROVIDENCE:
E. L. FREEMAN & SON, PRINTERS TO THE STATE.
1895.

Rhode Island College of Agriculture and Mechanic Arts.

CORPORATION.

HON. MELVILLE BULL..... NEWPORT COUNTY.
HON. C. H. COGGESHALL.....BRISTOL COUNTY.
HON. CHAS. J. GREENE.....WASHINGTON COUNTY.
HON. NATHAN D. PIERCE, JR.....KENT COUNTY.
HON. GARDINER C. SIMS.....PROVIDENCE COUNTY.

OFFICERS OF THE CORPORATION.

HON. C. H. COGGESHALL, President..... ....P. O., BRISTOL, R. I.
HON. CHAS. J. GREENE, Clerk.....P. O., KENYON, R. I.
HON. MELVILLE BULL, Treasurer..... .....P. O., NEWPORT, R. I.

REPORT.

To His Excellency D. Russell Brown, Governor, and the Honorable General Assembly of the State of Rhode Island and Providence Plantations, at its January Session, 1895:

I have the honor herewith to submit the Seventh Annual Report of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, as required by law.

Since our last annual report the controversy over the Morrill Fund, so called, has been happily settled. The following is the full text of the resolution of settlement passed at the January Session of the General Assembly, A. D. 1894, and the agreement following said resolution:

State of Rhode Island and Providence Plantations.

JANUARY SESSION, A. D. 1894.

RESOLUTION FOR SETTLEMENT WITH BROWN UNIVERSITY.

WHEREAS, Controversies exist between the State and Brown University respecting the Agricultural School Funds, so called, viz: the fund of fifty thousand dollars now in the possession of Brown University, being the proceeds of the sale of the land scrip issued to this State under the Act of Congress approved

July 2d, 1862, entitled "An act donating public lands to the several States and Territories which may provide Colleges for the benefit of Agriculture and the Mechanic Arts," and the moneys now in the State Treasury heretofore received, and the moneys which shall be hereafter received by, or shall hereafter accrue to, this State, under the Act of Congress, approved August 30th, 1890, entitled "An act to apply a portion of the proceeds of the public lands to the more complete endowment and support of the colleges for the benefit of Agriculture and the Mechanic Arts established under the provisions of an Act of Congress, approved July second, eighteen hundred and sixty-two," and respecting the latter of which funds said University now has its bill in equity pending on appeal in the Supreme Court of the United States:

THEREFORE, For the amicable adjustment of said controversies,

Resolved, That the General Treasurer be and hereby is authorized and instructed to pay to the Treasurer of Brown University, for the general uses of said University, the sum of forty thousand dollars, out of any moneys in the treasury not otherwise appropriated, whenever said University shall repay to him for the State, to be held under said act of Congress of July 2d, 1862, the said sum of fifty thousand dollars, and shall dismiss (without costs), its said bill in equity, and shall execute under its seal, and deliver to him, its obligations to the State, releasing and discharging all its claims of every nature upon the State, whether arising from the location and sale of the lands under said land scrip, or otherwise, and all its claims to or upon the said moneys heretofore received, and that shall be hereafter received by, or that shall hereafter accrue to this State under said act of Congress of August 30th, 1890; and agreeing, at its own expense, to continue in the enjoyment of their respective scholarships, until they respectively either graduate or otherwise leave college, all students in said University holding State scholarships on the first day of May, 1894; the General Treasurer and Secretary of State being then also hereby authorized and instructed to execute, under the seal of the State, and deliver to said University, the State's release to, and discharge of, said University from all further claims, obligations and liabilities in respect of said original fund of fifty thousand dollars, or the income thereof, particularly from all obligations assumed by said University under or pursuant to the resolutions of the General Assembly passed at its January Session, 1863, entitled "Resolutions assigning to Brown University the land scrip granted by the United States to the State of Rhode Island for the establishment of an Agricultural College," except the obligation to continue the State scholarships as aforesaid.

And this resolution shall go into effect immediately upon its passage.

AGREEMENT.

WHEREAS, the General Assembly of the State of Rhode Island and Providence Plantations at its January Session, A. D. 1894, did April 19, A. D. 1894, pass a resolution entitled "Resolution for Settlement with Brown University," a copy of which resolution is hereto annexed marked Exhibit "A" and is made a part of these presents; and

WHEREAS, the Trustees and fellows of Brown University in Providence in the State of Rhode Island and Providence Plantations, a corporation commonly known as Brown University and being the Brown University spoken of in the above mentioned resolution had previously by its corporate votes, copies of which are hereto annexed marked exhibit "B" and made a part of these presents, appointed a committee consisting of its president, Elisha Benjamin Andrews; its chancellor, William Goddard, Thomas Durfee, Francis A. Gaskill, Oscar Lapham, Robert I. Gammell and Arnold Green, to consider, arrange, act upon and conclude in behalf of Brown University all the matters and controversies in said resolution mentioned and alluded to, and by its action to bind the said Brown University; and

WHEREAS, the bill in equity brought by the said Brown University and mentioned in the said resolution has been, as in said resolution provided, dismissed without costs; and

WHEREAS, the general treasurer of the State of Rhode Island and Providence Plantations has received from the treasurer of said Brown University the sum of fifty thousand dollars spoken of in said resolution; and

WHEREAS, the treasurer of Brown University has received from the general treasurer of the State of Rhode Island and Providence Plantations the sum of forty thousand dollars spoken of in said resolution; now,

THEREFORE, to carry out the purposes and directions of said resolutions these presents witness:

THAT Arnold Benjamin Chace in his capacity of treasurer of said Brown University acknowledges having received from Samuel Clark, general treasurer of the State of Rhode Island and Providence Plantations, the said sum of forty thousand dollars spoken of in said resolution.

THAT Samuel Clark in his capacity of general treasurer of the State of Rhode Island and Providence Plantations, acknowledges having received from Arnold B. Chace, treasurer of said Brown University, the said sum of fifty thousand dollars spoken of in said resolution.

THAT the Trustees and fellows of Brown University in Providence in the

State of Rhode Island and Providence Plantations, a corporation under its corporate seal by its committee hereinbefore named, hereby releases and discharges to the State of Rhode Island and Providence Plantations all its claims upon said State of every nature whether arising from the location and sale of the lands under the land scrip mentioned in said resolution or otherwise and all its claims to or upon the moneys heretofore received and that shall be hereafter received by or that shall hereafter accrue to the State of Rhode Island and Providence Plantations under the Act of Congress of August 30, 1890, mentioned in said resolution.

THAT the Trustees and fellows of Brown University in Providence in the State of Rhode Island and Providence Plantations, a corporation under its corporate seal by its committee hereinbefore named also agrees and covenants to and with the state of Rhode Island and Providence Plantations at its own expense to continue in the enjoyment of their respective scholarships until they respectively graduate or otherwise leave college all students in said Brown University holding State scholarships on the first day of May, A. D. 1894.

THE foregoing releases, discharges, agreements and covenants being made in consideration of the payment made to the treasurer of Brown University by the general treasurer of the State of Rhode Island and Providence Plantations of the forty thousand dollars hereinbefore and in said resolution mentioned and of the releases and discharges hereinafter contained.

THAT the State of Rhode Island and Providence Plantations under its seal by Samuel Clark, its general treasurer, and George H. Utter, its secretary of state, acting under and by the authority of said resolution whereby they are for this purpose empowered, hereby releases and discharges said Trustees and fellows of Brown University in Providence in the State of Rhode Island and Providence Plantations, a corporation commonly known as Brown University, it and its successors of and from all further claims, obligations and liabilities in respect of the original fund of fifty thousand dollars in said resolution mentioned and the income thereof particularly from all obligations assumed by said University under or pursuant to the resolutions of the General Assembly passed at its January Session, A. D. 1863, entitled "Resolutions assigning to Brown University the land scrip granted by the United States to the State of Rhode Island for the establishment of an agricultural college" except the obligation to continue the State scholarships as aforesaid.

IN TESTIMONY WHEREOF, these presents are this Eighteenth day of May, Anno Domini, Eighteen Hundred and Ninety-Four, signed, executed and interchanged in two originals by and between the State of Rhode Island and Providence Plantations and the Trustees and fellows of Brown University in Providence in

the State of Rhode Island and Providence Plantations, a corporation commonly known as Brown University.

The Trustees and fellows of Brown University in Providence in the State of Rhode Island and Providence Plantations, by

SEAL OF THE UNIVERSITY.

COMMITTEE

ELISHA B. ANDREWS,
President of Brown University.
WILLIAM GODDARD,
Chancellor of Brown University.
THOMAS DURFEE.
FRANCIS A. GASKILL.
ARNOLD GREEN.
ROBERT I. GAMMELL.
OSCAR LAPHAM.
ARNOLD B. CHACE,
Treasurer of Brown University.

SEAL OF THE STATE.

SAMUEL CLARK,
General Treasurer of the State of Rhode Island and Providence Plantations.
GEORGE H. UTTER,
Secretary of the State of Rhode Island and Providence Plantations.

EXHIBIT A.

[This consists of the Resolution printed above.]

EXHIBIT B.

[This consists of a copy of that part of the records of the corporation of Brown University creating and authorizing the Committee of seven whose names appear at the end of the above agreement.]

The Morrill Fund is now available and is being used for the support of the Rhode Island College of Agriculture and Mechanic Arts, in accordance with the laws of the State. The State is thus relieved of the greater part of the expense attending the same.

On the 1st of July, 1894, Mr. Chas. O. Flagg, who has served as president of the board of managers since its organization, resigned his position as a member of the board, and the Hon. Gardiner C. Sims, of Providence, was appointed as his successor. The services of Mr. Flagg during these early years of the College have been most valuable.

The treasurer's report will show the receipts and expenditures for the year.

The report of the Faculty of the College indicates the progress of the past year, all of which is herewith transmitted.

BY THE BOARD OF MANAGERS,

C. H. Coggeshall

President.

CHEMICAL LABORATORY. COLLEGE HALL. DINING HALL.

COLLEGE CALENDAR.

1895.

WINTER TERM.

January 2, 8:30 A. M. ..... Term begins.
January 31 ..... Day of Prayer for Colleges.
February 22 ..... Washington's Birthday.
March 29 ..... Term ends.

SPRING TERM.

April 9, 8:30 A. M. ..... Term begins.
—— —— ..... Arbor Day.
May 30 ..... Memorial Day.
June 4 ..... Senior Examinations begin.
June 7, 10 A. M. ..... Entrance Examination.
June 16 ..... Baccalaureate Sunday.
June 18 ..... Commencement.

FALL TERM.

September 16, 10 A. M. ..... Entrance Examination.
September 17, 8:30 A. M. ..... Term begins.
—— —— ..... Thanksgiving Day.
December 24 ..... Term ends.

1896.

WINTER TERM.

January 2 ..... Term begins.

FACULTY.

JOHN HOSEA WASHBURN, PH. D.,
PRESIDENT,
Professor of Chemistry.

CHARLES OTIS FLAGG, B. SC.,
Professor of Agriculture.

LORENZO FOSTER KINNEY, B. SC.,
Professor of Horticulture.

HOMER JAY WHEELER, PH. D.,
Professor of Geology.

ANNE LUCY BOSWORTH, B. SC.
Professor of Mathematics.

ESSIE JOSEPHINE WATSON, A. M.,
Professor of Languages.

WILLIAM ELISHA DRAKE, B. SC.,
Professor of Mechanical Engineering.

OLIVER CHASE WIGGIN, M. D.,
Professor of Biology.

WILLIAM WALLACE WOTHERSPOON,
Captain of 12th Infantry,
Professor of Military Science and Tactics.

HARRIET LATHROP MERROW, M. A.,
Professor of Botany.

JAMES DE LOSS TOWAR, B. SC.,
Associate Professor of Agriculture.

THOMAS CARROLL RODMAN,
Instructor in Woodwork.

FACULTY.

FREDERICK ATHERTON LANE,
Assistant Instructor in Woodwork.

MARY POWELL HELME,
Instructor in Drawing.

ANNA BROWN PECKHAM, A. B.,
Instructor in Languages and History.

WILLIS THOMAS LEE, PH. B.,
Instructor in Chemistry and Physics.

SAMUEL CUSHMAN,
Lecturer on Bee-Keeping.

WARREN BROWN MADISON, B. SC.,
Assistant in Horticulture.

GEORGE CLARENCE AMMONDS, B. SC.,
Assistant in Mechanics.

GEORGE ALBERT RODMAN, B. SC.,
Assistant in Mechanics.

SAMUEL WATSON SLOCUM, B. SC.,
Assistant in Mechanics.

JOHN FRANKLIN KNOWLES, B. SC.,
Assistant in Mechanics.

ROBERT ARTHUR WILBUR, B. SC.,
Assistant in Mechanics.

NATHANIEL HELME,
Meteorologist.

EXPERIMENT STATION STAFF.

JOHN H. WASHBURN, Ph. D. ..... PRESIDENT OF THE COLLEGE.

CHAS. O. FLAGG, B. Sc. ..... DIRECTOR AND AGRICULTURIST.

H. J. WHEELER, Ph. D. ..... CHEMIST.

L. F. KINNEY, B. Sc. ..... HORTICULTURIST.

SAMUEL CUSHMAN ..... APIARIST AND POULTRY MANAGER.

J. D. TOWAR, B. Sc. ..... ASSISTANT AGRICULTURIST.

GEO. M. TUCKER, B. Sc. ..... ASSISTANT AGRICULTURIST.

B. L. HARTWELL, B. Sc. ..... ASSISTANT CHEMIST.

C. L. SARGENT, B. Sc. ..... ASSISTANT CHEMIST.

H. F. ADAMS ..... FARMER.

N. HELME ..... METEOROLOGIST.

MISS A. R. FRENCH ..... CLERK.

The EXPERIMENT STATION COUNCIL consists of the President of the College, the Director of the Station, the heads of departments and their first assistants.

THE COLLEGE.

HISTORY.

IN 1863 the State of Rhode Island accepted from the United States Government the land grant scrip, which gave to each State thirty thousand acres of the public lands for each Senator and Representative in Congress. The land was to be sold by the States, or their agents, the proceeds arising from the sale invested, and the annual income derived therefrom was to be "inviolably appropriated by each State which may take and claim the benefit of this act, to the endowment, support and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to Agriculture and the Mechanic Arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

On March 2d, 1887, the act known as the Hatch Act was passed, appropriating $15,000 annually to each State, for the purpose of establishing an Agricultural Experiment Station in connection with an Agricultural College or School.*

From the time of the acceptance by the State of Rhode Island of the land scrip in 1863, there were many people who felt that this State did not offer to young men such advantages for instruction in agriculture and mechanic arts as others afforded that had genuine agricultural and mechanical colleges. So great was the

*See Bulletin No. 1 of the Experiment Station.

dissatisfaction among the citizens of Rhode Island at the absence of these educational advantages, that they were determined to have the Hatch Agricultural Experiment Station located at a *bona fide* agricultural educational institution.

The Rhode Island State Agricultural School was established according to Chapter 706 of the Public Laws, passed May 23, 1888. (See Fifth Annual Report, page 6).

The United States Congress, on August 30, 1890, passed an act known as the new Morrill Bill. This appropriated for the further support of the agricultural and mechanical colleges a sum beginning with $15,000, and continuing with a yearly increase of $1,000 until the annual appropriation should reach $25,000.

That the school already established might receive the benefit of the act of Congress, the General Assembly amended Chapter 706 of the Public Statutes, (for text see Fifth Annual Report, page 12), incorporating the Rhode Island College of Agriculture and Mechanic Arts.

Since September, 1892, the institution has been conducted on a college basis with an entirely new course of study.

On April 19, 1894, the Legislature passed an act authorizing the State Treasurer to pay Brown University the sum of $40,000, in consideration of which the University was to turn over to the State the proceeds of the original Land Grant of 1862, and to withdraw from the United States Supreme Court its suit for the Morrill Fund.

GROWTH DURING 1894.

Forty new pupils have entered this year, and all the departments have received much help by the addition of new books and apparatus. Never before in the history of the institution have the departments had so promising a future or been in a condition to do so good work as at present. Professor Drake has been relieved from teaching physics, which allows him to devote all his time to mechanical engineering and machine-shop work. Mr. W. T. Lee has been appointed instructor in physics and chemistry. The

department of horticulture and botany has been divided to allow Prof. Kinney more time to devote to elective courses in horticulture and Experiment Station work. Miss H. L. Merrow, from the University of Michigan, (first assistant in botanical laboratory), has been appointed professor in charge of the botanical department. Miss Anna B. Peckham has been appointed instructor in languages and history. The War Department has detailed Capt. William Wallace Wotherspoon professor of military science and tactics. This fills a long felt need in the institution. Mr. Nathaniel Helme has been appointed meteorologist to the College. The library has grown. There have been added during the past year about four thousand bound volumes and one thousand pamphlets. The selection of reference books is already excellent, but many more are needed.

REQUIREMENTS FOR ADMISSION.

The requirements for admission to the College are necessarily low, on account of the deplorable condition of our district schools. They embrace both an oral and written examination in arithmetic, geography, English grammar and United States history. Applicants for the regular course will find some knowledge of algebra of great assistance.

ADMISSION TO ADVANCED STANDING.

Graduates of high schools, and others who have had a sufficient amount of high school or college work, may enter in advance in any of the higher classes for whose work they are prepared.

OPPORTUNITIES OFFERED TO WOMEN.

There are no facilities for the boarding of young women at the College, since the number of applicants for an industrial education has not yet been sufficient to warrant the furnishing of special dormitory accommodations. Some young women, however, find accommodations elsewhere, and receive a part or the whole of the instruction given, substituting for agriculture, horticulture and mechanics, English, Latin, German, French, art and mathematics.

EXPENSES.

Expenses at the College are as follows: Tuition free to Rhode Island pupils; table board at $3.00 per week; necessary text books, fuel and lights at cost; physical laboratory expenses for breakage, if the student is ordinarily careful, $1.00 per term; chemical laboratory charges, $3.00 for chemicals during each term of qualitative analysis; in the shops, $1.00 per term for the use of tools; room rent, $5.00 per annum, or $2.00 per term; gas, an average of $1.50 per term. Students are required to furnish their own furniture and bedding. The only other expense is for heavy laundry work, 50 cents a dozen, two cents each for collars and cuffs. All clothing should be distinctly marked. Packages sent the students by express or freight in care of the College, will be taken from the station to the College free of charge. Once at the beginning and end of each term a team will go to the station to take or bring trunks and other luggage. If the student desires aid in procuring his furniture, such aid will be given by the President, for whom special rates are made by the dealers. Graduates pay the cost of diplomas, $5.00. No diplomas will be issued till the candidate has paid all term bills. Day students are required to deposit $10 per term in advance, and boarding students must either pay term bills in advance, deposit $50, or give bond for $100, to insure the payment of all bills. No bond will be accepted from any member of the faculty.

The labor of the students during class exercises, in the shops, at iron work, and in the horticultural and agricultural departments, is a part of their instruction, and is not paid for unless special arrangements be made with the professor in charge. All extra work outside of the required hours of labor is paid for when the student is employed by the superintendent in charge. A limited amount of labor may be furnished to those students who are desirous of assisting themselves. There will be work about the buildings, on the farm, at the experiment station, and in the laboratories. Much of this can be performed by the students.

PUBLIC WORSHIP.

The students are expected to be present at chapel exercises every morning, and on Sundays to attend service in some church at least once a day.

DEPORTMENT.

The rule for the conduct of the young men is, "Be a gentleman." Students who do not understand the elements of gentlemanly conduct will not continue to be members of the institution. Negligence or absence from class duties of any kind will be vigorously opposed. The following regulations concerning absences are rigidly enforced.

1. Students shall go to each professor or instructor for excuses in his or her department.
2. An application for an excuse shall be made, if possible, beforehand; if not, at the first recitation after the student's return; otherwise, the absence will be considered unexcused.
3. Every student shall be allowed each term ten per cent. of unexcused absences from recitations in each subject. No account will be taken of fractions.
4. An unexcused absence in excess of this number shall dismiss a student from the institution.
5. Attendance at Chapel exercises shall be treated like attendance upon any class, except that applications for excuses from the same must be made at the President's office on Tuesdays, at 8.40 A. M.

LOCATION.

The College is situated on a hillside, which furnishes it with quick drainage and a delightful view. It is less than two miles from the railroad station. A macadamized road leads from the grounds to the station, insuring at all times a good walk and drive. The railroad station is situated on the New York, New Haven & Hartford R. R., with eighteen trains daily, in the winter, stopping at Kingston, and more in the summer. The town is a very healthful place, five or six miles from the ocean.

DEPARTMENTS OF INSTRUCTION.

GENERAL AND AGRICULTURAL CHEMISTRY.

WITH the new course of study, instruction in chemistry begins with the Sophomores' third term. It consists of lectures and recitations three hours per week, with laboratory work one afternoon per week. The same number of lectures and recitations is continued during the first term, Junior year, and the laboratory work consists of qualitative analysis two afternoons per week. During the second term, Junior year, organic chemistry is begun, consisting of lectures three hours per week, and qualitative analysis is continued three afternoons per week. During the third term, agricultural chemistry is taught by lectures four hours per week, and qualitative analysis three afternoons per week. The instruction in agricultural chemistry consists of lectures and recitations with laboratory work upon artificial digestion, analysis of soils, fodders and fertilizers, milk, butter and cheese, tests for poisons in the stomachs of different animals, analysis of fruits for sugar, starch and albuminoids, and the study of chemical changes in soils. Instruction in inorganic chemistry comprises recitations and laboratory work upon Remsen's advanced course in inorganic chemistry. Special illustrations, however, are given in the line of agriculture, physiology and hygiene, for the purpose of making the chemistry of the farm and kitchen familiar to all. In the chemistry of the halogen compounds, especial attention is given to photographic chemistry and manipulation, which prepares the students for a special course in

THE FARM BUILDINGS.

photography, which may be taken as an elective branch in the study of chemistry.

Text books: Remsen's Inorganic Chemistry (advanced course), Remsen's Theoretical Chemistry, Remsen's Organic Chemistry, Orndorff's Laboratory Manual, Appleton's Qualitative and Quantitative Analysis.

The Freshman class study physical geography during the first term. They pay special attention to the scientific phases of it, to the chemistry and geology of the soils, the influence of air and water on the same; and much reading and time are expended on the flora and fauna of the different countries. Warren's Physical Geography is taken as a basis; and Dana's Coral Islands, Shaler's Aspects of the Earth, and Dana's Characteristics of Volcanoes are thoroughly studied during the term. Five hundred lantern slides illustrating ethnological subjects are projected and explained before the class. This course seems especially valuable to introduce the student to the scientific studies which are to follow.

AGRICULTURE.

The term *Agriculture* is broad and comprehensive, including many of the sciences set apart as separate divisions in an agricultural college, where they are to be taught "in their relation to agriculture." The work of this division is intended to cover ground both practical and theoretical in agricultural knowledge, not included in other divisions, and to further impress upon the student the application of scientific principles to agriculture. The course for the first year is the same for both the agricultural and mechanical students, and aims to begin with such subjects as may be somewhat familiar to them and about which they have some elementary knowledge. The soil might quite properly be considered the correct starting-point for an agricultural course, but to study the soil intelligently requires some knowledge of chemistry, and should properly come at such a time in the course as to follow at least elementary instruction in that branch. The

same is true of the use of fertilizers and the growth of plants, except that a knowledge of botany is essential in the latter.

One afternoon in each week of the first term of the Freshman year is devoted to the study of farm buildings, their location and convenience of arrangement; farm machinery, its use and care; a discussion of general and special farming with the arrangement of farm buildings and fields for the various kinds of farming, including the subject of fences and fencing. The third term is given to the subject of land drainage; the effect of water upon the soil and growing crops; tile and other methods of draining; how drains act and affect the soil; how to lay out a system of drains; draining-tools and their use; laying tile, silt basin, outlets and care of tile drains. A little time will be devoted to the history, value and cost of tile draining. Practical field work is given in laying out drains, leveling and preparing plans. The agriculture of the first term of the Sophomore year is assigned to the study of the breeds of live stock, horses, cattle, sheep and swine; the history, characteristics and value of each for various purposes, with practice in tracing pedigrees from herd records and the use of score cards in judging animals. For the study of animals, the stock of the College and Experiment Station as well as the herds of stock breeders in the vicinity are available. Two hours each week of the first term are given to the study of farm crops, their relation to the soil and stock of the farm, their relation to each other, rotations and the planting, cultivating and harvesting of the various crops generally grown. Two terms of the Junior year are given to the study of soils, manures and fertilizers. This includes the relation of water, heat, light and air to the soil as affecting plant growth and crop cultivation.

Some time is given to the careful study of the manures made upon the farm; their value, and the best course to pursue in handling them to prevent loss. Chemical and artificial fertilizers as plant food and as chemical agents in rendering inert material in the soil available to plants, receive the consideration due them.

The student is taught how to learn what the soil requires and how to compound the material to supply the elements found lacking. The chemical and biological changes constantly taking place within the soil and their bearing upon the supply of available plant food are considered, and attention given to the influences tending to increase their activity.

Senior year agriculture is devoted to the study of the laws of breeding and stock feeding. Such subjects as heredity, atavism, fecundity, in and in breeding, cross breeding, influence of parentage and pedigree, are studied in their relation to the breeding of animals. The latter includes the compounding of feeding rations for specific purposes in the feeding of various classes of animals, and practice in the selection of such waste products used for feeding as will balance the coarse fodders grown on the farm to make a cheap and complete food to produce the most satisfactory results.

The farm, fields and work of the Experiment Station are at all times available for the purpose of illustration. The students are not required to devote their time to manual labor in the common operations of the farm with which they are already familiar. Skill in manual labor is the result of practice; and once the knowledge of and reason for any certain farm operation is acquired by the student, it is hardly wise for him to spend the time and opportunities of a college course in the acquiring of mere manual dexterity in farm operations. He can easily do that elsewhere. His time here can be used to better advantage.

For the successful management of the farm, a modern barn with root cellars and silo facilities for the keeping of a dairy, sheep, and other farm stock is absolutely necessary, and we are glad to state that an appropriation has been made by the General Assembly for the construction of a suitable barn and dairy building. This dairy building will be planned to serve as a laboratory and creamery in giving instruction in the care and handling of milk and making of butter.

Agricultural text-books suitable for class use have not yet

reached the state of perfection found in those of other lines of study, and the labor of teaching is augmented by the necessity of lectures and the more frequent use of reference books. The College and Experiment Station libraries are valuable for this purpose. Collections of chemicals and fertilizing materials, grains, various commercial foods and by-products are used for the purpose of illustration and instruction.

The text-books used thus far are as follows:—Draining for Profit and Health, Waring; Horses, Cattle, Sheep and Swine, Curtis; Agriculture, Storer; Stock Breeding, Miles; Feeding Animals, Stewart.

HORTICULTURE.

POMOLOGY. The course in pomology now offered embraces, 1. The identification of the standard kinds of fruits by means of an artificial key now being prepared here at the College; 2. A systematic study of the important characteristics of the various kinds of fruits that have been considered in making the classification; 3. Their history while under cultivation. There are now many kinds of orchard fruits grown upon the College grounds and it is proposed to add to these by grafting scions until as far as possible all the kinds of apples, pears, peaches, plums and cherries that are recognized by the American Pomological Association as being worthy of cultivation have a place in the garden.

In connection with the systematic study of the varieties of fruits, opportunity will be afforded for practical experience in the propagation and cultivation of the strawberry, raspberry, currant, gooseberry, and the grape, in addition to the orchard fruits already named.

MARKET GARDENING. Opportunity will be offered in this course for practical experience in the cultivation of celery, onions, beets, lettuce, cucumbers, etc., in the garden; and as soon as suitable glass structures are provided, lettuce, radishes and cucumbers will be grown under glass.

FLORICULTURE. This course will consist of a series of discussions on the propagation, cultivation and fertilization of the rose, carnation, violet, chrysanthemum, orchids, ferns and palms, together with practical exercises in the laboratory or greenhouse in preparing and setting hard and soft wood cuttings, and in budding, grafting, and layering. There will also be discussions on the arrangement of flowers when used either for exterior or interior decoration.

LANDSCAPE GARDENING. This course consists of discussions on the location of buildings, walks and drives, the laying out of lawns and the planting of them with appropriate trees, shrubs and flowers. In this course, a special study is made of the appearance of trees and shrubs due to the form of the branches, the size of the leaves and the color of the bark in winter. Opportunity is also offered for experience in moving large trees and making plans for planting private or public places.

FORESTRY. This course consists of lectures only. Last year these were given by Professor B. E. Fernow, Chief of the Division of Forestry of the United States Department of Agriculture.

GEOLOGY.

The course in geology embraces structural, dynamical, historical and a brief review of physiographic geology. In connection with historical geology, the student is made familiar with, and taught to recognize some of the most characteristic fossils of the different formations, and is also taught the characteristic features of different divisions of mollusks by examination and study of recent and fossil shells. Especial attention is given in the course to such mineral constituents of rocks as are of importance in connection with the study of the origin of soils, and the changes and transformation which are continually in progress within them. In this connection, special effort is made to familiarize the student with the desirable mineral and physical features of soils as well as with those compounds the presence of which is undesirable or which

may give rise to a greater or less degree of soil sterility. A thorough study of natural deposits of interest to agriculture is made; namely: of Chili salt-petre, potash salts and phosphates of various character. During the spring term, occasional excursions are made to places of geological interest, affording the student an opportunity to collect mineral and geological specimens, and to make for himself practical geological observations. These excursions also furnish a favorable opportunity for gaining an idea of the methods pursued in the preparation of geological and agricultural maps. During the past year a collection of characteristic rocks of the different geological formations and also one of two hundred mineral specimens, has been purchased. Some fine specimens of natural sodium nitrate from the World's Fair Exhibit have been presented by Joseph Harris, and a number of miscellaneous minerals have been donated by friends of the College. Several geographical maps, and charts of the Mississippi River Commission have also been added to the equipment for teaching. It is hoped to add soon a special collection of Rhode Island minerals and also a collection of fossils and recent shells. It is also proposed to secure additional slides for use in giving geological instruction by aid of a stereopticon.

MATHEMATICS AND ASTRONOMY.

The required work in mathematics extends through the first two years of the course for students in the agricultural department, and throughout the entire four years for those in the mechanical course. The time devoted to the subject in the Freshman year, is spent in the study of algebra and plane geometry. The work in algebra consists of a systematic drill in the fundamental operations, leading up to a study of the equation, both simple and quadratic, the theory of exponents, radicals, progression, the binomial formula, and the graphic representation of equations. Especial attention is given to the expression by means of equations, of the conditions of a problem, and the exact methods of

A DIVISION OF THE SURVEYED CLASS.

reasoning involved. In the course in plane geometry, beginning with the third term, particular stress is laid upon the original demonstration of propositions, in order best to develop the rigidly logical methods of thought which are the outcome of exact geometrical work. Numerical problems and practical applications are given whenever possible. This course extends through the first term of the Sophomore year and is followed by a course in plane trigonometry during the winter term. The fundamental formulas are developed and application of them is made to the solution of right and oblique triangles. The subject of logarithms is studied and sufficient applications are made to thoroughly familiarize the student with this invaluable aid to computation. It is the aim here, as throughout the course, to select such problems and applications as shall have direct bearing upon practical subjects. Practical work in surveying is given during the spring term and this work is continued through the first term of the Junior year, by the agricultural students, while the mechanical students enter upon the subject of analytical geometry, studying first the nature and meaning of a locus and the analytical demonstration of many geometrical theorems, and later developing the simpler properties of the conics. A short course in descriptive geometry is also given during the first term. A one term course in solid geometry is given to the mechanical students, in which are studied the points, the line and plane in space, the familiar polyedrons, the cylinder, cone and space, including the measurement of these solid figures. The work in calculus begins with the second term of the Junior year and continues through three terms. It includes the differentiation of algebraic, trigonometric, anti-trigonometric, exponential and logarithmic functions, successive differentiations and the integration of simple forms illustrated by applications to the rectification of plane curves, the areas of plane curves and the surface and volume of solids of revolution. The fundamental formulas of mechanics are developed and illustrated. The more familiar devices for the integration of functions are studied and a

short time is devoted to the interesting subject of curve-tracing. Three new elective courses will be offered for the ensuing year, one in modern synthetic geometry, open to all who have completed the preliminary work in algebra and plane geometry; one in determinants and an advanced course in integral calculus, open, of course, only to students who have completed the required work in calculus. The primary aim of the entire course in mathematics is to stimulate original work, to insist upon and develop a capacity for clear thinking and logical, systematic reasoning such as will prove invaluable in any department of study or life, as well as to achieve familiarity with such mathematical principles as are necessary for applied work.

The course in general astronomy has been shifted from the winter to the spring term of the senior year, a change that is advantageous because it renders possible a much larger amount of out-door observation. It is the aim of this course to emphasize the fundamental laws which govern the universe and to make the class familiar with the general characteristics of the various members of our own solar system by the aid of copious stereoscopic views. The department has added greatly to its resources during the past year by the collection of a small reference library of about one hundred standard works on mathematical and astronomical subjects. The collateral reading which these books enable the student to accomplish has already added much to the interest of the class. A four-inch telescope has been ordered and will, it is hoped, be on hand in time for use during the course in general astronomy. An elaborate set of drawings of celestial objects is projected and partly completed, and many additions have been made to the collection of lantern slides of astronomical phenomena. A fine equipment of surveying instruments has also been secured, description of which will be found in another section of this report.

The work of the students in this department shows, as a whole, a most gratifying improvement, both as to quality and quantity, over that of preceding years.

DEPARTMENT OF LANGUAGES.

The subjects grouped under this head are English, German, French, Latin, and history. The work in each is indicated below.

At the beginning of the fall term, Miss Peckham, a graduate of Wellesley College, succeeded Miss Williams as instructor in this department and has proved most efficient. She teaches English to the two lower classes, Latin, American and general history.

All efforts made to increase the facilities of this department have been furthered by the generous action of the Board of Managers. Busts and photographs will make the classroom more attractive, while the additions to the library in history and literature —English, French, and German—have quickened the interest of the students in these subjects and greatly enlarged the possibilities of the department. 1,455 volumes have been purchased, in the following proportion : English literature, 666 ; history and biography, 305 ; French and German literature, 484. Among these, may be mentioned Halliwell-Phillips's Outlines of the Life of Shakespeare, Furness's Variorum Edition of Shakespeare, Letters of James Russell Lowell, Correspondence of John Lothrop Motley, Morley's English Writers, Stedman and Hutchinson's Library of American Literature, the works of Hazlitt, Ruskin, Carlyle, De Quincey, Thackeray, George Eliot, Scott, Dickens, Arnold, Kingsley and Hawthorne, Winsor's Narrative and Critical History of America, Palfrey's History of New England, the works of Prescott and Parkman, The Story of the Nations Series, Lord's Beacon Lights of History, Duruy's History of Greece and History of Rome, Memoirs of Talleyrand, Memoirs of Prince Metternich, Von Sybel's Founding of the German Empire, Motley's Works, complete editions of Lessing, Goethe, Schiller, Heine, and Victor Hugo, also representative works of Freytag, Spielhagen, Ebers, Auerbach, Dahn, Heyse, George Sand, Balzac, Dumas, and Daudet. Among works of reference, may be noted Larned's History for Ready Reference, Chambers' Encyclopædia, Johnson's Universal Cyclo-

pedia, The Iconographic Encyclopedia, Grimm's Deutsches Woerterbuch, Littré's Dictionnaire de la Langue Française.

It is gratifying to note from year to year an improvement in scholarship on the part of the students in this department. They seem to understand now better than ever before the value and necessity of language work.

ENGLISH.

English, comprising composition, rhetoric, and literature, is studied during the four years of the college course.

In the Freshman year, the work is largely elementary. In addition to the written exercises required of the students, there is a careful reading in the classroom of representative works by famous authors, principally American. The aim of this is the early development of a taste for good literature.

The study of American literature is continued in the Sophomore year, and the principles of rhetoric are then taught. Written work more advanced than that of the first year is also required.

The winter and spring terms of the Junior year are devoted to general English literature. English history is studied at the same time, as it is thought impossible to understand an author apart from his age. Individual research is encouraged, and will increase, it is hoped, from year to year. Some attention will also be paid to contemporaneous literature. As far as possible, entire works of the most noted authors are critically read in class. Exercises in composition give opportunity for detailed treatment of special topics. An elective in English literature is offered throughout the Senior year. The purpose of it is to supplement the general course of the preceding year. During 1894, the work was adapted to the needs of the first graduating class, and a special study was made of American literature. The present Seniors during the fall term read Arnold's Sohrab and Rustum, The Sir Roger de Coverley papers in the Spectator, Macaulay's Second Essay on the Earl of Chatham, and the Essay on Addison. Essay

writing and declamations are required of the whole class. Three graduate students took work in English during the fall term.

GERMAN.

The study of this language is required during the Junior year, and is elective during the three terms of the Senior year. The experiment of using a text-book written in German with beginners has proved very successful. The language itself is made the medium of instruction, and the subject is taken up in grammar work, dictation, conversation, and translation—from English into German and from German into English. The course is carefully graded. As soon as a small vocabulary is acquired, the student begins the reading of simple prose and poetry, passing gradually to more difficult texts. The advanced classes of 1894 have studied Schiller's Die Jungfrau von Orleans, Lessing's Minna von Barnhelm, a history of German literature and Freytag's Aus dem Staat Friedrichs des Grossen. During the fall term there were two graduate students in the German department.

FRENCH.

A change in the curriculum enables a student beginning French in the fall term of the Sophomore year to continue it during the last two years of his course, if he so desire. It is the aim of the department to make the instruction in this language similar to that given in German, with the expectation that the results will be greater in consequence of the additional year allotted to the subject. French, like German, is taught by means of grammar, conversation, dictation, translation, and composition. Progressive work throughout the three years will make it possible for the student at graduation to read with ease ordinary French, both literary and scientific.

LATIN.

During the year, Latin has been introduced into the curriculum as an elective. The course, of four years, will be similar to that

of the best preparatory schools. It is felt that students taking Latin will be benefited not only by the reading of certain literary masterpieces, but that they will more readily comprehend the terminology of science, find modern languages less difficult, and gain a mental discipline that will be of value in all departments of study. That the new elective is appreciated, is indicated by the fact that twelve are studying it, among the number one graduate student.

HISTORY.

In the fall term of the Freshman year, a careful review is made of American history, followed in the other two terms by outline work in general history. The method is topical. No one text-book is used, but students are taught to consult various authorities and to report upon what they have read. In the Junior year, English history is studied in connection with English literature; and an elective for special historical work is offered throughout the Senior year.

TEXT-BOOKS.

ENGLISH. Lessons in English, Lockwood; Familiar Talks on English Literature, Richardson; Many Texts of Authors from Chancer to Longfellow; The Library.

GERMAN. Elementary German, Otis; German Reader, Joynes; Deutsches Sprach und Lesebuch, Bernhardt; Bilderbuch Ohne Bilder, Anderson; Unter dem Christbaum, Bernhardt; Minna von Barnhelm, Lessing; Die Jungfrau von Orleans, Schiller; Deutsche Litteraturgeschichte, Bernhardt.

FRENCH. Complete French Course, Chardenal; Petites Causeries, Sauveur; Contes de Fées, Joynes; Historiettes Modernes, Fontaine.

LATIN. Beginner's Latin Book, Collar and Daniells; Latin Grammar, Allen and Greenough; Cæsar, Allen and Greenough.

HISTORY. American History, Montgomery; General History, Myers; The Library.

MACHINE SHOP.

DEPARTMENT OF MECHANIC ARTS.

DURING the past year, the department of Mechanic Arts has made large additions to its outfit of tools and machinery, with the result that the College can now give instruction in mechanical branches comparable with that given by any institution in the country. While the College does not attempt to teach trades in any sense, yet the courses of shopwork that are offered are of the greatest value to those who may wish to learn a trade.

The students in the regular four years' course receive instruction in woodworking, forging, and in the machine shop. During the winter term, young men may enter the College and take work as special students in any of the above lines. Hand work as the cultivator of manual dexterity is emphasized from the beginning, and the use of machinery follows only when this skill in handwork has been acquired. The student is at all times under the direction of an instructor. Graded courses of work are used by all students alike, and the instruction is systematized in every possible way. An excellent course in woodworking has been prepared, its object being to give the student skill and confidence in working various kinds of wood, and also to impart a fair knowledge of the principles of building and construction. Bench-work, carpentering, wood-turning, pattern-making and cabinet-making are each taken up in turn under able instructors. A series of practical lectures upon the art of estimating the cost of various constructions of wood has just been prepared and is now being given to

the agricultural students of the Sophomore year. The greatest need of this division of the Mechanic Arts department is more floor space. Twenty-five students at one time are now receiving instruction in a room and at benches that should accommodate no more than eighteen. This makes it very difficult to carry on uniform work and it is impossible to construct a piece of work of large size. During the first term of the Sophomore year, wood-turning is taken. For this work, we now have thirteen lathes, and with each is a very complete set of turning-tools; such as chisels, gauges, chucks and calipers. In the same room are benches for pattern-making, which is given to students of the mechanical course during the second term of the Sophomore year. The wood-working division is also furnished with machinery as follows; double circular saw, surface planer, buzz planer, mortising-machine, doweling-machine, band saw, jig saw, sash and blind moulding-machine and others.

The wood-carving class becomes more popular every year. A small fee is charged to special students, and is used for the support of the reading-room. Students may arrange to buy the articles that they make in this or any other line of manual work by paying only the cost of the materials used. Bookcases, hand glasses, picture and mirror frames, chairs, paper knives and foot-stools are some of the articles made and carved.

A vast amount of work is accomplished by the wood-working division every year. During the past year, the mechanical building has been sheathed and finished throughout. The students have been employed also in building museum cases; erecting shafting and machinery; piping for boiler and engine connections and for steam blasting; installing a complete electric lighting plant; building lumber shed; ice house, 26 x 36; a gymnasium, 22 x 37; and storm windows for College Hall and mechanical building.

Blacksmithing, or forging, is given a prominent place in the practical studies of the College. The forge shop will now accom-

THE CARPENTER SHOP.

modate fifteen students at one time. It contains twelve forges and anvils, a stock cutter, a bolt header, a post drill, and is well supplied with all the necessary tools for complete work. A regular course is followed here in forging as well as in other lines, and large quantities of iron work useful about the farm are produced by the students of the agricultural course. The mechanical students follow a similar course, but in a direction more suited to the machine shop. Only the students in the mechanical course work in the machine shop. The work here is designed to give a sure knowledge and intelligent practice in the best modern methods of using various tools; such as lathes, planers, shapers, drills, milling-machine, universal grinder, and other machines. Hand work at the bench is taken up until the student shows some proficiency in the use of the file and chisel. In the machine shop, each pupil builds a complete machine before finishing the course.

As much time is given to engineering practice as is desirable at present. Among other things, students make actual tests of engines and boilers, and operate the machinery for testing iron and steel and cements. Considerable practice in mechanical drawing, running engines, and care of boilers is given during the course to all students alike. The department has recently purchased an agricultural engine and boiler, also a hoisting-engine, which will give additional opportunities for students to acquire experience in steam engineering. About one hundred and fifty books have been purchased as a nucleus for a library of mechanical engineering, and additions of desirable books will be made from time to time. We have received as gifts the following: two barrels of oil, together with samples of crude oils and their reduction products, from Mr. Charles M. Everest of the Vacuum Oil Co.; blue prints, photographs and framed cuts from Brown and Sharpe of Providence; samples of boiler coverings and asbestos, insulating materials from the agents of the H. W. Johns Co., Providence. It is hoped and requested that manufacturers in Rhode Island will send to the College samples of their products in

both the raw and finished state, as well as drawings to show machinery used. This material will be used to form an industrial museum of Rhode Island products. In purchasing machinery, we buy in the State if possible, with the idea that at some future time the mechanical department of the College will become an index of the industries of Rhode Island.

MECHANICAL DRAWING.

The mechanical drawing is very closely related to the shop courses of work. Students receive their first practice in drawing the exercises they afterward make in the shops. The time given to the mechanical drawing is much too short to allow of any extended study of machine construction or design; and the course, therefore, consists chiefly of a presentation of the various principles involved in the more common forms of drawing and in the practice with the instruments necessary to insure a fair degree of accuracy in work. The division of mechanical drawing has never had suitable accommodations, and the need of a special and permanent location has never been greater than at present. Nevertheless, some progress has been made. An entirely new course has been arranged and additional models have been collected. It is expected that in the near future the mechanical drawing will move to ample quarters especially prepared for it, with boards, tables, and lockers. Thirty-two students received instruction during the past year. The course of study is as follows: (1) exercise sheet for pencil and drawing pen; (2) exercise sheet for compass; (3) orthographic projections; (4) lettering; (5) isometric drawing; (6) sketching and drawing from models; (7) study of bolts, nuts and screw threads; (8) practical descriptive problems; (9) perspective drawing; (10) machine drawing and sketching; (11) tracing and blue-printing; (12) architectural drawing.

PHYSICS.

The physical laboratory and recitation room is in the basement of College Hall. The apparatus room immediately adjoins the laboratory, and all the apparatus is now near at hand for convenient use. A quantity of new apparatus has been added during the past year, the section of electricity being prominently represented in the additions. A large storage battery of sixty cells has been put in, and this will furnish a constant current for electric lights and for experimental purposes. Mechanics and sound are taken up in the fall term; magnetism and electricity, in the winter term; while light and heat are studied during the spring term.

Students in physics have work in the laboratory each week in connection with their text-book study; but as the space for such practical work is limited, it is not possible to take up the laboratory work in accordance with the original method of teaching physics. The lectures upon the practical applications of electricity have been followed again this year with encouraging results.

A meteorological division has been opened this fall and an excellent set of self-recording instruments has been procured. The local weather forecast will be sent by our meteorologist to the newspapers of the State. The instruments now in position are one quadruple register, recording velocity and direction of the wind, hours of sunshine, and the rainfall; one self-recording barometer; one self-recording thermometer; one rain-gauge; one polymeter.

BIOLOGY.

There have been no changes in the studies pursued in this department since the last report. They are as follows:

First year—Elementary Anatomy and Physiology through the winter and spring terms.

Third year—Zoölogy through the fall term.

Fourth year—Advanced Anatomy and Physiology, Comparative Anatomy, Comparative Physiology and Microscopic Anatomy

through the entire year; Veterinary Science during the winter term; Constitution of the United States, together with State, County and Town Government, through the fall term; Political Economy and Sociology through the winter and spring terms; Physiological Psychology through the spring term.

The department of biology has been greatly enriched by the furnishing of ample lecture-rooms, laboratories, and a special library. Several thousand dollars have been expended for a synoptical collection for the study of zoölogy and human and comparative anatomy. In the laboratories are found all necessary conveniences for dissecting, mounting and preserving animals, and for embryological, physiological and microscopical work. For purposes of demonstration, there are (1) mounted microscopical objects representing every kind of tissue and cell in the animal system, (2) the living subject for dissection, (3) alcoholic preservations, models in plaster and *papier maché*, skeletons and stuffed subjects of most of the orders of the animal kingdom, from a sponge to a man, (4) Lenckart's zoölogical wallcharts, and other charts and diagrams of our own make, (5) ample blackboard facilities of which much is made, (6) chemical and physical apparatus, (7) all necessary mechanical appliances. The collection of skeletons of all the domestic animals cannot be excelled. In the class of birds, there have just been added all the species of Rhode Island, comprising some three hundred individuals. These prove of exceptional interest and stimulate inquiry because of their local habitat and more or less familiar mien. In the collection are found the skeletons of all the great classes of birds showing striking structural peculiarities. It is also proposed to add the nests and eggs of all those species of the collection which nest in the State. It will thus be seen that there is an exceptionally good equipment for teaching the courses in zoölogy, physiology, and anatomy, both human and comparative, which are so liberally provided for in this College.

Apparatus is being collected for the course in experimental psychology. The course occupies but one term and the time given

to experimentation is limited. The demonstrations are simple mechanical appliances to illustrate the sensations and perceptions. But few experiments are attempted on the more complex mental phenomena, which require intricate and costly appliances, much time and more special training than the College students can summon. The beautiful models and charts of the human brain, spinal cord, and organs of special sense, are most serviceable in teaching the mechanism and functions of the great nerve centres. The appliances in this department are so complete as to expedite the study in no small degree. It is believed that a more lively interest is thus created, that more ground is covered, and that a clearer comprehension of this branch is given than could otherwise be done in twice the time allotted to it. The same claim may be predicated of the whole range of biological studies.

Immediately after last year's report, the College was visited by a mild epidemic of German measles of twenty cases. They were mostly of so mild a type as to interfere but slightly with the regular college work. Since then there has been the usual good health among the students and teachers. During the last term, ten cases of injury incident to football playing have been treated, among them two fractures and two dislocations.

It is difficult to see how this violent game, as usually conducted in outside contests, serves, in any proper sense, the uses of a wholesome physical training. If it does not, then it is hostile to all educational aims. Certainly all other influences combined do not distract the attention from regular college work so much as this one sport. Its present practices are in direct conflict with the philosophy of exercise. Neither in the arts of war nor of peace is the modern man called upon for phenomenal muscle or wind, and these are both important prerequisites of the unusual exertions of football. Over-training is at the expense, in some degree, of the mental and moral economy. The student needs a capacity for resolves and activities incited by something of higher order than retaliation and gate-money. The office of exercise is

to equalize nervous energy. Muscular activity thus prevents overwork of any one nerve centre. An abounding physical life does not legitimately throw the whole reactional force on the muscles. It must leave a record on the brain and other nerve centres as a whole. The more or less sedentary lives which students are pretty sure to follow later on will not require the physical standards of professional athletes; on the contrary, such standards are found to be impediments to an easy and sustained mental activity.

The temporary building erected a few weeks ago for the purposes of military drill and light gymnastics has proved of much service. It is most instructive to witness the improvement in the whole morale of the students under a few weeks of military drill in neat and dressy suits. It is encouraging to see active preparations going on for the building of an ample gymnasium. Each winter as the classes become larger, the need of facilities for rational exercise is felt more and more.

BOTANY.

The department of botany enters upon its work as a distinct department with the beginning of 1895. A commodious laboratory has been provided and fitted with new apparatus and books. The required work for the students in mechanics covers two terms; and for the student in agriculture, three terms. The first two terms will be devoted to the study of a few groups of plants from the lowest to the highest. Flowering plants of economic importance will be studied in the third term. The work may be elected as indicated in the courses of study.

MILITARY SCIENCE AND TACTICS.

The military department was duly organized immediately after the arrival on November 12th of Capt. William W. Wotherspoon of the 12th Infantry, who was assigned to duty as Professor of Military Science and Tactics by the President of the United States, by

This meets for one hour, once a week, and is conducted by its members, who pose in turn or find a substitute. These time sketches from life, without instruction, are a great help to the student in observing and noting quickly the effect desired. The library of the studio has a good nucleus of art books. These are already appreciated by the pupils. The effects procured in Europe the past summer are rare and of great value to the department. The increase in material has already made our facilities for study equal to those in most city schools of much older growth.

A great difficulty arises from the very limited time given to this study; and yet the students that have worked seriously and earnestly—as have most of them—have produced very satisfactory results.

BEE CULTURE.

Instruction is given both by text-book and lectures. This instruction will be thoroughly practical. The natural history, physiology, and the peculiar habits of bees will be taught, to acquaint the student with the reasons for performing the various operations; but the class-room instruction will be but an introduction to the practical work in the Experiment Station Apiary.

This Apiary of twenty colonies is fitted with the best of hives for performing all the operations in vogue among bee-keepers with the least amount of labor; and furnishes bees, combs, queen-cells, and other illustrative material for use in the class-room. The Station collection of the different hives used by the various leading honey producers is also a valuable aid in this line of work.

COURSES OF INSTRUCTION.

THE following courses of instruction are offered in the different departments. All studies required of regular students lead to the degree of Bachelor of Science.

MATHEMATICS.

1. Algebra (Wells).—The fundamental operations, addition, subtraction, multiplication, division of algebraic quantities; factoring and its applications; the solution of simple equations with one or more unknown quantities; involution; evolution; the theory of exponents; the solution of radical and quadratic equations; arithmetical and geometrical progression; the binomial theorem. *Fall, winter and spring terms; 5 hours per week. Required of all candidates for a degree.*

2. Book-keeping (Bryant and Stratton).—Explanation of commercial terms; single entry; double entry; use of books,—day-book cash-book, journal and ledger; practical exercises; original accounts; farm accounts; mechanics' accounts; inventory; statements; partnership; interest; discount; exercise in commercial forms—bills, receipts, checks, notes, orders, drafts. *Winter term; 4 hours per week. Required of all candidates for a degree.*

3. Plane Geometry (Wells).—Rectilinear figures; the circle; measurements of angles; the theory of proportion; similar figures; regular polygons; areas of polygons; the measurement of the circle; original demonstrations. *Spring and fall terms; 4 hours per week. Required of all candidates for a degree.*

4. Plane Trigonometry (Wentworth).—The derivation of the fundamental formulas; logarithms; the solution of right and oblique triangles; practical problems. *Winter term; 3 hours per week. Required of all candidates for a degree.*

5. Plane Surveying (Carhart).—Elementary course, field work, recitation and plotting. Use of compass, transit, plane table, and levels; adjustment of instruments; stadia surveying. *Spring term; 2 hours of classroom, 5 hours of field work per week. Additional practice on Saturdays. Required of all candidates for a degree.*

6. Road Construction and Leveling (Gillespie).—Location and construction of roads; mechanical structures; earth, gravel, broken stone, paved and macadam roads. *Fall term; 3 hours of text-book work, 3 hours of field work per week. Required of students in the Agricultural course.*

7. Solid Geometry (Wells).—Lines and planes in space; diedral angles; polyhedral angles; polyhedrons, the cylinder, cone and sphere; measurement of the cylinder, cone and sphere; numerical examples and original demonstrations. *Fall term; 3 hours per week. Required of students in the Mechanical course.*

8. Analytical Geometry (Hardy).—Coördinate systems; the point; the line; relation between different coördinate systems; the equation of the first degree, the straight line; the equation of the second degree, the conic section; higher plane curves. *Fall and winter terms; 4 hours per week. Required of students in the Mechanical course.*

9. Descriptive Geometry (Faunce).—Notation and elementary principles; problems on the point, line and plane; problems relating to the cylinder, cone and double curved surfaces of revolution; intersection and development of planes and solids; practical problems. *Fall term; 3 hours per week. Required of students in the Mechanical course.*

10. Calculus (Taylor).—The differentiation of algebraic, trigonometric, logarithmic, exponential and anti-trigonometric func-

tions. Integration of fundamental forms; definite integrals; applications to geometry and mechanics; successive differentiation; successive integration with applications; evaluation of indeterminate forms; the development of functions in series; maxima and minima; change of the independent variables; integration of rational fractions; integration by rationalization; integration by parts and by series; curve tracing. *Spring, fall and winter terms; 3 hours per week. Required of students in the Mechanical course.*

11. General Astronomy (Young).—The text study is accompanied by frequent lectures, illustrated with copious lantern slides of celestial phenomena; observations of the heavens with a four inch telescope, and laboratory work with the sun spectrum, and the spark spectrum sufficient to give an insight into the methods of the new astronomy. *Spring term; 4 hours per week. Required of all candidates for a degree.*

12. Synthetic Geometry (Dupuis).—The line, point, and circle; comparison and measurement of areas; proportion amongst line segments; collinearity; inversion; anharmonic division; homography. *Elective open to students who have completed courses 1 and 3.*

13. Determinants (Harris).—Proofs of fundamental propositions; determinant minors; development of determinants; rectangular arrays; reciprocal determinants; symmetrical, skew-symmetric, and skew-determinants. *Elective open to all students who have completed course 10.*

14. Advanced Calculus (Byerly).—An extension of course 10, including further discussion of definite integrals; imaginaries, length of curves, areas, volumes, the elements of elliptic integrals, and of the theory of the functions. *Elective open to students who have completed course 10.*

15. Analytical Mechanics (Same as Mechanics 7).—*Junior year, spring term. Open to students who have completed one term of course 10.*

PHYSICS.

1. General Course.—Study of mechanics, pneumatics, hydraulics and acoustics. Recitations. Fall term. Electricity and magnetism. Winter term. Light and Heat. Spring term. *Throughout the Sophomore year, 3 hours per week. Required of all candidates for a degree.*

2. Physical Laboratory.—In connection with course 1. *Throughout the Sophomore year, 2 hours per week.*

3. Applied Electricity.—A course of lectures upon the modern practical applications of electricity. *Spring term, Senior year; 3 hours per week. Elective.*

4. Laboratory work in connection with course 3. *2 hours per week.*

MECHANICS.

1. Strength of Materials.—Strength of iron and steel; simple and continuous beams; pipes and columns. *Spring term, Junior year; 2 hours recitations and 3 hours laboratory work per week. Required of all Mechanical students.*

2. Mechanism.—Rectilinear motion. Rotary motion. Transmission of motion. *Spring term, Junior year; 3 hours per week. Required of all Mechanical students.*

3. Steam Engineering.—Study of steam and its properties; simple and compound engines; steam boilers. *Fall term, Senior year; 3 hours per week. Elective.*

4. Mechanics of Engineering.—Bodies in equilibrium and in motion; work and power; friction of rest and motion. Recitations. *Fall term, 5 hours per week.* Theory of arches, retaining walls, gas engines, hot-air engines. *Winter term, 4 hours per week.* Hydraulics and water-wheels. *Spring term. All during the Senior year. Required of all Mechanical students.*

5. Metallurgy.—Study of the manufacture of cast iron, wrought

iron, and steel; rolling-mill machinery; metallurgy of copper, tin, zinc, and silver; alloys. *Winter term, Senior year; 3 hours per week. Elective.*

6. Shop-Work.—*A.* Use of wood-working tools, bench-work, carpentering. *Fall term, Freshman year; 6 hours per week.* Carpentering and practical constructions in wood. *Winter term, Freshman year; 6 hours per week.*

B. Wood-Turning. *Fall term, Sophomore year; 6 hours per week.* Forging, drawing iron, bending, welding, and tool-dressing. *Winter term, Sophomore year; 6 hours per week.* Estimates of construction. *Winter term, 2 hours; for Agricultural students.* Forging. *3 hours, Spring term, Sophomore year; for Mechanical students.*

C. Pattern-Making, Moulding and Casting. *Fall term, Junior year; 3 hours per week.* Machine-shop practice. *Winter term, Junior year; 3 hours per week.* Machine-shop practice. *Spring term, Junior year; 3 hours per week. C. required of Mechanical students.*

D. Machine Constructions. *Throughout the Senior year, 6 hours per week. Required of Mechanical students.*

7. Analytical Mechanics (Same as Mathematics 15). *Junior year, Spring term. Open to students who have completed one term of Mathematics 10.*

ENGLISH.

1. Review of elementary principles. Study of representative American authors. Composition. *5 hours, Fall and Winter terms, Freshman year; and 4 hours Spring term. Required of all candidates for a degree.*

2. Rhetoric. Continued study of American literature. Composition. *Fall and Winter terms, Sophomore year; 2 hours per week. Required of all candidates for a degree.*

3. General English Literature and History. *Winter and spring terms, Junior year; 4 hours per week. Required of all candidates for a degree.*

4. English Literature. Study of special periods and authors. *Throughout Senior year; 3 hours per week. Open to those who have taken courses 1, 2 and 3.*

5. Orations and Essays. *Throughout Senior year; 1 hour per week. Required of all candidates for a degree.*

GERMAN.

1. Elementary Course. Grammar, dictation, conversation. Bernhardt's Deutsches Sprach und Lesebuch. *Throughout Junior year; 3 hours per week. Required of all candidates for a degree.*

2. Middle Course. Composition. Modern German writers. *Fall term of Senior year; 3 hours per week. Elective.*

3. Advanced Course. German Classics. History of German literature. *Winter and Spring terms, Senior year; 3 hours per week, for those that have taken courses 1 and 2.*

4. Scientific German. *Winter and Spring terms, Senior year; 2 hours per week. Elective for those that have taken courses 1 and 2.*

5. Reading at sight of easy German. *Throughout Senior year; 1 hour per week. Elective for those that have taken courses 1 and 2.*

FRENCH.

1. Elementary Course. Grammar, dictation, conversation. Sauveur's Petites Causeries. *Throughout the Sophomore year; 3 hours per week. Required of all candidates for a degree.*

2. Middle Course. Composition. Modern French writers. *Throughout the Junior year; 3 hours per week. Elective for those that have taken course 1.*

3. Advanced Course. French classics—Molière and Racine. History of French literature. *Throughout the Senior year; 3 hours per week. Elective for those that have taken courses 1 and 2.*

4. Scientific French. *Throughout the Senior year; 2 hours per week. Elective for those that have taken courses 1 and 2.*

5. Reading at sight of easy French. *Throughout the Senior year; 1 hour per week. Elective for those that have taken courses 1 and 2.*

LATIN.

1. Elementary Course. Beginner's Latin Book. Grammar. *Throughout Freshman year; 3 hours per week. Elective.*

2. Cæsar. Composition. *Throughout Sophomore year; 3 hours per week. Elective.*

3. Cicero. Composition. *Throughout Junior year; 3 hours per week. Elective.*

4. Virgil. Composition. *Throughout Senior year; 3 hours per week. Elective.*

HISTORY.

1. American History. *Fall term, Freshman year; 2 hours per week. Required of all candidates for a degree.*

2. General History. *Winter and Spring terms, Freshman year; 2 hours per week. Required of all candidates for a degree.*

3. English History. Studied in connection with general English literature. *Winter and Spring terms, Junior year; 4 hours per week. Required of all candidates for a degree.*

4. Special historical work for individual students. *Spring term, Senior year; 3 hours per week. Elective for those having taken courses 1, 2 and 3.*

PHYSIOLOGY, ZOÖLOGY AND COMPARATIVE ANATOMY.

1. Elementary Course in Human Physiology. Lectures and recitations. Includes hygiene instruction, development of observing faculties. *Winter and Spring terms, Freshman year; 3 hours per week. Required of all candidates for a degree. Elective for Special students.*

2. Advanced Course. Presupposes knowledge of chemistry, embryology and zoölogy. Based on the laws of the conservation of energy. Instruction demonstrative, comparative, and theoretical. *Fall term, Senior year; 5 hours per week. Required of Agricultural students.*

3. Vertebrate Physiology and Anatomy. Incidentally in connection with advanced course of human anatomy and physiology, with course of veterinary. *Spring term, Senior year; 4 hours per week. Instruction wholly demonstrative. Required of Agricultural students.*

4. Invertebrate Physiology and Anatomy. In course of zoölogy. *Fall term, Junior year; 4 hours per week. Required of Agricultural students.*

5. Zoölogy. General Course. *Fall term, Junior year, 4 hours per week. Required of Agricultural students.*

6. Veterinary Science. Theory of practice. Based on course of comparative anatomy and physiology. *Winter term, Senior year; 3 hours per week. Required of Agricultural students.*

7. Embryology. Limited Course. Introductory to course 5. Lectures, laboratory work with incubators, microscopical dissections, and alcoholic preparations, and models. *Required of Agricultural students.*

POLITICAL SCIENCE.

1. Town, County, State, and United States.—Their origin, development, and practices. Critical analysis of the Constitution of

the United States. Lectures, recitations and discussions. *Fall term, Senior year; 4 hours per week. Required of all candidates for a degree.*

2. Political Economy.—Elementary course. Based on Walker's Briefer Course, and Andrews's Institutes of Economics. Lectures, recitations, discussions, readings, original problems, citations from the daily press, and essays. *Winter term, Senior year; 4 hours per week. Required of all candidates for a degree.*

PSYCHOLOGY.

Elementary Course.—Lectures, recitations, simple laboratory experiments. *Spring term, Senior year; 4 hours per week. Required of all candidates for a degree.*

CHEMISTRY.

1. General Chemistry, Briefer Course, Non-metals.—Recitations and lectures. *Spring term, Sophomore year; 4 hours per week. Required of all candidates for a degree.*

2. Laboratory Work.—Experimental chemistry. *2 hours per week, given in connection with course 1.*

3. General Chemistry.—Metals. Lectures and recitations. *Fall term, Junior year; 3 hours per week. Required of all candidates for a degree.*

4. Qualitative Analysis.—*Fall term, 4 hours per week; Winter term, 6 hours per week; Junior year. Required of all candidates for a degree.*

5. Organic Chemistry.—Lectures and recitations. *Winter term, Junior year; 4 hours per week. Required of Agricultural students.*

6. Agricultural Chemistry.—Lectures. *Spring term, Junior year; 3 hours per week. Required of Agricultural students.*

7. Quantitative Analysis.—*6 hours per week. Required of those taking course 6.*

8. Theoretical Chemistry and Quantitative Analysis.—*Throughout Senior year; 6 hours per week. Elective.*

BOTANY.

1. Biology of Plants.—Comparative morphology and physiology are emphasized rather than the details of classification. Laboratory, reading, and lectures. *Winter and Spring terms, Sophomore year; 8 hours per week. Required of all candidates for a degree.*

2. Systematic and Economic.—Orders of phanerogams of economic importance are studied from fresh and preserved material. *Fall term, Junior year; 4 hours per week. Required of Agricultural students. Elective for those who have taken course 1.*

3. Fungi.—A study of types of fungi with special reference to parasitic forms of economic importance. Laboratory, reading, and lectures. *Elective for those having taken course 1, as an 8 hour course for the Fall term, or a 4 hour course for the year.*

4. Histology.—Laboratory, reading and lectures. The laboratory work includes methods of imbedding, sectioning, staining, and mounting. *This course may be elected as an 8 hour course for the Fall term, or a 4 hour course for the year.*

GEOLOGY.

General Course.—Structural and dynamical. *Winter term, Senior year; 2 hours per week.* Lectures and recitations. Historical, with excursions. *Spring term, Senior year; 4 hours per week.* Lectures and recitations.

MILITARY SCIENCE AND TACTICS.

1. Infantry Drill.—School of the soldier. School of the company. School of the battalion and small-arm target practice. *Throughout the course, 3 hours per week.*

2. Artillery Drill.—School of the soldier dismounted. Sabre exercise and target practice. School of the battery dismounted for selected detachments. Students in course 2 are selected by the commandant from those reasonably proficient in course 1.

3. Military Science.—*Lectures given in Winter term.*

4. Signal Drill.—With heliograph flags, torches, and telegraphic instruments, according to the United States signal code.

HORTICULTURE.

1. Pomology.—Lectures and laboratory work. *Spring and Fall terms; 2 hours per week. Elective.*

2. Market Gardening.—Lectures, and work in the garden. *Spring and Fall terms; 2 hours per week. Elective.*

3. Floriculture.—*Winter term.* Practical exercises in greenhouse. *3 hours per week. Elective.*

4. Landscape Gardening.—Lectures and conferences, with numerous illustrations. *Spring term, Senior year; 2 hours per week. Required of Agricultural students.*

AGRICULTURE.

1. Farm Management.—Definition of agricultural terms; mixed husbandry; special farming; rotation of crops; general suggestions for agricultural practice; farm buildings—plans, size, location, arrangement, care; silos and ensilage; farm fences; fence laws; methods of constructing fences; economy in the selection of fences; portable fences; gates. Farm tools and implements; reapers, mowers, hay-tedders and rakes, plows, harrows, grain-drills, cultivators, rollers, etc. Value, selection, use, and care of farm tools. Lectures. *Fall term, Freshman year; 2 hours per week. Required of all candidates for a degree.*

2. Farm Bookkeeping (Same as Mathematics 2).—Inventory; use of day-book, cash-book, and ledger on the farm; farm accounts; accounts with stock, fields, and crops; yearly statements; interest

and discount. Classroom practice. *Winter term, Freshman year; 4 hours per week. Required of all candidates for a degree.*

3. Drainage.—Drainage for Profit and Health (Waring). Sources of water; necessity of drains; kinds of drains; how drains act; how to lay out, build, and care for drains; drain tiles, cost and value of drains; sanitary effects of drainage; practice in the use of tools and instruments; details of the work. Text-book and actual practice. *Spring term, Freshman year; 4 hours per week. Required of all candidates for a degree.*

4. Farm Crops and their Production.—Selection and preparation of soil and seed; quantity of seed; time of seeding; cultivation and harvesting of various farm crops; hay crop, its importance in agriculture; varieties of grasses; influence of time of cutting upon the value; method of storing; leguminous fodder crops; corn as a grain crop; five types of corn; corn and other crops for the silo. Other cereals—wheat, oats, barley and rye—origin, history and value; root crops—potatoes, beets, turnips, carrots, and onions; miscellaneous crops—buckwheat, cabbages, pumpkins, squashes, field peas, tobacco, broom corn; weeds—injury, dissemination, and eradication. Lectures. *Fall term, Sophomore year; 2 hours per week. Required of Agricultural students.*

5. Breeds of Live Stock—Horses, cattle, sheep, and swine (Curtis).—Horses: draft; coach; saddle; thoroughbred; trotters; ponies; care and selection. Cattle: dairy; general purpose; beef; care, selection, and management. Sheep: short wool; middle wool; long wool; care, selection and management. Swine: large breeds; medium breeds; small breeds; care, selection, and management. Origin of breeds; adaptability to climates and conditions; tracing pedigrees; scoring animals. Text-book and lectures. *Fall term, Sophomore year; 3 hours per week. Required of Agricultural students.*

6. Agriculture (Storer).—Relations of heat, air, and water to the soil; relations of soil, atmosphere, heat, light, and water upon

the growth of plants; tillage and implements; natural sources of plant food; action of manures, special manures, phosphatic manures, nitrogenous compounds; green manuring; seaweeds, humus, farmyard manure; composts; modes of applying manures, night soil, history of the use of manures; potash, magnesium, lime and soda as manures; theory of rotation; irrigation; sewage; growth of crops; cereals; hay and hay-making; pastures; ensilage. Text-book. *Winter term, Junior year; 3 hours per week. Spring term, Junior year; 4 hours per week. Required of Agricultural students.*

7. Stock-Breeding (Miles).—Breeding as an art; heredity, normal characteristics; diseases, acquired and abnormal characteristics; atavism (reversion); law of correlation; variation; fecundity; in and in breeding; cross breeding; relative influence of parents; sex; pedigree; animal form and index of qualities; selection; period of gestation. Text-book. *Fall term, Senior year; 3 hours per week. Required of Agricultural students.*

8. Feeding Animals (Stewart).—Composition of animal bodies; relative proportion of different parts of the carcass; elements of food material; digestion, its effect upon food; respiration and excretions; value of various animal manures; stock barns and their relation to the economy of feeding; principles of alimentation; early maturity; how to feed young animals; stock foods; nutritive ratio and feeding standards; definition of terms; calculation of ratios for various conditions and ages of animals; calculation of cost of rations, and their manurial value; soiling,—economy in land, fences, feed, and manure,—disadvantages, labor required; soiling crops; ensilage; economy of preserving crops in the silo; variety of crops that may be ensilaged; value of legumes and balancing rations; feeding for beef or milk; feeding horses, sheep, and swine; cooked and uncooked food; cold and warm water; temperature of stables, and ventilation. Text-book. *Winter term, Senior year; 1 hour per week. Required of Agricultural students.*

9. Fertilizers.—Study of the composition of the various agricultural chemicals as sold in the markets; calculation of formulas for special crops; calculation and value of various homemade fertilizers. Lecture and classroom calculations. *Spring term, Senior year; 1 hour per week. Required of Agricultural students.*

10. Dairying. American Dairying (Jurler).—The dairy cow, type, breeding, and management from birth to maturity; feed and management; branches of dairy husbandry; dairy utensils, milking; care of milk; separators and butter accumulators; separating cream; ripening and churning; salting, working, packing and printing butter. The Babcock milk test; test of skim milk and cream; value of skim milk; building creameries. Text-book and lectures. *Winter term, Senior year; 2 hours per week. Elective.*

Courses are also offered in bee-keeping, and in commercial and agricultural law.

COURSE OF STUDY

OF THE

Rhode Island College of Agriculture and Mechanic Arts.

FRESHMAN YEAR.

FALL TERM.

Algebra	5 hours.[1]	Bench-work in Wood	6 hours.
English	5 "	Military Drill	3 "
Physical Geography	3 "	Inspection	1 "
History	2 "	Latin (elective)	3 "
Agriculture	2 "		

WINTER TERM.

Algebra	5 hours.	Wood Work	6 hours.
English	5 "	Military Drill	3 "
Physiology	3 "	Inspection	1 "
History	2 "	Latin (elective)	3 "
Bookkeeping and Business Law	5 "		

SPRING TERM.

Algebra and Logarithms	3 hours.	Free-Hand Drawing	4 hours.
English	4 "	Agriculture	4 "
Geometry	4 "	Military Drill	3 "
Physiology	2 "	Inspection	1 "
History	2 "	Latin (elective)	3 "

[1] The figures represent the number of hours of classroom work per week in each study.

SOPHOMORE YEAR.

FALL TERM.

Agricultural Course.		Mechanical Course.	
Plane Geometry	5 hours.	Plane Geometry	5 hours.
Agriculture	3 "	Physics	3 "
Physics	3 "	English	2 "
English	3 "	French	3 "
French	3 "	Free-Hand Drawing	2 "
Free Hand Drawing	2 "	Physical Laboratory	2 "
Modeling	2 "	Wood Turning	6 "
Physical Laboratory	2 "	Military Drill	3 "
Practical Agriculture	2 "	Inspection	1 "
Wood Turning	3 "	Latin (elective)	3 "
Military Drill	3 "		
Inspection	1 "		
Latin (elective)	3 "		

WINTER TERM.

Trigonometry	3 hours.	Trigonometry	3 hours.
Mechanical Laboratory	8 "	Mechanical Laboratory	8 "
English	2 "	English	2 "
Physics	3 "	Physics	3 "
French	3 "	French	3 "
Mechanical Drawing	2 "	Mechanical Drawing	2 "
Constructions	2 "	Forging	6 "
Estimates	2 "	Physical Laboratory	2 "
Physical Laboratory	2 "	Military Drill	3 "
Military Drill	3 "	Inspection	1 "
Inspection	1 "	Latin (elective)	3 "
Latin (elective)	3 "		

SPRING TERM.

Surveying	1 hour.	Surveying	1 hour.
Physics	3 hours.	Physics	3 hours.
Botanical Laboratory	8 "	Botanical Laboratory	8 "
French	3 "	French	3 "
Inorganic Chemistry	3 "	Inorganic Chemistry	3 "
Experimental Chemistry	2 "	Experimental Chemistry	2 "
Physical Laboratory	2 "	Physical Laboratory	2 "
Practical Surveying	6 "	Mechanical Drawing	3 "
Military Drill	3 "	Forging	3 "
Inspection	1 "	Military Drill	3 "
Art Work (elective)	2 "	Inspection	1 "
Pomology (elective)	2 "	Art Work (elective)	2 "
Latin (elective)	3 "	Latin (elective)	3 "
		Synthetic Geometry (elective)	3 "

JUNIOR YEAR.

FALL TERM.

Agricultural Course.		Mechanical Course.	
Road Construction and Leveling	3 hours.	Inorganic Chemistry	3 hours.
Botany	4 "	Analytical Geometry	4 "
Inorganic Chemistry	3 "	Solid Geometry	3 "
German	3 "	German	3 "
Pomology	2 "	Descriptive Geometry	3 "
Qualitative Analysis	4 "	Qualitative Analysis	3 "
Practice in Leveling and Road Surveying	3 "	Pattern Making	5 "
Military Drill	3 "	Military Drill	3 "
Inspection	1 "	Inspection	1 "
Market Gardening	2 "	Latin (elective)	3 "
Latin (elective)	3 "	French (elective)	3 "
French (elective)	3 "	Art Work (elective)	2 "
Art Work (elective)	2 "		

WINTER TERM.

English	4 hours.	English	4 hours.
Agriculture	5 "	Analytical Geometry	4 "
Organic Chemistry	4 "	German	3 "
German	3 "	Calculus	3 "
Qualitative Analysis	6 "	Qualitative Analysis	6 "
Forging	3 "	Mechanical Drawing	3 "
Military Drill	3 "	Machine Shop Practice	3 "
Inspection	1 "	Military Drill	3 "
Latin (elective)	3 "	Inspection	1 "
French (elective)	3 "	Latin (elective)	3 "
Floriculture (elective)	2 "	French (elective)	3 "
Botany (elective)	2 "		

SPRING TERM.

English	4 hours.	English	4 hours.
Agriculture	2 "	Calculus	3 "
Agricultural Chemistry	3 "	German	3 "
German	3 "	Principles of Mechanism	2 "
Zoölogy	4 "	Strength of Materials	3 "
Chemical Laboratory	6 "	Machine-Shop Practice	3 "
Military Drill	3 "	Mechanical Drawing	2 "
Inspection	1 "	Military Drill	3 "
Latin (elective)	3 "	Inspection	1 "
French (elective)	3 "	Chemical Laboratory (elective)	6 "

JUNIOR YEAR.—SPRING TERM—*Continued.*

Agricultural Course.		Mechanical Course.	
Art Work (elective)	6 hours.	Latin (elective)	3 hours.
Agricultural Mechanics (elective)	6 "	French (elective)	3 "
Botanical Laboratory (elective)	6 "	Analytical Mechanics (elective)	3 "
Market Gardening (elective)	2 "	Art Work (elective)	6 "
Pomology (elective)	2 "		

SENIOR YEAR.

FALL TERM.

Comparative Anatomy and Physiology	5 hours.	Calculus	3 hours.
Political Economy and Science of Government	4 "	Political Economy and Science of Government	4 "
Agriculture	3 "	Applied Mechanics	5 "
Orations	1 "	Orations	1 "
Military Drill	3 "	Machine-Shop Practice	6 "
Inspection	1 "	Military Drill	3 "
English Literature (elective)	3 "	Inspection	1 "
Apiary Work (elective)	1 "	English Literature (elective)	3 "
Botany (elective)	2 "	French (elective)	3 "
Art Work (elective)	3 "	German (elective)	3 "
Pomology (elective)	3 "	Latin (elective)	3 "
Market Gardening (elective)	3 "	Engineering (elective)	3 "
Chemistry (elective)	3 or 6 "	Art Work (elective)	3 "
French (elective)	3 "	Chemistry (elective)	3 or 6 "
German (elective)	3 "	Electricity (elective)	3 "
Latin (elective)	3 "	Determinants (elective)	3 "

WINTER TERM.

Veterinary Science	3 hours.	Political Economy	4 hours.
Agriculture	1 "	Applied Mechanics	4 "
Political Economy	4 "	Orations	1 "
Market Gardening	3 "	Mechanical Practice	6 "
Geology	2 "	Military Drill	3 "
Orations	1 "	Inspection	1 "
Military Drill	3 "	English Literature (elective)	3 "
Inspection	1 "	Latin (elective)	3 "
English Literature (elective)	3 "	French (elective)	3 "
Latin (elective)	3 "	German (elective)	3 "
French (elective)	3 "	Engineering (elective)	3 "
German (elective)	3 "	Chemistry (elective)	3 or 6 "
Botany (elective)	2 or 4 "	Advanced Calculus (elective)	3 "
Floriculture (elective)	3 "		
Dairying (elective)	3 "		
Chemistry (elective)	3 or 6 "		

SENIOR YEAR—SPRING TERM.

Agricultural Course.

Forestry and Landscape Gardening	2 hours.
Geology	2 "
Mental Science	4 "
Veterinary Science	4 "
Geology Excursions	2 "
Military Drill	3 "
Inspection	1 "
Astronomy	4 "
English Literature (elective)	3 "
Latin (elective)	3 "
French (elective)	3 "
German (elective)	3 "
Pomology (elective)	3 "
Botany (elective)	2 or 4 "
Chemistry (elective)	3 or 6 "
Stock Feeding (elective)	3 "
Art Work (elective)	3 "
History (elective)	3 "
Apiary Work (elective)	1 "

Mechanical Course.

Engineering Conference	2 hours.
Applied Mechanics	5 "
Astronomy	4 "
Military Drill	3 "
Inspection	1 "
Mechanical Practice	6 "
English Literature (elective)	3 "
Latin (elective)	3 "
French (elective)	3 "
German (elective)	3 "
Mental Science (elective)	4 "
Chemistry (elective)	3 or 6 "
Engineering (elective)	3 "
Machine Design (elective)	3 "
History (elective)	3 "
Advanced Calculus (elective)	3 "

AGRICULTURAL COLLEGE EXTENSION.

FOR the benefit of persons within the State who cannot attend the College as students, the faculty has arranged a course of study known as the Agricultural College Extension. The plan of operation is similar to that of the Chautauqua Reading-Circle. On December 20th, 1894, circulars giving the course of study, supplementary reading, and other information relating to the course, were sent to those persons within the State whose names were on our mailing list. The following is reprinted from our Extension circular:

COURSE OF STUDY.

The course of study is so arranged as to meet the requirements of all, with no limitations as to age, sex, or occupation. Persons may take short special courses in any branch, and receive certificates for proficiency therein, or they may take a more extended course, and receive the award of a special diploma. An examination either at the college or under the direction of some authorized person will be necessary for obtaining either certificate or diploma, but this arrangement does not prevent persons from taking any course without such examination. Persons desiring to graduate will be required to pass an examination on at least one book under each number in the following three years' course; thus taking five studies each year. Additional work may be taken by any desiring it. Persons will be passed, upon writing a satisfactory review, of one thousand or more words, of the books marked by a star. On all other books, a written examination will be required.

		Publisher's Price.	Price to Members of the Extension.	Postage.
	FIRST YEAR.			
1.	First Principles of Agriculture. *Mills and Shaw*	$	$ 40	$ 05
	American Literature. *Hawthorne and Lemmon*		1 12	10
2.	*Home Floriculture. *Rexford*	1 50	1 20	08
	Silos, Ensilage, and Silage. *Miles*	50	38	04
	*Helps for Home Makers. *Mary Blake*	75	56	08
3.	Insects and Insecticides. *Weed*	1 25	1 00	08
	The Human Body. *Martin*		1 20	10
4.	Feeding Animals. *Stewart*	2 00	1 60	12
	American History. *Montgomery*		1 00	11
5.	Manual of the Constitution. *Andrews*		1 00	08
	SECOND YEAR.			
1.	Soils and Crops. *Morrow and Hunt*	$1 00	$ 75	$ 06
	Representative English Literature. *Pancoast*		1 60	12
2.	Text-Book of Botany			
	Horses, Cattle, Sheep and Swine. *Curtis*	2 00	1 60	12
	*Ornamental Gardening for Americans. *Long*	2 00	1 50	08
3.	How the Farm Pays. *Henderson and Crozier*	2 50	1 88	12
	How to Make the Garden Pay. *Greiner*	2 00	1 60	12
	Profitable Poultry Keeping. *Beale*	1 50	1 12	08
	*Anna Maria's Housekeeping. *Power*	75	56	08
4.	Stock Breeding. *Miles*	1 50	1 12	12
	English History. *Montgomery*		1 12	11
5.	Political Economy (Briefer Course). *Walker*		1 00	08
	Astronomy. *Newcomb*		1 30	12
	THIRD YEAR.			
1.	Practical Farm Chemistry. *Greiner*	$1 00	$ 80	$ 06
	General History. *Meyers*		1 50	15
2.	A Text-Book of Chemistry			
	The Nursery Book. *Bailey*	1 00	80	06
	Draining for Profit and Health. *Waring*	1 50	1 12	08
3.	Langstroth on the Hive and Honey Bee. (Danant's Revision)		1 12	08
	American Fruit Culturist. *Thomas*			
	American Dairying. *Gurler*	1 00	80	06

		Publisher's Price.	Price to Members of the Extension.	Postage.
4.	Green-House Construction. *Taft*	$1 50	$1 20	$ 08
	Horse Breeding. *Sanders*	2 00	1 50	12
	*Our Farming. *Terry*	2 00	1 60	13
	English translation of a foreign literature. (Books will be recommended later according to the subject chosen.)			
5.	*The New Womanhood. *Fernald*	1 25	94	08
	Advanced Course in Political Economy. *Walker*		2 00	15
	Soils and Rocks. *Stockbridge*	2 50	2 25	12

This arrangement affords opportunity for taking special courses in either agriculture or horticulture; while it also contains studies that will admit of a course entirely without the agricultural books, which some might not care to study exclusively.

It was with a great deal of reluctance that physiology, botany, and chemistry were placed in the course; and while a knowledge of these sciences is considered of great value, no person will be encouraged to begin them unless he arranges either to come to the College one term for laboratory practice and aid, or to join a class to be taught by an instructor from the College. This latter arrangement can be perfected, if communities, granges, etc., take up the work with that end in view.

SUPPLEMENTARY READING.

In selecting the books for this course of study, the committee has had under consideration a large number of valuable ones; and in many cases, selection was difficult. It therefore feels that in presenting the limited number of studies for this course, several books have been left out which should have a place, if not in the regular reading-course, in the home, grange, or town library. And so a list of supplementary works is appended.

	Publisher's Price.	Price to Members.	Postage.
Agriculture (2 vols.). *Storer*	$5 00	$3 75	$ 24
Talks on Manures. *Harris*	1 75	1 31	08
Practical Dairy Husbandry. *Willard*	3 00	2 00	16
The Grasses of North America. *Beal*	2 50	2 00	10

	Publisher's Price.	Price to Members.	Postage.
The Farmer's Veterinary Adviser. *Law*	$3 00	$2 40	$ .16
Plant Life on the Farm. *Masters*	1 00	75	.06
The Shepherd's Manual. *Stewart*	1 50	1 12	.11
Harris on the Pig. *Harris*	1 50	1 12	.08
Practical Poultry Keeper. *Wright*	2 00	1 50	.12
The Book of Poultry. *Wright.*	5 00	3 75	.24
Colored Plates.	12 50	9 38	.32
How Crops Feed. *Johnson*	1 50	1 12	.11
How Crops Grow. *Johnson*	1 50	1 12	.11
A B C of Bee Culture. *Root*	1 25	1 00	.12
A Modern Bee Farm. *Simmins*			
Bees and Bee-Keeping. (2 vols.) *Cheshire*			
The Production of Comb Honey. *Hutchinson*		25	
The Production of Extracted Honey. *Cowan*			
The Incubator and its use. *Rankin*			
Poultry for Profit. *Jacobs*			
Incubators and Brooders. *Jacobs*			
Natural and Artificial Duck Raising. *Rankin*			
Poultry. (A Treatise on Raising Broilers and Ducks by Artificial Means.) *McFetridge*			
Hand-book of Plants. *Henderson*	$4 00	3 20	.28
Flowers, Fruits and Leaves. *Sir John Lubbock*			
How to Know the Wild Flowers. *Dana*		1 50	Free
Origin of Species. *Darwin*	2 00	1 50	.14
Animals and Plants under Domestication. (2 vols.) *Darwin*	5 00	3 75	.28
The American Commonwealth. *Bryce*		3 50	Free
Letters to a Daughter. *Starrett*	75	60	.06
How the Other Half Lives. *Riis*		1 25	.06
Amenities of Home	60	45	.05
How to Win. *Frances E. Willard.*	1 00	75	.07
New-England Legends and Folk Lore. *Drake*	2 00	1 50	.12
A Nameless Nobleman. *Jane Austin*	1 25	94	.08
Dr. LeBaron and his Daughter. *Jane Austin*	1 25	94	.08
Standish of Standish. *Jane Austin*	1 25	94	.08
Betty Alden. *Jane Austin*	1 25	94	.08
Half Hours with American History. (2 vols.) *Morris.*	3 00	2 25	.24
Masterpieces of American Literature		1 00	.08

	Publisher's Price.	Price to Members.	Postage.
Riverside Literature Series		15	Free
A Short History of the English People. *Green*		1 20	15
Student's History of England. *Gardiner*		3 00	15
Readings from English History. *J. R. Green*	1 50	1 12	12
English Classic Series		12	Free
Public Opinion (Periodical)			

MEMBERSHIP.

To become a member of the Extension, one will not be required to take an examination. Application may be made by sending to the secretary one's name, address, and occupation, with a statement as to the books one wishes to study the first year and the extent of one's practical experience in the line to be pursued. Upon receipt of the application, one will be enrolled as a member of the Extension; and the name will be sent to The Rhode Island News Company, 113 and 115 Westminster Street, Providence, from whom may be obtained books for the course, and all others mentioned in the list, at special rates. One may order the books one's self from this firm or procure them elsewhere; or one may send the money to the secretary, and he will order them.

CLASS STUDY.

One may begin the course at any time, and may study entirely independent of others; yet there are advantages in forming reading-circles in neighborhoods and granges, where weekly meetings for consultation and discussion may be held. If several (not less than six) in the same locality are taking the course, arrangements may be made later for an instructor to come to meetings of the readers, and give special instruction in some of the sciences.

GRADUATION.

Upon the completion of a year's work, by correspondence with the secretary, examinations may be arranged; and upon completing three years' work, and passing all the examinations, the candidate will graduate, and receive a diploma. The time of graduation will be at the close of the Spring term; and those graduating from this course will be expected to come to the College on Commencement Day.

EXPENSES.

The expense to readers in this course is for books only, any of which are worthy of a place in the farm home library, and are offered here at very reasonable prices. But in case an instructor is called to give lessons away from the College, the members interested will be required to pay his traveling expenses.

CORRESPONDENCE.

If further information is desired in connection with anything contained in this circular, or if one encounters difficulties of any nature in one's study, or wishes advice in regard to the selection of books, a letter to the secretary will insure a reply on the point in question. All interested in this work, whether members of the extension or not, should visit the College frequently—its library, laboratories, and the Experiment Station—and encourage others to do the same. It is the object and wish of the management of the College to do all it can to promote the best interests of the inhabitants of the State, and the coöperation of every loyal citizen is sought. All correspondence relating to the Agricultural College Extension should be addressed to

J. D. Towar, Secretary,

Kingston, Rhode Island.

STUDENTS.

POST GRADUATES.

Adams, George Edward	Rocky Brook,	R. I.
Ammonds, George Clarence	Kingston,	"
Clark, Helen May	Kingston,	"
Knowles, John Franklin	Kingston,	"
Madison, Warren Brown	East Greenwich	"
Rodman, George Albert	Kingston,	"

GRADUATES, 1894.

Adams, George Edward, Agr.	Rocky Brook,	R. I.
Ammonds, George Clarence, Mech.	Kingston,	"
Arnold, Chapin Trafford, Agr.	Lonsdale,	"
Burlingame, George Washington, Agr	Glocester,	"
Clark, Helen May	Kingston,	"
Knowles, John Franklin, Mech	Kingston,	"
Madison, Warren Brown, Agr.	East Greenwich,	"
Mathewson, Ernest Hoxsie, Mech	Providence,	"
Peckham, Reuben Wallace, Agr.	Middletown,	"
Rathbun, William Sherman, Agr	Peace Dale,	"
Rodman, George Albert, Mech	Kingston,	"
Sargent, Charles Lawrence, Agr.	Peace Dale,	"
Slocum, Samuel Watson, Agr.	Peace Dale,	"
Spears, John Barden, Agr	Foster Centre,	"
Sweet, Stephen Adelbert, Agr.	Slocumville,	"
Tucker, George Mason, Agr.	Swansea Centre,	Mass.
Wilber, Robert Arthur, Mech.	West Kingston,	R. I.

SENIORS.

Albro, Lester Franklin, Agr.	Middletown,	R. I.
Burdick, Howland, Agr.	Newport,	"
Clarke, Charles Sherman, Mech.	Jamestown,	"
Hammond, John Edward, Agr.	Jamestown,	"
Oatley, Lincoln Nathan, Mech.	Peace Dale,	"
Scott, Arthur Curtis, Mech.	Summit,	"
Tefft, Jesse Cottrell, Mech.	Jamestown,	"
Winsor, Byron Edgar, Mech.	Summit,	"

JUNIORS.

Barton, Benjamin, Agr.	East Greenwich,	R. I
Brayton, Charles Andrew, Agr.	Fiskeville,	"
Clark, Matthew Waite, Mech.	Kingston,	"
Greenman, Adelaide Maria.	Kingston,	"
Kenyon, Albert Louis, Mech.	Point Judith,	"
Moore, Nathan Lewis Cass, Agr.	Shannock,	"
Tabor, Edgar Francis, Mech.	Slatersville,	"
Williams, James Emerson, Mech.	Summit,	"

SOPHOMORES.

Capwell, Charles Worden, Mech.	South Scituate,	R. I
Carmichael, Welcome Sands, Mech.	Shannock,	"
Case, Herbert Edwards Brown, Mech.	Pawtucket,	"
Grinnell, Archie Franklin, Mech.	Middletown.	"
Hoxsie, Bessie Bailey.	Quonochontaug,	"
Kenyon, Charles Franklin, Mech.	Shannock,	"
Kenyon, Albert Prentice, Mech.	Ashaway,	"
Marsland, Louis Herbert, Mech.	Franklin,	N. Y.
Nelson, George Oscar, Mech.	Peace Dale,	R. I.
Newton, Willis Bertram, Mech.	Washington,	"
Peckham, Charles Herbert, Mech.	Coventry,	"
Tefft, Eliza Alice.	Allenton,	"

Thomas, Irving, Mech	Lafayette,	R. I.
Tucker, Lucy Comins	Swansea Centre,	Mass.
Turner, Harriette Florence	Lakeside,	N. Y.
Wright, Mary Ella	Shannock,	R. I.

FRESHMEN.

Arnold, Sarah Estelle	Wakefield,	R. I.
Barber, George Washington	Shannock,	"
Burdick, Fred Vine	Carolina,	"
Cargill, Edna Maria	Abbott Run,	"
Case, John P.	Gould,	"
Clark, William Case, Jr.	Wakefield,	"
Clarke, William Lamont Wheeler	Jamestown,	"
Congdon, Henry Augustus	Mooresfield,	"
Flagg, Martha Rebecca	Kingston,	"
Gates, Eugene Herbert	Shannock,	"
Gardner, George Wallace	Block Island,	"
Gross, Herbert Dow	North Foster,	"
Hadfield, John Slater	Forestdale,	"
Harley, William Ferguson	Pawtucket,	"
Larkin, Jessie Louise	Watch Hill,	"
Merrill, William Chauncey Palmer	Central Falls,	"
O'Neil, Henry Francis	Providence,	"
Peckham, Herbert James	Middletown,	"
Pike, David	Riverpoint,	"
Rose, George	Mooresfield,	"
Steere, John Purkis	Chepachet,	"
Strout, Robert Bruce	Wakefield,	"
Taylor, William James	Slatersville,	"
Tucker, Attmore Arnold	Wakefield,	"
Van Horne, Mahlon Augustus	Newport,	"
Wheeler, Charles Noyes	Shannock,	"
Wilson, Henry Paige	Allenton,	"
Worden, Cornelia	Allenton,	"

SPECIALS.

Alexander, Walter Putnam	Abbott Run,	R. I.
Braman, Benjamin	West Kingston,	"
Brown, May	Narragansett Pier,	"
Burgess, George	Rockland,	"
Champlin, Frank Everett	Matunuc,	"
Clarke, John Gideon	West Kingston,	"
Cochrane, George William	Franklin.	"
Crandall, Henry	Green Hill,	"
Dunn, Lawrence Thomas	Chepachet,	"
Eldred, Mabel DeWitt	Kingston,	"
Greene, Lulie Lynch	Carolina,	"
Hamblen, John Franklin	Carolina,	"
Hartwell, Charles	Littleton,	Mass.
Kingsley, Walter Burnside	Hamilton,	R. I.
Magill, Arthur Reginald	Newport,	"
Oatley, George Nathan	Peace Dale,	"
Pratt, Edith Forrester	Kingston,	"
Sherman, Abbie Gertrude	Kingston,	"
Wells, Grace Perry	Kingston,	"
Whitford, John	Perryville,	"
Willis, Libbie Winnifred	Kingston,	"
Wright, Silas Wilber	Wakefield,	"

SPECIALS IN WOOD CARVING.

Adams, Mrs. H. F	Kingston,	R. I.
Auel, Mrs. Charles	Kenyon,	"
Armstrong, Mrs. Charles, Jr	Wakefield,	"
Carmichael, Mrs. George	Shannock,	"
Clemens, Julia	Wakefield,	"
Green, Aldana	Kenyon,	"
Green, Nellie	Kenyon,	"
Hudson, Lila	Wakefield,	"

King, Jonie	Kenyon,	R. I.
King, Lizzie	Kenyon,	"
King, Mrs. George	Kenyon,	"
Kenyon, Alice	Carolina,	"
Metcalf, Alice	Carolina,	"
Northrup, Florence	Rocky Brook,	"
Pope, Angela	Rocky Brook,	"

Post Graduates	6
Graduates, 1894	17
Seniors	8
Juniors	8
Sophomores	16
Freshmen	28
Specials	22
Specials in Wood Carving	15
Total, counting none twice	114

TREASURER'S REPORT.[1]

MELVILLE BULL, *Treasurer*, *in account with the* RHODE ISLAND COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

1894.	DR.	
Jan. 1.	To cash balance on hand	$49 23
Dec. 31.	State of Rhode Island	20,000 00
	J. H. Washburn, President, for students' board, etc.	2,750 00
	Cash received from Morrill Fund	13,038 90
	" " interest	39 52
		$35,877 65

1894.	CR.	
Dec. 31.	By Salaries	$5,503 69
	Apparatus	354 88
	Library	348 39
	Postage, stationery, and printing	362 57
	Freight and expressage	782 10
	Traveling	533 96
	Tools and machinery	859 03
	Labor	3,128 77
	Store	1,335 64
	Furniture	1,138 27
	[2]Incidentals	3,299 09
	Laboratory supplies	1,357 90
	Construction and repairs	4,814 29
	Provisions	2,813 23
	Boarding expense	999 30
	[3]Cash balance on hand	8,246 54
		$35,877 65

[1] The report of the Morrill Fund is published after June 30 of each year.

[2] This includes cost of coal, gasoline, etc.

[3] This sum will be used for a barn and dairy, by vote of the General Assembly at the May Session.

THIS IS TO CERTIFY that the undersigned, Auditing Committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of Melville Bull, Treasurer, as above, and find the same to be correct, leaving a balance in the said Treasurer's hands of eight thousand two hundred forty-six dollars and fifty-four cents ($8,246\frac{54}{100}$).

GARDINER C. SIMS,
NATHAN D. PIERCE,
CHAS. D. GREENE,
Auditing Committee.

THE RHODE ISLAND STATE AGRICULTURAL EXPERIMENT STATION *in account with the* UNITED STATES APPROPRIATION.

1894.	DR.	
	To receipts from the Treasurer of the United States as per appropriation for the year ending June 30, 1894, under act of Congress approved March 2, 1887.....	$15,000 00
1894.	CR.	
June 30.	By Salaries..... $8,707 06	
	Labor..... 2,305 33	
	Supplies and repairs..... 1,200 00	
	Freight, expressage, etc. 429 47	
	Library and printing..... 849 41	
	Tools and machinery..... 382 31	
	Scientific instruments..... 90 06	
	Chemical apparatus and supplies..... 125 64	
	Furniture and general fittings..... 29 12	
	Live stock..... 323 19	
	Traveling..... 281 25	
	Incidentals..... 99 58	
	Building 177 58	
		$15,000 00

THIS CERTIFIES THAT WE, the undersigned, authorized Auditing Committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of the Treasurer of the Agricultural Experiment Station for the fiscal year ending June 30, 1894, and that we find the receipts for the time named to have been $15,000, and that the same has been expended, for which satisfactory vouchers, correctly classified as above,

are on file, and the same agree with the Treasurer's account, and there is no unexpended balance.

GARDINER C. SIMS,
NATHAN D. PIERCE,
CHAS. J. GREENE,
Auditing Committee.

I hereby certify that the above is a true copy from the books of the account of the institution named.

MELVILLE BULL,
Treasurer of the Rhode Island College of Agriculture and Mechanic Arts.

I hereby certify that the above signature is that of the Treasurer of the Rhode Island College of Agriculture and Mechanic Arts.

C. H. COGGESHALL,
President of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts.

MELVILLE BULL, *Treasurer, in account with the* RHODE ISLAND AGRICULTURAL EXPERIMENT STATION.

1894.	DR.	
June 30.	To balance from last year	$8 59
	Rebate on Columbian Fair freight	4 97
	Station receipts	1,369 00
	State receipts Fertilizer inspection	1,666 38
	Interest	53 78
		$3,102 72

	CR.	
By	Labor	$709 43
	Supplies and repairs	1,948 90
	Roads, water supply, etc	49 90
	Fertilizer inspection	309 11
	Incidentals	50 10
	Balance on hand	35 28
		$3,102 72

MELVILLE BULL, *Treasurer, in account with* UNITED STATES SPECIAL APPROPRIATION.

1894.	DR.	
June 30.	To balance on hand	$1,639 07
	Interest	105 18
		$1,744 25

1894.	CR.	
June 30.	By Library and printing	$159 78
	Scientific instruments	2 50
	Balance unexpended	1,581 97
		$1,744 25

THIS IS TO CERTIFY that the undersigned, Auditing Committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of Melville Bull, Treasurer, ending June 30, 1894, and the vouchers corresponding therewith, and find the same correct.

GARDINER C. SIMS,
NATHAN D. PIERCE,
CHAS. J. GREENE,
Auditing Committee.