

TENTH BIENNIAL REPORT

OF THE

BOARD OF TRUSTEES

OF THE

Iowa State Agricultural College
AND FARM,

MADE TO

THE GOVERNOR OF IOWA,

FOR THE YEARS 1882 AND 1883.

PRINTED BY ORDER OF THE GENERAL ASSEMBLY.

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STATE AGRICULTURAL COLLEGE, }
AMES, IOWA, December 1, 1883. }

To His Excellency, BUREN R. SHERMAN:

In accordance with the statute defining the duties of the Secretary of the Board of Trustees of the Iowa Agricultural College, I have the honor to transmit herewith the Tenth Biennial Report of said Board.

E. W. STANTON, *Secretary.*

REPORTS OF THE PRESIDENT AND THE HEADS OF DE- PARTMENTS.

The following reports are made by the President and the heads of departments to the Board of Trustees.

PRESIDENT'S REPORT.

To the Honorable Board of Trustees:

GENTLEMEN—I take pleasure in reporting the excellent condition of the Agricultural College throughout the past year. All its departments have made satisfactory progress, and all parties connected therewith have worked together in the utmost harmony.

The following statement comprises the attendance during the spring and fall terms:

STUDENTS IN ATTENDANCE DURING THE YEAR 1883.

Seniors—	
Ladies.....	12
Gentlemen.....	15 — 27
Juniors—	
Ladies.....	6
Gentlemen.....	34 — 40
Sophomores—	
Ladies.....	13
Gentlemen.....	60 — 73
Freshmen—	
Ladies.....	16
Gentlemen.....	88 — 104
Sub-Freshmen—	
Ladies.....	12
Gentlemen.....	36 — 48
Special Students—	
Ladies.....	9
Gentlemen.....	4 — 13
Post Graduates—	
Lady.....	1
Gentlemen.....	4 — 5
Veterinary School—	
.....	9 — 9
Whole number of students.....	319

The steady growth of the Agricultural College, which has been very marked during the past few years, will make farther buildings indispensable. The classes in some of the different schools and departments have become too large for the halls in which their exercises are held. The engineers have hitherto met for instruction in a small room which will not hold seats and drawing tables enough for their use. The mechanics have had their practice in a basement which has not sufficient bench room to enable them all to work at once.

We asked the last Legislature for an appropriation of \$10,000 to put up a new building for these two departments, but only \$5,000 was granted. With this limited sum we have built a hall that is too small to accommodate the growing classes of the Engineering School.

The same may be said with still greater emphasis respecting the lack of buildings for conducting the exercises of the Veterinary School. This school, as everybody knows, is of vital importance to the stock interests of the State. It will not be able for some years to supply the demand now existing for veterinary physicians and surgeons in the different stock centers. Its offices and lecture rooms are sufficiently commodious, but the veterinary hospital is an insignificant barn not large enough to accommodate the stock of an ordinary farm. It is impossible to build up institutions of industrial science and practice without adequate buildings.

We want for this rising veterinary school a hospital, whose capacity shall not only meet the needs of the present, but shall suffice for the growth of future years. We have already erected on these grounds enough of shambling structures with stinted appropriations. Let Iowa fulfill her assumed obligations to Congress in such a manner as will comport with the importance of this great enterprise, and supply the wants of generations to come.

ZOOLOGICAL BUILDING.

The Department of Zoology is an indispensable adjunct of an industrial college. We should have a mere fragment of an agricultural school without it. In this college it has a name, but no local habitation. Its large classes meet in the narrow rooms of the main building, in the museum, or wherever they can. What it needs for full development is a building of its own, in whose rooms and halls it can gather collections, make analyses, give lectures, and conduct reviews and examinations. This need is so great that the State will certainly give heed to it.

GASOMETER AND GAS HOUSE.

I have only to say respecting this item, that a new gas house is demanded as a measure of safety. The old gas house, whose cracked and crumbling walls lean against the main building, is a constant menace to the property of the College and the lives of the pupils. It has caught fire twice within the last two years. It ought to be removed without delay, and a new gas house put up at a safe distance, with a capacity for holding gas enough for two or three days' consumption.

A HOUSE AND BARN ON THE NORTH FARM,

which have become imperative wants, are minutely explained in Professor Knapp's report, to which the attention of your honorable body is respectfully called.

The engine and boiler by which the various buildings are supplied with water needs a shelter to save it from exposure to the weather and consequent decay. The College has recently purchased a new engine and boiler at considerable expense, but it cannot legally build an engine house with the interest fund. The Legislature in accepting the national endowment entered into an agreement to put up all necessary buildings at the expense of the State. So we are compelled in this, as in other instances, to ask the State to fulfill its contract.

PROFESSOR BUDD'S DWELLING HOUSE.

When Professor Budd accepted the chair of Horticulture, there was no building which his family could occupy as a residence. For this reason, having received the permission of the Trustees, he built an economical but comfortable dwelling on the college grounds, with his own means. In this house he has resided several years without charging rent, while other professors have had free houses assigned to them. Professor Budd now asks the Legislature to reimburse him for money so advanced and his value to the State, and the reasonableness of his claim will certainly justify the demand.

BUILDING FOR FIRE-PROOF VAULT AND OFFICES.

Respecting the necessity for this building, we have only to say that the college books and vouchers, embracing fifteen years, are exposed to constant danger from fire. Moreover, the continually increasing

business of the College has far outgrown the capacity of its present office.

COLLEGE HOSPITAL.

Prominent among the urgent necessities I have mentioned, is a college hospital for sick students. Every building used as a dormitory for a large number of young people is liable to be visited by infectious diseases. Despite the great care which is taken to prevent the spread of contagious maladies among the students, they have suffered several different times from measles, once from diphtheria, and once, the last summer, from scarlet fever. In this latter case, by rare good fortune, we were able to isolate, in a building temporarily unoccupied, each patient as soon as the first symptoms appeared, and to disinfect the vacated room with fumes of sulphur. In this way the dread malady was kept from spreading beyond six cases, none of which were fatal.

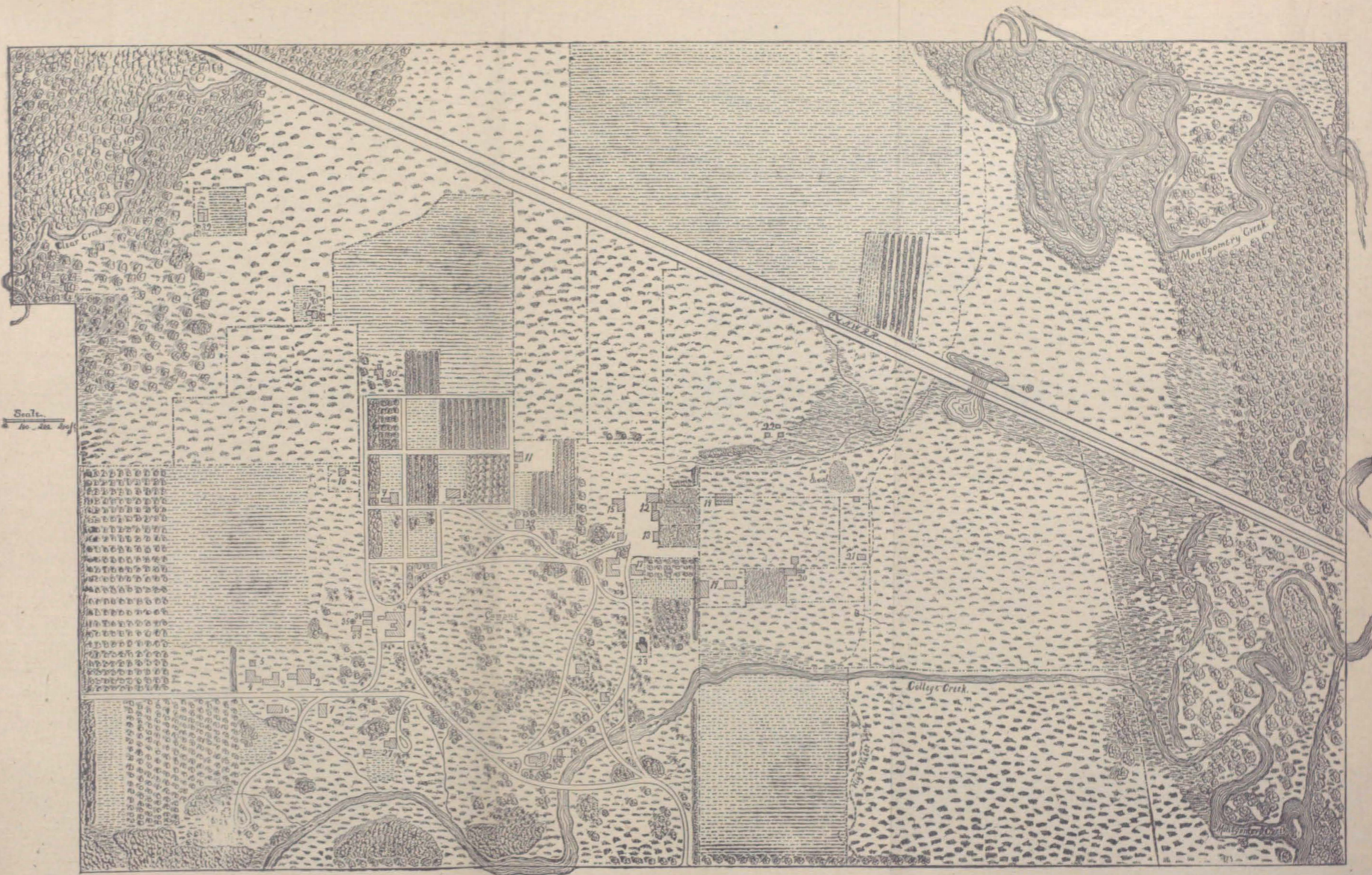
We believe that we could secure the College from the inroads of the various infections if we had the means of isolating the patient so that we could at once disinfect his room. A college hospital, which could be built at a limited expense, would thus enable us, in nearly all cases, to save the suffering, if not the lives, of the young people committed to our charge.

The following appropriations will be necessary for the buildings proposed :

Engineering hall.....	\$ 12,000.00
Veterinary hospital.....	10,000.00
Zoological building.....	6,000.00
Gasometer and gas house.....	4,500.00
House and barn for north farm.....	2,000.00
Pump house.....	1,000.00
Purchase of house occupied by Professor Budd.....	2,000.00
Building containing fire-proof vault and offices of Secretary, Treasurer and President.....	5,000.00
College hospital.....	2,000.00

Total.....\$ 44,500.00

A. S. WELCH.



THE COLLEGE DOMAIN.

1. Main College Building. 2. Chemical and Physical Hall. 3. Engineering Hall. 4. Shops. 5. Gas Works. 6 & 7. Boarding Halls. 8. North Hall. 9. Horticultural Hall.
10. Veterinary Hospital. 11, 12, 13 & 14. Barns. 15 & 16. Experimental Buildings. 17. Creamery. 18. Farm House. 19. Sheep Barns. 20. Piggery. 21. Feed Barn.
22. Water Works. 23 to 32. Dwelling Houses. 33. Gymnasium. 34. Coal and Ice Houses. 35. Water Tank.

REPORT OF THE DEPARTMENT OF AGRICULTURE.

S. A. KNAPP, PROFESSOR.

The following report outlines the work of this Department for the biennial period closing November 14, 1883.

INSTRUCTION IN AGRICULTURE.

In the ninth biennial report the following statement was made in regard to the course of instruction in agriculture in the Iowa Agricultural College:

“The present college course in agriculture seems to meet the wants of such pupils as desire to become proficient in husbandry and have chosen this great department of industry for a vocation. The several studies pursued have been selected with a view to solve, in a practical way, the problems of the farm, from the standpoint of the owner or manager; and with the design of aiding him, as far as practicable, to become a wise observer and successful operator upon the farm. While it is not claimed that perfection has been reached in a question so difficult of solution, it is thought that this course more comprehensively and successfully outlines the work of the agricultural student, and traces the proper means between skill and general theory, than any that has hitherto been formulated. The pupil is regarded as the intelligent owner or manager of a farm, and the several problems that arise in farm improvement, drainage, stock-breeding and the dairy, in the soil and application of manures, in the production of the cereals and grasses and their economic uses in husbandry, are carefully discussed from this entirely practical standpoint. Sufficient manual labor is given under a competent foreman to familiarize the pupil with the methods necessary to the successful application of principles involved and to give him a reasonable amount of skill.

It is not, however, presumed that the student in agriculture, after

a course that has taxed his full energies, will be as skillful in ordinary farm industries as one who has spent an equal amount of time upon the farm; but the superior knowledge and mental discipline acquired are considered more than a compensation for any temporary lack in skill, and fully vindicate the wisdom of a thorough education for the farm."

Two years of added experience have served to confirm these opinions. The first class in the special course of agriculture, graduated November, 1883. In September previous, Mr. George W. Curtis, of this class, was elected Professor of Agriculture and Horticulture in the Agricultural and Mechanical College of Texas. That progressive college sent its president, Prof. H. H. Dinwiddie, and its secretary, Prof. L. L. McInnis, north to secure the most competent man for the department of agriculture, and Mr. Curtis was selected after a most careful investigation of college courses of instruction and the fitness of applicants.

In a late report, President Dinwiddie makes the following allusion to the Iowa Agricultural College:

"The fact is recognized that some of our most thoughtful people regard the proper conduct of an Agricultural College as an unsolved problem.

"This is a serious error. It is true that the greater number of our state agricultural colleges have failed. But a few have succeeded brilliantly, and guided by the experience of one of the best of these the professor of agriculture here finds nothing problematic in the general plan which he has marked out for his course. The institution of which he is a graduate, has during the fifteen years of its existence solved the problems of agricultural education in America and is now filled with earnest, enthusiastic students preparing to become practical scientific managers of farms."

The interest in this department of instruction has greatly increased in the school as the work has progressed and become more clearly outlined. During the two years past the number of students in the several classes in agriculture were two hundred and twenty-four, divided as follows:

Freshman agriculture.....	121
The science of stock-breeding.....	50
Science and practice of dairying.....	39
Scientific stock feeding and experiment stations.....	11
Grasses and forage plants.....	3

FACILITIES.

The difficulties in the way of placing the instruction in scientific agriculture upon the same basis as other departments of science are neither few nor slight, and require the element of time. So far as instruction in the general means and methods of conducting a farm the appliances are ample to meet the demands. Samples of various ways of cultivation, drainage, mowing, fencing, building, of the pasture, meadow, etc., are at hand. With the new creamery building and apparatus every pupil in the dairy class can have practice in the manufacture of butter and cheese with the various methods of packing, storing and marketing.

The students in grasses and fodder plants are well provided with the facilities for the investigation of the several problems relating to the grasses. There are plats of a large number of grasses at hand. These are neatly kept. The daily temperature of the soil, rate of growth of the plant, amount of grass and hay per acre, and the early and late growth are carefully determined.

In scientific stock-feeding the College cannot provide the means sufficient to demonstrate even the simpler questions under investigation.

This should receive the early attention of the Legislature, to the end that the improvidence and waste of the present system of stock-feeding may be thoroughly exposed, not only to the scholars, but to the whole State.

THE FARM.

In order to note the progress made upon the farm, attention is called to changes in the number of acres devoted to the various purposes in 1881 and in 1883.

	1881.	1883.
Meadow.....	40 acres.	100 acres.
Land under cultivation.....	104 acres.	70 acres.
Upland pasture.....	105 acres.	185 acres.
Woodland pasture.....		80 acres.
Bottom land pasture.....	140 acres.	140 acres.
Wood and timber lands.....	290 acres.	194 acres.
	679 acres.	699 acres.

It will be observed that the farm has become better balanced by these changes, and less liable to disaster in case of wet seasons.

Pasturing is now continued well into December instead of closing in October as formerly.

FARM BUILDINGS AND IMPROVEMENTS.

It should be observed that the buildings and general equipments of the farm are much more complete than at any former period. It is now possible to keep the several classes of stock separate and thus determine the relative expense and income of each. The improvement of the upland by tile drainage and the bottoms by leveeing has gone forward with such rapidity that many acres formerly of little use have become the most valuable portions of the farm.

HORSES.

The policy of placing upon the farm representative animals has gone steadily forward, though somewhat slowly, owing to the demand of means for improvement.

There are twenty-four horses and colts upon the farm, classed as Clydesdale, Norman, Coach, and Hamiltonian. They serve as means of illustration in stock-feeding, and do the work upon the farm.

CATTLE.

There are eighty-four cattle of all kinds; twenty-four Short-Horns, ten Frisians or Holsteins, two Jerseys, and forty-eight high grades. As soon as practicable there should be representative animals of other standard breeds.

SHEEP.

At this date one hundred and five ewes, pure South-Down, pure Shropshire-Down, and cross-bred Shropshire and South-Down, and sixteen bucks comprise the flock. The Downs are giving excellent satisfaction.

SWINE.

The herd of swine consists of thoroughbred Poland-Chinas and Chester-Whites, to which should be added sixteen store hogs for experiment.

FARM CROPS.

For full reports upon farm crops and field experiments, I respectfully refer to Annual Reports of the Farm, for 1882 and 1883.

FINANCIAL STATEMENT.

If the College farm be regarded as apparatus with which to illustrate and demonstrate the various problems arising in the practical management of farms, it can never make a strong financial showing. Farming for profit requires that definite plans and methods be chosen and tenaciously followed; that the lines of stock be few, and that the crops be restricted to such as are necessary for the work in hand. Farming for instruction requires that the variety of farm work should be wide to illustrate methods; that specimens of most breeds and their grades should be kept to test relative values.

Quite a portion of this work can never be made profitable from a financial stand-point. For example, the keeping of animals in pairs as specimens is necessary for instruction, but poor policy for profit. Students are the best employes upon the farm — earnest, intelligent, and industrious; but labor by the hour and for a short time is expensive, and, as a policy, is justifiable solely upon the necessities of education.

Another point should be noted: That the College farm, while one of the best to illustrate varieties of soil and methods of improvement, is expensive, as every field requires heavy manuring, or draining, or leveeing, or brushing.

The expenditures for various purposes upon the farm, for the year 1882, exceeded the income \$3,703.67, and for the year 1883, \$2,777.62; total, \$6,481.29.

During this period \$1,784.54 were expended for experimental and instructive work; \$2,253.15 for permanent improvements, mainly tile draining and leveeing bottom lands; \$697.14 for tools and apparatus; total, \$4,734.83.

If the increase in inventories for the two years be added, \$2,233.74 (which is mainly in pure breed cattle and produce), the total is \$6,968.57, leaving a balance of \$487.28 in favor of the farm. During this period the sum of \$2,173.71 was paid by the farm for student labor, all of which contributed to the cause of education.

CONDITION OF THE DEPARTMENT OF HORTICULTURE AND FORESTRY, 1883.

J. L. BUDD, PROFESSOR.

My initial report, six years ago, represented the Department destitute of all needed facilities for storage, propagation, experimental work, and even class-room instruction.

With due thanks to the Legislature, our Board of Trustees, and the President and Faculty of the College, I am now pleased to report fair to good appliances, fixtures, and conveniences in all our lines of work. As the years go on, we have reason to hope that the Department in all its appointments will compare favorably with those of the older schools of Horticulture and Forestry in Europe.

INSTRUCTION IN HORTICULTURE.

The lectures and line of practice in the Freshman year are arranged with special view to the facts that horticultural instruction is confined to this year with all students, except those taking the agricultural course; and none of the students in the large class as yet have been profited by the supporting studies in applied science.

Hence the lessons and practice are confined to the history, propagation and management of the small fruits, the apple, pear, plum and cherry, with closing lectures on nut-bearing trees, propagation and management of forest trees, and the selection, propagation and management of a select list for our climate of shrubs and flowers.

Each recitation commences with a review and discussion of the points presented in the previous lecture.

By completing each topic before another is taken up, careful attention to the note-taking of each student, with required inspection of and practice in the adjacent fruit plantations, nursery grounds, lawn

plantations, flower gardens, etc., we find the majority of the members of the large Freshman class to secure a clearer idea of the reasons for modes and methods in tree, shrub and plant growing, than is possible with the ordinary laborer in nursery or fruit plantations. With the student this work becomes a series of consecutive studies and methodic observations. Relatively few leave the Freshman class without realizing the important fact that the value of all horticultural operations is as the thought put into it. Scarcely a week now passes that we do not hear of some neighborhood on the great prairies where the successful culture of the strawberry, the grape, etc., was first inaugurated by a student whose name appears on our Freshman roll of two, three or four years ago.

In the Sophomore and Junior years horticultural instruction is only given to the students in the agricultural course.

The Sophomore year is mainly given to forestry, ornamental trees, shrubs, perennial flowers, bulbs, etc.

The field inspection of growing specimens is followed by lectures on propagation, planting, uses, etc., of all trees and plants which may profitably be planted in our climate. The supporting studies in botany and physics, in the second term, permit the use and retention of technical names of the economic plants, and the comprehension of valuable lessons on the relation of trees to climate.

In the first term of the Junior year the first text-book is used. While many of the lessons of "Lindley's Theory and Practice of Horticulture" are not applicable to our soil and climate, its use as a text-book permits the introduction of generalized views on vital force, germination, root and stem growth, climatic modification of leaves, climatic adaptation, etc., of vital importance to the prairie horticulturist.

Three lessons per week, during the second term, are given to a general review of the subjects already considered, with lectures on such divisions of each topic as may be better comprehended by the more advanced student in the sciences relating to the industries.

As the Junior class is relatively small, the principles, modes, and methods considered can be verified and impressed by practice and observation in the horticultural museum, the grafting room, the plant rooms, the fruit plantations, the great collections of ligneous plants under trial, and the artificial and natural forests.

EXPERIMENTAL HORTICULTURE.

An intelligible outline of our work in experimental horticulture would occupy more space than can be given in this report. The part of our extended work most likely to benefit the great Northwest, is noted somewhat in detail in the College Bulletin, entitled, "Experiments with, and investigation of, North of Europe Fruits, Trees and Shrubs."

Of this division of our work we reported four years ago: "We now confidently predict that many of the varieties of the apple we now have in nursery from this region (central Russia), will prove just what we have been seeking for during many years past, viz.: good-keeping sorts, of large size and good qualities for different uses, produced on trees capable of enduring any phase of our climate."

Since that time we have grown and distributed for trial fully fifty thousand of these trees. These have been sent out in small lots to all parts of our State, and in limited quantity to Montana, northern Nebraska, Dakota, Minnesota, Manitoba, western Ontario, the Province of Quebec, the most trying portions of Vermont, etc.

The crucial winter of 1882-3 wrought havoc with the varieties of more southern extraction, but no complaint has come of the winter-killing of the trees from the great steppes north and east of the Carpathians. In the trying portions of the prairie States, the feeling is now becoming general that the work here inaugurated will prove a blessing difficult to estimate in dollars and cents.

Where top-worked, many of the varieties have already borne fruit which in size, appearance and quality has far exceeded the expectations of those who have believed all Russian fruits coarse in texture and rough, acid, and austere in quality.

On the College farm we have fruited the past year Russian varieties of the apple which are proving good keepers, and in quality fully equal to the Fameuse.

Since the above report was made to the Governor, I have been confirmed in my belief regarding the fruits of central Russia by a personal inspection of their orchards, and the testing of the quality of hundreds of the varieties grown on the great steppes. Even six hundred miles east of Moscow, on the fifty-fifth parallel of north latitude, and over one thousand miles inland from the sea, I saw great orchards loaded with fruit comparing favorably with our Winesap in

size, color, and quality. If in this arid region, liable to a temperature of forty-five degrees below zero in winter, apple-growing may be made profitable, I see no reason why the most trying portions of the Northwest may not enjoy home-grown fruits. Six hundred miles south of this point, where dent corn will ripen, and melons and tomatoes luxuriate, yet where the winter temperature often reaches forty degrees below zero with little snow, we saw on black prairie soil great orchards—one near Saratov had 12,000 trees—loaded with fall and winter apples far more beautiful than our common sorts, and fully their equal in size and quality. The representatives we have of the fruits of this section of interior Russia, have not failed to start from the terminal buds, like our well-known Duchess (a stray from the province of Simbirsk, adjoining Saratov), and we have every reason to hope they will prove very valuable north of the fortieth parallel on the prairies. The reports made by our hundreds of trial stations in all parts of the west are recorded, and we hope four years hence to receive as many favorable responses as now in regard to the behavior of the strangers from the only climate and soil like ours in the world.

Of the prospective value of the pears of the limitless steppes north and east of the Carpathians, I have now a much higher opinion than I expressed four years ago. The statement that "the fruit is represented to be of good size and of excellent quality for culinary use," was made from the truthful reports of Dr. Regel, of St. Petersburg, and Dr. Arnold, of Moscow, and referred to the fruits grown as far north as Moscow and Kazan. From four to six hundred miles south of these points, on the rich black prairie soils we have referred to in this connection, we saw old trees loaded with excellent pears for desert use. So far, we find these pears as hardy in wood as the Duchess apple, and we have no more reason to believe they will be fatally injured by blight than the apples from the same plains.

We are now preparing to send out the trees for trial. Some of them will be found hardy even in northern Dakota.

With the cherries of the steppes we have as yet done nothing except to place in orchard a few trees imported last winter from Voronesh and Orel, Russia. We have just received another consignment of small cherry trees for the experimental orchard from Riga, Russia, and we expect in the spring consignments for trial from five different portions of northeastern Austria and central Russia. We cannot send

out plants for trial until we can grow scions in the trial orchard. We have tried repeatedly to import scions, but invariably they have arrived in bad condition for successful grafting.

As train loads of fine cherries are grown in the province of Vladimir, one hundred and fifty miles east of Moscow, we can safely assume they can be grown on the most exposed prairies of northern Iowa.

In the earlier stages of our experimental work the want of proper facilities, and the very limited appropriation from the college interest fund prevented rapid advances. During the past two years the annual appropriations of \$750.00 by the legislature has hastened the work and permitted the investigation and importation of rooted plants and scions on a larger scale, as noted in the itemized statement on a subsequent page of this report. It will be seen that the sum of \$500.00 of the State appropriation of 1882 was used in the part payment of expenses incurred in investigation and personal inspection of the fruits, trees and shrubs of the steppe portions of Europe. The remaining sum of \$250.00 was used for the payment of bills for rooted plants and scions selected from the great collections of northern regions rich in horticultural products long before America was discovered.

The State appropriation for 1883 the financial statement shows mainly unexpended, for the reason that the bills for experimental stock are received after the close of the fiscal year of the College, and the sum of \$200.00 is to be used in the construction of a propagating frame which has long been one of the urgent needs of the Department.

ORCHARD.

The bearing orchard of about twelve hundred trees was planted ten and twelve years ago with such varieties of the apple as were then common in the nurseries of central Iowa. The many vacancies were replanted in the spring of 1877 by the writer with such varieties of a hardier type as Gros Pomier, Walbridge, Plumb's Cider, Duchess, etc. In common with all orchards in this region, on rather low wet soil, the last test winter either killed or irreparably injured all trees of the grade of hardiness of Ben Davis, Jonathan, Dominic, Fulton, W. W. Pearmain, Stark, Red June, and even Saxton Stripe. Fameuse, Gros Pomier, Cole's Quince, Walbridge, Plumb's Cider, Willow,

Roman Stem, and others of this grade of hardiness, were not killed, but more or less lowered in vitality.

The absolutely perfect trees are the Duchess, Wealthy, Tetofsky, and the crabs, of the one hundred and twenty sorts shown on the plat.

Plumb's Cider and Drap de Or are perhaps next to the above the most perfect trees in the whole collection.

This wrecked orchard is a lesson in experimental horticulture applicable to a large portion of the central district, with rather moist, rich, dark colored soil.

EXPERIMENTAL ORCHARD.

Adjoining the above orchard, on even less favorable soil, we have an orchard of about one thousand trees containing two hundred and fifty varieties, top worked on Gros Pomier and Duchess stocks.

With the best light we then had, and the scions obtainable four and five years ago, the purpose was to place in one collection the hardiest known apples of both continents.

With the farther experience, observation and investigation of to-day fully one half of the varieties then grafted would be superseded by others known to be still hardier and better. More especially is this true of the Russian varieties, as at that time only the coast varieties of the fruits of Russia were obtainable. Yet visitors from our own and other States pronounce this the most interesting collection of hardy trees to be found in the States.

The only trees to be found in the whole orchard injured by the test winter were seedling of seeming promise exhibited at the meetings of the State Horticultural Society, and a portion of the Russian varieties known to be winter, which were kept cut back for scions and bud sticks. The persistent cutting back of the young wood so lowered the vitality of the Gros Pomier stock that the past winter about ruined them as happened even to the Poplars from which we have persistently taken off the young wood for propagation.

Aside from slight losses of this character, and a few trees girdled by rabbits, the whole orchard made a vigorous growth the past summer from the terminal buds, and many of the varieties have borne fruit.

The few vacancies will permit the introduction of many varieties now known to be valuable, without extending the orchard limits.

SMALL FRUITS.

The strawberry is grown in considerable quantity for the use of the families on the ground, and for the boarding department.

With a view to reporting their relative value for the press and in bulletins, and for the observation and instruction of students, we grow many seedling sorts, and give trial to varieties whose claims are urged upon the attention of the public by interested parties.

But the main crop is of varieties found to give, under proper management, the best crop of the best fruit, such as Crescent Seedling, Charles Downing, Green Prolific, and Downer's Prolific. The growing of large crops of this fruit, under the care and daily observation of our students, results in getting up an interest in strawberry growing in many neighborhoods where paying crops of this luscious fruit had not been known.

In like manner the vineyard is managed mainly with a view to giving an abundant crop for the use of the boarding department. Even the past unfavorable year we were able to harvest a bountiful crop of well ripened fruit.

While we plant varieties known to have defective foliage for object lessons to students, and place promising new sorts on trial, the main crop as yet is Concord and Coe. The pruning, laying down in autumn, taking up and putting upon wires in the spring, cultivating, fruit-picking, etc., is done mainly by students, and the practical knowledge thus gained is extending grape culture in the State rapidly.

With the other small fruits, including many varieties of the Dwarf Juneberry, we are experimenting for the benefit of horticulture in the State and student instruction.

VEGETABLE GARDEN.

As with the small fruits, the vegetable garden, in the selection of varieties, etc., is managed with a view to the abundant supply of the boarding department, and the instruction of the students in the matter of varieties, and best modes and methods for varied soils and seasons. Many of the newer vegetables and roots are grown with a view to reporting for the benefit of the public.

In like manner, the flower gardens, hot beds, propagating frame, plant house, shrubbery plantations, forestry plantations, etc., are managed with a view to their practical uses, and for the instruction of students assisting in their management.

STUDENT LABOR.

In the different divisions of horticulture student labor is employed to the extent of about eight hundred dollars during the college year. The usual price paid is ten cents per hour, but advanced students who assist as foremen receive from twelve and a half to fifteen cents per hour.

Does student labor pay? This question is often asked by visitors, the press, and our correspondents. In dollars and cents, we must answer, no! The labor is detached, and for short periods. When the class bell rings the student must leave, and a new and perhaps inexperienced hand must take his place. It is evident that all divisions of the work must have the constant supervision of those familiar with the special work, yet we cannot dispense with student labor, nor can we as yet adopt the European plan, which assumes such detached student labor to be educational, and no more entitled to wages than work in the laboratories of the scientist.

In Michigan the Agricultural College struggled with this student labor question for years, and finally surmounted it by securing from the legislature an annual appropriation of \$4,500 to assist in the perpetuation of the system.

APPROPRIATIONS NEEDED.

We need a respectable greenhouse, means to start a creditable arboretum, and many other fixtures and appliances, possessed by the most unassuming School of Horticulture and Forestry in Europe; but, in view of our urgent needs in the other departments, the Trustees only ask that the money expended by the writer for a dwelling-house on the college grounds be refunded by the State. When the house was built it was impossible to secure an appropriation for a Professor's house on the college grounds. That it is imperatively necessary for the Professor of Horticulture to live on the grounds need not be urged. In 1877 I urged upon the attention of members of the Legislature the question of refunding the money I had expended, for the erection of an urgently needed house, on State property, for the benefit of the State at large. Appropriations, sadly needed, for the houses of other Professors have since been made. I hope the time has now come for an appropriation for the house which "Jack built," perhaps very foolishly, on State property.

REPORT OF THE DEPARTMENT OF VETERINARY
SCIENCE.

M. STALKER, PROFESSOR.

During the last year the facilities of this Department have been added to by the erection of a small building, to be used as an infirmary. While the building is of sufficient size to serve as a place for holding clinics, it has proved totally inadequate to the demands on the Department for hospital work. During the year about fifty boarding patients were received for treatment, and three hundred cases presented at the clinics. A nominal charge is made on patients kept for treatment in the hospital—a charge sufficient to cover the expense of this branch of the work. The treatment in most cases has proved satisfactory. No case receiving treatment at the hospital during the year has proved fatal.

The demands on the Department from various portions of the State have been far in excess of former years. I have so far as possible responded to these calls when there was satisfactory evidence that the disease was sufficiently serious to justify making an examination.

This work has taken me into about one-half of the counties of the State. In some instances I have been enabled to render more or less valuable service in the suppression of contagious disease. There has been no considerable loss of stock during the year, except from local causes. Ergotism, glanders, and cerebro-spinal meningitis have resulted in the destruction of a number of individuals in different parts of the State.

During the year, ten special students have received instruction in this Department, in addition to the Senior Class in the general college course. Instruction is given by lectures, text-books, and practical work. A clinic is held every afternoon at the hospital, at which attendance is required of all students.

I would again call your attention to the importance of securing the necessary legislative appropriation to erect a convenient building to be used as an infirmary. An appropriation of ten thousand dollars is needed to erect such a building. The demand is not for a building that will shelter a large number of animals, but for such accommodations and appliances as will enable the Department to carry on successfully its work of instruction and experimentation. The importance of this long-neglected work is now beginning to be felt, and the sum required to carry out these plans is but a small investment as security on so large a property as the stock interest of the State.

DEPARTMENT OF MECHANICAL ENGINEERING.

A. THOMSON, PROFESSOR.

At the last session of the Legislature there was appropriated the sum of \$5,000.00 to build a building for the School of Engineering. From the cramped condition of the Departments of Mechanical and Civil Engineering, the building had to be so planned as to contain shops and recitation rooms for these two departments. A little consideration will show that this is a very small sum with which to put up a building which is to represent the great industries of the State of Iowa. It is entirely inadequate for the purpose of the school, and does not at all compare with the liberality of our neighbor States which have made appropriations for the same purpose. I therefore ask that the Board of Trustees urge the coming Legislature to appropriate the sum of \$12,000.00 to build additions to the part now erected by the above appropriation. If the State of Iowa is going to give her sons an industrial education, why not furnish buildings and facilities to give them the best in the land?

The following is an exposition of the course of study pursued during the past two years by the different classes:

In the Freshman Class in mechanical drawing the principles were taught in the class-room, each student being required to make forty drawings, beginning with lining, graining, line drawings in projection, shading, shadows, isometrical perspection, and perspective; making a progressive course from the simplest problems in projection to the most intricate in perspective.

The Freshman Class in the mechanical laboratory was the same as that in drawing. This class, owing to lack of room, had to be divided, giving only one half the time that should been spent at this work.

The work-shop practice consisted of all the operations found in modern shop practice, such as filing, fitting, chipping, and problems on the machine lathe, planer, shaper, drill, and many on the hand lathe. Owing to the cramped condition of the department many branches of instruction have to be omitted which would prove of great advantage to the school.

In the class-room workshop-tools and appliances were taken up and systematically discussed, each machine or tool described, and all the different operations and kinds of work that they were intended to do explained.

The Sophomore Class in principles of mechanism and cinematics take up in succession the following subjects: Transfer of reciprocating to circular motion, motion in a straight line, motion in any plane curve, motion in any curve not in the same plane; pairs of elements, trains of mechanism, rolling contact, sliding contact, wrapping, connectors, general principles of aggregate motion, combinations for producing aggregate velocities, adjustments, properties of friction, butting friction, twisting friction, friction wheels, coil friction, universal joints.

The Junior Class in analytical mechanics is taught by the use of Wood's Elements of Mechanics. In many of the subjects treated of in this work such as falling bodies, center of gravity, moment of inertia, attraction and repulsion of forces, the loaded cord, and many others, there is a free use of the differential and integral calculus, thereby giving that training of the mind and power of reasoning necessary to the solution of many physical problems, which often occur in proportioning structures to resist the strains that are to come upon them. In addition to the text, the different subjects are further elucidated by means of lectures and independent problems. In the study of the resistance of materials the calculus is again brought to our aid, in the discussion of such subjects as work of elongation, bar of uniform resistance, determination of the equation of the elastic curve, beams of uniform resistance, and angle of tension. From the results of many experiments are deduced the laws and coefficients of elasticity, modulus of strength, strength of columns, and practical formulæ.

Thus far the studies are preparatory to the study of mechanical engineering, which is mainly taught in the senior year, and embraces

a study of the prime movers, which include the steam engine, water-wheels, windmills, water engines, air engines, also the combustion of fuel, the efficiency of furnaces, principles of thermodynamics, efficiency of steam and other engines. In the junior and senior years the classes practice in the mechanical laboratory, also in the drafting room, where they make original designs for machinery and complete detailed drawings of the several parts.

REPORT OF THE DEPARTMENT OF CIVIL ENGINEERING.

C. F. MOUNT, PROFESSOR.

The object of this course of study is as far as possible, to fit the graduate for the immediate entrance upon the duties of a civil engineer. The scope of the instruction given here, although probably not as wide as in the purely engineering schools, is constantly being widened. The subjects now embraced are about as follows: Plane surveying, railroad surveying and construction, retaining walls, bridge engineering, foundations, specifications and contracts, masonry, sanitary engineering, mechanics, resistance of materials, etc., and a complete course in mathematics, embracing algebra, geometry, trigonometry, analytical geometry, descriptive geometry, calculus and analytical mechanics.

Plane surveying is taught by class work and by actual surveys. The latter embraces surveys of fields of various and complicated forms, the calculation of their contents and the platting to a scale, from the field notes. All plats must be neatly and accurately done upon a good quality of draughting paper.

Railroad surveying is taught in a similar manner, two afternoons per week, for about three fourths of the term, (second term sophomore year) being spent in field work. The field work consists in laying out general and special problems in simple, compound and reversed curves, such as occur in actual practice. This same subject is continued through the junior year, embracing in the first term the subjects of excavation and embankment, trestles, piling bridges, etc., supplemented by field work. In the second term (junior year) the survey of a limited line of road is undertaken and completed. Grades and curves are determined, after a preliminary survey has been made, grade stakes set, curves run in, excavation and embankment calculated, and the work placed in condition for the grading to

be done. A complete topographical map of the line is made and the profile platted.

The subject of bridges is studied during the entire senior year. The first term is devoted to the determining of stresses in the different members of the several types of trusses, and the second term to the study of foundations, connections, form of members, allowable stress per square inch in posts, chords, ties, wind-bracing, etc., wind pressure, effect of fatigue of metal, and such other topics as are related to bridges, culverts, abutments, piers, etc.

Bridges in the vicinity are examined critically and detail drawings of them made in order to familiarize the student with the methods of making connections. One or more original designs, with stresses, size of members, plan, elevations and detail drawings are required of each student.

Trips are taken to different parts of the country to examine the engineering works of importance, from an engineer's standpoint. The trip of the past year embraced Chicago, Cleveland, Buffalo, Niagara, Portage, New York City, Brooklyn, etc. The only object of such trips being to give the student ideas of how the best class of engineering works are constructed. Thanks are due the Lake Shore & Michigan Southern and the Erie railroad officials for favors shown the Department during this trip.

It is the intention of the Department to continue these trips to different points whenever possible, they being made during the summer vacation.

Sanitary Engineering is taught mainly by questions given the student, the answers to which he must learn from reading in the library and upon which he is examined at the close of the term. The other subjects taught in the second term senior year are given almost entirely by lectures.

In descriptive geometry and stereotomy about forty plates of drawings (twelve by eighteen inches) are prepared, each involving one or many of the problems in the text-book. In all subjects taught, the practical application of the principles taught is a leading feature, and we think should be in all technical education. Not only to know *how* a thing should be done but to be able *to do* that thing is what is wanted to-day.

The Department is fairly well equipped with instruments, draughting tables, etc., its present need being *more room*. We have three

transits (with latest improvements), two levels, compass, chains, steel tapes, pins, poles, cross-section rods, maps, drawings, and like material for instruction, but have not nearly enough room to use these articles to the best advantage. The engineering library contains many of the standard works on such subjects as bridges, railways, tunnels, sanitary engineering, water supply and surveying, and additions are being constantly made.

The Department is constantly growing in the number of students who enter, and it is the constant endeavor of the College to advance the course of study and make it more technical, in order that its graduates may take still higher positions upon graduation.

Paris - 1883

REPORT OF DEPARTMENT OF BOTANY.

REPORT FOR 1882.

C. E. BESSEY, PROFESSOR.

Gentlemen of the Board of Trustees:

I have the honor to present you my annual report as Professor of Botany.

CLASS WORK.

During the first term my classes included seventy-eight students, disposed as follows:

Sophomore class in Systematic Botany.....	52
Junior class in Vegetable Anatomy and Physiology.....	24
Junior students in Advanced Botany.....	2

These required twenty-one hours per week of actual attendance in the class-room or laboratory, or an average of four and one fifth hours per day. This does not include the time necessary for preparation for the work in the class-room, or the collection of material for the laboratory, which required from one to three hours per day.

During the second term my classes included one hundred and seventy-six students, disposed as follows:

Freshman class in Elementary Botany.....	113
Sophomore class in Vegetable Anatomy.....	30
Junior students in Advanced Botany.....	2
Junior class in Landscape Gardening.....	25
Junior class in Horticulture.....	6

These required twenty-three hours per week of class and laboratory work, being an average of four and three fifths hours (4 3-5) per day. During this term the work of preparation was considerably greater, requiring not less than from two to four hours per day.

In addition to the foregoing, during the month of August a teacher

from the High Schools of Indianapolis received instruction in advanced botany, spending the whole of each day in the laboratory.

The class and laboratory work was carried on during the greater part of the first term in the Horticultural Hall, Professor Budd having kindly offered his rooms for the purpose, after the tornado of April 8th. We were much cramped for room, but yet managed to get on very well. The very large Freshman class in Botany in the fall term; crowded the lecture room to its full capacity, warning us that if the number of students in the College should increase to any great extent, the question of rooms for classes will become a most serious one.

As to the nature of the instruction given in botany, I may say that it has been this past year, in nearly every particular, the same as that of the year 1881. Beginning with the simpler and easier parts of the subject, the student was led successively to the more and more difficult and complex portions, the aim throughout being to give rather a practical knowledge of plants and their manner of living, than to dwell upon the study of technical botany, which is of importance mainly to the systematic botanist, and of but little value to those who propose to follow the ordinary pursuits of life. The work in the laboratory supplements, as nothing else could, the classroom instruction, and I am happy to say that every year this work becomes more popular with the students, and, I think, more profitable, also.

APPARATUS.

As will be seen by an examination of the inventory taken the 13th inst. and filed with the Treasurer of the College, the total value of the property belonging to the Botanical Department is \$3,623.35. This is divided as follows:

Laboratory apparatus, i. e., microscopes, specimens, dissecting instruments, tables, cases, etc.....	\$ 1,616.85
Herbarium and Cabinet, i. e., botanical specimens, cases, etc.....	1,626.50
Lecture Room apparatus, i. e., chairs, charts, etc.....	380.00

Total.....\$ 3,623.35

The laboratory is again in good condition, the losses by the tornado (about \$300.00) having been nearly all made good by the appropriation made by you in May last. The new microscopes have done

good service, and have enabled much larger classes to be accommodated.

The lecture room has been made usable, and enough chairs have been added to the old stock so as to enable us to seat a class of over one hundred. The chairs are not yet fastened to the floor, and the room is therefore not as easily kept in order as it should be. Several curtains also are wanting, they having been destroyed in the storm.

The Herbarium room has not yet recovered from the tornado effects. The material was moved back into it, and temporarily arranged in the cases, but it has been impossible to secure the time necessary to a careful rearrangement of all the specimens. Considerable additions have been made to the collection, among which may be mentioned the following: Two hundred and fifty Southern plants, five hundred Utah and California plants, one thousand English plants, fifteen hundred German plants, besides other small lots aggregating about two hundred or three hundred more, making in all a grand total of additions of about thirty-five hundred specimens.

During the last month I have been engaged, with the help of Mr. J. C. Arthur, in an attempt to put in order that part of the collection which contains the parasitic fungi, the lichens, mosses, etc., and have succeeded in doing so quite satisfactorily. When this work of arrangement is completed, this College will possess one of the best collections of plants for study in the country. It already furnishes far better facilities to the student and specialist for obtaining a knowledge of the vegetable kingdom than is offered by most other herbaria in the west. The additions made this year have been particularly valuable in furnishing plants of economic value in horticulture, agriculture, and medicine.

REPORT FOR 1883.

C. E. BESSEY, PROFESSOR.

Gentlemen of the Board:

I have the honor of submitting herewith my report, as Professor of Botany, for the school year just closed.

CLASS WORK.

During the first term the following classes were taught:

Junior Class in Vegetable Anatomy and Physiology	29
Sophomore Class in Systematic Botany	79
Special Students	2
Students in "extra" work	3
Making a total of.....	113

The actual time in class work required by these students was twenty-one hours per week, an average of four and one-fifth hours per day.

In addition to this actual class work, several hours a week were necessary for preparation of specimens for the laboratory work.

During the second term, classes were instructed as follows:

Sophomore Class in Vegetable Anatomy	33
Freshman Class in Elementary Botany	110
Special Students	2
Students in "extra" work	4
Senior Engineers	3
Landscape Gardening	16
Making a total of.....	168

The actual time in class work required by these students was seventeen hours per week, being an average of three and two-fifths hours per day,

The work of preparation for the laboratory, and the courses of lectures to the Freshmen and the Senior Engineers, was consider-

ably greater than in the first term, taking, on an average, at least four hours per week.

Two teachers — one from Indiana and one from Minnesota — spent some time in the laboratory in June and July. I have no doubt that, if it were desirable to do so, we could easily bring together here every year a class of ten or a dozen high school teachers, who would be glad to avail themselves of the facilities offered by the Department. At present, I hardly feel like taking upon myself the considerable extra work which such a class would require; but in a few years I think it may be well for us to make some provision for the many teachers who are seeking to fit themselves for better botanical work in the schools. This is all the more desirable because it has been our aim here to make Botany a study of *living plants*, rather than a study of mere classification. If we can, by throwing open our laboratories for a few weeks each year, do somewhat in aid of those teachers who wish to acquaint themselves more fully with the modern methods of study, we can hardly refuse to do so.

The methods of instruction have not differed materially from those used in previous years. The aim throughout the course is to so arrange the work that the student shall, as far as possible, observe for himself. He is sent to the plants, and told to study *them*, rather than to books to be coned. Of course, books must be used, but they are rather *guides* than the objects of study.

The Freshmen begin the study of collecting their own specimens of leaves, twigs, flowers, seeds, roots, etc., and after careful examination making drawings, and writing out descriptions. After a considerable drill in this work, they are given a course of lectures covering in non-technical English the main facts as to the structure, mode of life, and manner of reproduction, of plants in the several great divisions of the vegetable kingdom. I consider this one of the most important terms of the students' work in botany, for in it he is led to examine plants for himself, and thus to lay the foundation for a practical acquaintance with the plants with which he may come in contact. One of the most difficult, and yet most desirable, things to be accomplished is to convince the student that science is a direct study of *things themselves*, and that that study is possible at all times and in all places, not being confined to the class room and laboratory, or to any particular locality or season. If we can succeed in instilling into the mind of the student this one great lesson, the way is then

clear for his securing a scientific education; but so long as he supposes science to reside in books alone, he has not yet laid a solid foundation for sound scientific culture.

The Sophomores spend a term in what is generally called systematic botany. They principally learn to identify plants by the use of the ordinary botanical manuals; at the same time preparing good herbarium specimens, neatly mounted, arranged and labeled. While the work is doubtless a profitable one, and while I am assured by the students themselves that they regard the time as well spent, yet I cannot help feeling that we must soon substitute in its place some structural or physiological study of plants. This, however, will require more room and apparatus than we can now command. I should greatly like to see the time when every student, especially in the Agricultural and Horticultural courses, can take up a line of careful experiments upon the way plants get food; how they grow and develop, from the germination of the seed to the formation of the fruit again. Such studies, I am certain, would be of far greater value to the young people of the State than that which merely results in a facility in the use of botanical manuals, and a storing of the mind with technical names of plants. We must before long take up this line of work, and it is clearly our duty to make provision for it at as early a date as possible.

The Sophomores in the second term begin the particular study of the minute structure of plants. They do this in the microscopical laboratory, and, by making their own specimens and doing all the work themselves, acquire a considerable degree of expertness in the use of the microscope in investigation. The work is continued for a term in the Junior year, leading finally to an examination of typical forms of the lower plants. Thus the student is made familiar with the general structure of the parasitic and other fungi, which are of such interest to the farmer and gardener, and lays a broad foundation for an extended and more particular study, should he desire to pursue the subject further.

APPARATUS.

The inventory of apparatus shows an aggregate value of \$3,883.75, divided as follows:

Lecture Room Apparatus.....	\$ 380.00
Laboratory Apparatus.....	1,667.75
Herbarium and other specimens.....	1,836.00

The additions to the laboratory apparatus consisted mainly of scalpels, forceps, slides, cover glasses and working materials for daily use.

In the herbarium, some money was expended for labels, paper, and a few reference books. About forty dollars were expended in the labor of mounting and arranging specimens on hand. The greater part of the expenditures, however, was in the purchase of specimens, which have made valuable additions to the herbarium. These additions were as follows:

Specimens of Fungi (Ravenel)	200 species.
Specimens of Fungi (Jones).....	90 species.
Specimens of Iowa Fungi, about.....	200 species.
Specimens of European Liverworts.....	660 species.
Specimens of California Ferns.....	100 species.
Specimens of Florida plants (Curtiss).....	220 species.
Specimens from various sources, about.....	150 species.
Total additions for the year.....	1,620 species.

In addition to the foregoing, I may mention that during the year I have mounted and made available for study in the herbarium, a set of North American Mosses, belonging to me, and numbering four hundred and fifty species, so that we may consider that the collection has been enriched by an aggregate of very nearly two thousand species.

I have devoted as much time as I have been able to spare from other duties to the work of arranging the general herbarium, and of mounting specimens, classifying, labeling, etc. I propose to continue this next year, and hope to be able to mount a large part of the material now on hand, amounting to a good many thousand species.

OTHER WORK.

In addition to the regular work connected with the Department, there is an increasing amount of labor which does not strictly fall within the list of official duties, and yet which, when well done, will bring credit to the Department as well as to the College itself. I have, therefore, thought it best to do as much of such work as might be consistent with a proper discharge of my other duties.

The following enumeration will give you an idea of the nature of this work.

In January and February, a course of lectures in Peabody Hall, Salem, Mass., upon "Some Problems in Vegetable Physiology."

In January, a paper upon "Parasitic and Other Fungi," presented to the State Horticultural Society.

In August, a course of lectures before the Mahtomedi Assembly, St. Paul, Minnesota, upon "The Common Plants of Land and Water."

In August, took part in the American Forestry Congress held in St. Paul, Minnesota.

In August, took part in the meeting of the "Society for the Promotion of Scientific Agriculture," held at Minneapolis, Minnesota, and read a paper upon "Grain Rust." This paper will be published in the proceedings of the society.

In August, took part in the meetings of the American Association for the Advancement of Science, at Minneapolis, Minnesota.

During the year I have contributed occasional articles to the agricultural departments of the *New York Tribune*, *Iowa State Register*, and *Iowa Homestead*, and have, as associate editor, of the *American Naturalist*, conducted the botanical department of that journal.

A good many botanical inquiries come to the Department, which often require a considerable investigation before proper answers can be returned. All such inquiries have been attended to as promptly as possible.

EXPENDITURES.

There has been expended during the year the sum of \$254.26. The detailed account of items will be found in the Treasurer's books.

ESTIMATES FOR THE COMING YEAR.

For the laboratory apparatus needed, and for the purchase of paper, labels, and other material for the herbarium, and the payments upon sets of plants for additions to the collections, I estimate that it will require from \$250.00 to \$300.00. For a new case for the microscopes in the laboratory, \$35.00. For a suitable office table, \$30.00 to \$40.00.

ZOOLOGY AND ENTOMOLOGY.

H. OSBORN.

This course begins in the second term of the Freshman year with the study of elementary zoology. No text book is used, but the students familiarize themselves with the principle features of animal structure, habits, etc., by examinations of the animals themselves, and making descriptions and drawings. In this they follow a prescribed plan of work, and in class their observations are brought up for discussion and criticism. This work is supplemented by a course of lectures, which aims to systematize the observations made by the students, and give an outline of the structure and relations of members of the principal groups of the animal kingdom.

In the first term of the Sophomore year the subject of entomology is given especial attention. The course consists of a careful examination of the different groups of insects, including lectures and discussions upon those which are injurious or beneficial. Entozoan parasites of domestic animals are also here considered, and throughout the course the discussion of remedies or checks for injurious species is a prominent feature, in which the students are encouraged to present their own views and experience.

Beside the class-room work, each student collects and identifies a certain number of insects in order to become more familiar with their external structure and to acquire the methods of classification.

In the second term of the Sophomore year the regular students in the general course begin the special study of zoology, and Packard's "Zoology" is followed as a basis for the class-room work. In the laboratory Brook's "Handbook of Invertebrate Zoology" is used as a guide, the student beginning with the lowest fresh water forms, (*Amœbæ*) and examining, by the aid of the microscope, or by means of dissection, typical forms of each of the prominent groups. Owing

to our distance from the sea, certain groups have necessarily been neglected, and substitutions of inland forms made where possible, but arrangements are now being made by which it is expected that laboratory material of marine forms will be supplied so that while we cannot have all the advantages of a seaside laboratory, with living specimens, we can, by the use of fresh dissecting material, greatly lessen our ignorance of such groups.

During the first term of the Junior year the student takes up in the laboratory the dissection and study of typical forms of vertebrates, the laboratory manuals of Huxley and Martin, Martin and Moale, and Wilder and Gage being used as guides.

The students in the course of agriculture continue, in the second term of the Sophomore year, the subject of entomology, having a course of three lectures per week, devoted especially to the insects of the farm, orchard and garden, and combined with field observations on life histories and habits of injurious species, with a study of the means of preventing or checking their injuries.

The students in the engineering course receive, during the second term of the Senior year, a course of lectures upon the insects which are of importance in consequence of their attacks upon wood and wooden structures of various kinds, especially bridges.

The laboratory apparatus, the museum collections, and the books to which students have access, furnish facilities for very thorough work in these branches, and all possible assistance will be rendered to students who may wish to pursue any special line of research. During the past summer three young ladies, two from Indiana, teachers in city schools, availed themselves of opportunities offered by the Department, during their summer vacations.

Darwin's "Origin of Species" and "Plants and Animals under Domestication," Clark's "Mind in Nature," Packard's "Life Histories of Animals," Van der Hoeven's "Handbook of Zoology," Harris' "Insects Injurious to Vegetation," Packard's "Guide to the Study of Insects," the Entomological Reports of Fitch, Riley, Le Baron, Thomas, Lintner and Forbes, Saunders' "Insects Injurious to Fruits," the "Proceedings and Transactions of the American Entomological Society," and the various monographs issued by the Smithsonian Institution and the Government Departments, besides many other works of importance, are available to students either in the College library or the library of the professor, and are in constant use.

During the past year I have devoted such time as I could spare from regular duties to the study of injurious insects. Early in the season my attention was occupied by the numerous insects infesting the ash trees, and my observations upon these I hope soon to be able to publish.

Considerable time was spent in the examination of the minute mites (*Phytoptidæ*) which produce wart galls and other deformations upon leaves and twigs of trees, and a paper upon the subject presented to the American Association for the Advancement of Science. A paper containing the practical bearings of this subject I intend to publish in form for general distribution. Late in August I observed an epidemic disease among our native grasshoppers, and a paper detailing my observations, with some remarks on the possible utilization of the parasite causing it to destroy these pests, was presented to the Iowa Academy of Sciences. I have been collecting, as fully as possible, the parasites of birds and mammals, and hope to devote considerable time to a thorough study of these important pests, which are so largely neglected in this country. Late in the fall I had the pleasure of making some experiments upon the introduction of a cabbage worm disease of a contagious character, the material for which was kindly furnished me by Professor Forbes, the State Entomologist of Illinois.

The correspondence of the Department, as in years previous, has been quite extensive. Many of the letters received have demanded considerable time and study for reply. I have deemed it proper and important to give careful attention to all such inquiries, and trust that the information thus distributed has been of some use in the localities where it has been sent. When of public interest, these replies have been published in some of the State papers.

The zoological museum occupies a large room on the third floor of the main college building. It includes mounted specimens of a few mammals, several hundred mounted birds representing the avian fauna of the State; a large collection of reptiles, mostly in alcohol; a few native fishes, and a collection of Pacific coast fishes furnished by the United States Fish Commission; a large collection of native insects, embracing series representing the life histories of many injurious species, many of the rare insects of our own State and a few specimens from other States and the old world; small collections of mollusks, crustaceans, worms and other native inverte-

brates, and a small but typical collection of marine invertebrates with a series of glass models of delicate forms. A set of the "Ward Models," illustrating the principal larger fossils, is of service both in zoology and geology. Collections of nests and eggs of birds, brains, skulls and skeletons of vertebrates are in process of formation.

The additions to the museum, by donation, during the past year, are as follows:

Albino chipmunk, <i>Tamias striatus</i>	A. C. Diller, Marshalltown, Iowa.
Skull of cat.....	W. P. Dickey, student.
Crab from oyster shell.....	Prof. F. E. L. Beal, Ames, Iowa.
Spade cat-fish, <i>Polyodon folium</i>	E. G. Tyler, Logan, Iowa.
Portion of Emmet county meteorite.....	University of Minnesota.
Grape Phylloxera, from Germany.....	President A. S. Welch.
Head of pickerel, <i>Esox lucius</i>	Prof. Beal.
Collection of marine animals from Pacific coast, including young shark, devil-fish, crabs, sea urchins, sand cakes, and a number of others.....	Geo. Schrader, Los Angeles, Cal.
Collection of California insects.....	Geo. Schrader, Los Angeles, Cal.
Two tarantulas, <i>Mygale Hentzii</i>	Geo. Schrader, Los Angeles, Cal.
Horned Toad, <i>Phrynosoma, sp.</i> , from New Mexico.....	President Welch.
Bat, <i>Vespertilio subulatus</i>	A. U. Quint, student.
Weasel, <i>Putorius ermineus</i>	Messrs. Gill and Daugherty, students.
Turtle, <i>Emys meleagris</i>	C. J. Zenor, student.
Leeches, old with young of different sizes.....	C. J. Zenor, student.
Bat, <i>Atalapha noveboracensis</i>	Ira Coy, student.
Petrified Wood.....	J. E. Daugherty, Villisca, Iowa.

A considerable number of specimens have been added to the insect collections as a result of my own field work, and in connection with observations upon their life histories and habits. A number of interesting species were collected at Minneapolis and Lake Minnetonka, while attending the American Association, and a few specimens have been obtained by exchange with entomologists in other States and in Europe.

The Department is much in need of room, and will be seriously retarded in its growth unless this can be secured. The museum is over-crowded, and valuable material is of necessity packed away where it cannot be examined by visitors and is not readily available for students. The lecture room is much too small to accommodate classes. It has been necessary to divide the class in zoology, thus requiring double work, which is both inconvenient and a waste of time. The laboratory occupies a portion of the lecture room, which

at times seriously interferes with the work in progress, and, finally, the position of the rooms is such that they are difficult of access to both students and visitors, particularly so for the lady students.

A building devoted to the Department, containing rooms sufficient for the proper distribution of the various collections; a lecture room, laboratory, and smaller rooms for carrying on experiments, office work, etc., would very greatly facilitate the work of the Department and enable it to meet the constantly increasing demand for better means of studying the animals of our State.

The urgent need of more accurate knowledge concerning the relations of many of our birds, insects and other animals, is acknowledged by all intelligent observers, and many of these problems can be worked out only by means of the best appliances for investigation, coupled with specific and long continued observations in field, breeding room and laboratory.

DEPARTMENT OF PHYSICS.

J. K. MACOMBER, PROFESSOR.

To the Honorable Board of Trustees:

GENTLEMEN: I herewith present my report on the Department of Physics, for the year 1883.

It gives me pleasure to say that, since my connection with the College as a teacher, the facilities and opportunities for the pursuit of the study of Physics have improved every year. In 1873 the physical cabinet comprised about fifteen hundred dollars' worth of apparatus, occupying a few shelves in the basement of the old Chemical Laboratory. At the present time we have about six thousand dollars' worth of the best and most improved apparatus to be had in this country and Europe, so that few laboratories in the west offer students the inducements and opportunities for investigation that this one does.

I find it my duty to call the special attention of the Board to the fact that our Physical Cabinet has outgrown the capacity of the shelves furnished to preserve it. In many of the cases the shelves are so crowded with apparatus that it can hardly be taken down for use without danger of breaking. If the apparatus were distributed over fifty per cent more room, it would be safer, and also would make a much better appearance. This subject was mentioned in my report of last year, and I earnestly hope that the matter will receive the attention of the Board very soon. The course of study pursued in this Department is fully given in the annual catalogue, and to that I would respectfully refer your honorable body for information on that subject.

I would earnestly recommend that an appropriation of two hundred and fifty dollars be appropriated for the year 1884. I will here say that the appropriation of the present year was mainly devoted

to purchasing some much needed apparatus upon the subject of sound.

Appended to this I present a tolerably complete summary of the meteorological observations, taken under my supervision since the year 1875. I have also appended tables on the mean temperature and average rainfall at several other places, for the purposes of comparison.

Very respectfully submitted,

J. K. MACOMBER,

Professor of Physics.

REPORT ON METEOROLOGY.

BY J. K. MACOMBER, PROFESSOR OF PHYSICS.

Summary of the work on Meteorology at the Iowa State Agricultural College, at Ames, Iowa, from 1876-1883, inclusive. Latitude 42° north, longitude $93^{\circ} 38'$ west of Greenwich. Height above the sea, 1,000 feet.

The meteorological work was commenced in 1875, but, as the records for that year are incomplete, it was thought best to give only the records from 1876.

In table number one will be found the mean monthly and mean annual temperature for seven years. The mean of the seven years gives the annual temperature of the place as $48^{\circ}.12$. The lowest was in 1876, $46^{\circ}.4$, and the highest in 1878, $49^{\circ}.7$.

In table number two will be found the mean temperature of the seasons.

In table number three is to be found the highest and lowest temperatures for the different months. The highest in the seven years was July, 1878, and June, 1882, when the temperature was 98° . The lowest was in January, 1879, when it was 30° below zero.

Table number four shows the time when the earliest frosts were noticed.

Table number six gives the mean monthly and mean annual rainfall. The mean annual rainfall for the seven years is 35.22 inches. All snow is melted and measured as rain. The heaviest rainfall of any year was in 1881, when it was 51.92 inches. The least fell in 1880, 29.5 inches. The greatest in any month was in July, 1881, 16.31 inches, and the largest amount in twenty-four hours was on the night of July 10, 1881, when 5.35 inches fell.

Table number six gives the rainfall for the seasons. The average

for summer is 16.02 inches; autumn, 8.55 inches; spring, 8.02 inches, and winter, 2.42 inches.

Table number seven gives the mean humidity from April to October.

Following the records taken at this place, I have appended a summary of the records from Davenport, Scott county, Iowa; Tabor, Fremont county, Iowa; Grinnell, Poweshiek county, and a record of the rainfall at Sioux City, for eleven years.

I am under obligations to Dr. J. F. Sanborn for the report from Tabor. The records from Davenport were sent me by Messrs. W. H. Pratt and B. F. Tillinghast, and were taken by the United States Signal Service observer, Lieutenant Robert Martin. The observations from Grinnell were taken by Messrs. W. H. Brainerd and E. G. Worden, students in Iowa College. The Hon. George H. Wright, of Sioux City, has furnished me with the records from that place. I wish to express my obligations to all these gentlemen for the favors at their hands.

TORNADOES AND CYCLONES.

An account of the meteorology of Story county for the past eight years would be very incomplete without a brief notice of the tornadoes which have swept over it.

On April 8, 1882, at six o'clock and fourteen minutes, by Chicago time, a small tornado passed through the grounds of the College. Its direction was due north, and it was traced from a point about ten miles south of here over a path about twelve miles long. It entirely destroyed the house of Mr. Keltner, about two miles south of the College. Mr. W. McCarthy's house, three fourths of a mile south of the College, was also completely destroyed and the occupants somewhat injured. On the College farm a large amount of damage was done. A portion of the brick wall of South Hall was bulged outward by the pressure of the wind inside the house caused by a door blowing open. The south tower of the main building was seriously damaged. North Hall had both gable ends blown in above the first floor, and all the roof carried away except a small portion in the center. Many trees and smaller buildings about the campus were damaged. No people were killed, although for a time it was thought that several were seriously injured.

This was a genuine tornado or whirlwind, the direction of rotation being from right to left, or opposite that of the hands of a watch.

Its velocity in a direction from south to north was twenty-four miles per hour. Calculations made from various data show that the velocity of the wind in its rotary motion was from one hundred to one hundred and fifty miles per hour.

THE TORNADO OF APRIL 17, 1882, COMMONLY KNOWN AS THE "GRINNELL TORNADO."

On June 17, 1882, a terrible tornado swept over the western portion of Boone county, through Story county, and thence in a southeasterly direction to Mt. Pleasant in this State. It was first seen in this county about four miles south of the College, and had the appearance of a long, slender column reaching from the clouds to the earth. The column was nearly a mile long, and perhaps four hundred feet in diameter. In passing through this township it broke into two distinct tonadoes, which moved nearly parallel about two miles apart, and then united after crossing the Skunk river. Probably ten thousand dollars would not pay the damage done in this county alone.

I shall only give a brief summary of the important peculiarities and facts of this tornado.

First—Its general direction was from northwest to southeast.

Second—The wind rotated from right to left, or, in the opposite direction of the hands of a watch.

Third—The cloud moved over the State at the rate of about forty-six miles per hour.

Fourth—The velocity of the wind in the tornado was from two hundred to three hundred and fifty miles per hour.

Fifth—At times the tornado resembled a funnel with the little end down; then a long serpent, and then at other times it resembled two cones with their bases on the ground and in the clouds meeting in mid-air.

Sixth—The width of the tornado varied at different times from two hundred to one thousand feet.

Seventh—It frequently rose from the ground and drew into the clouds, and after passing some distance the funnel would let down again and commence its work of destruction.

Eighth—This tornado swept through the town of Grinnell in Poweshiek county, and killed and injured a large number of people. It is probable that not less than half a million dollars worth of damage was done in its course through Iowa.

TABLE No. I.

Table showing the mean annual temperatures, and also the mean monthly temperatures, from 1876-1883. Annual mean temperature for seven years, 48.12°.

MONTH.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.
January	15.8	12.	24.7	13.6	32.1	8.5	22.4	2.7
February	29.9	32.9	33.	21.3	30.1	16.2	32.1	13.8
March	28.7	26.3	45.3	36.6	34.2	26.5	35.	29.3
April	48.4	48.1	52.5	50.1	46.	42.7	49.9	51.
May	61.4	61.4	56.5	63.1	68.7	68.5	54.4	55.3
June	72.1	67.8	67.8	70.2	73.	72.3	69.4	68.31
July	74.8	74.6	77.8	78.3	76.6	78.6	72.1	76.2
August	74.	71.5	74.9	72.3	74.6	77.1	73.2	69.6
September	60.6	63.9	62.3	59.6	60.9	65.6	64.7	50.1
October	46.4	48.7	47.9	60.2	47.	52.7	54.1	* 44.1
November	29.3	31.4	37.4	33.6	24.1	33.3	35.7	
December	11.1	35.8	16.2	16.4	15.4	31.3	18.8	
Means	46.4	47.8	49.7	48.8	48.4	47.7	48.4	

*The observations for 1883 not completed at the time of publication.

TABLE No. II.

Table showing the mean temperature of the seasons from 1876-1873.

In getting the mean temperatures of each winter the mean temperature of December of the previous year is included.

	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	Means
Winter	24.3	18.6	31.1	17.	26.2	14.6	28.6	11.7	21.5
Spring	46.1	45.2	51.4	49.9	49.6	45.9	46.4	45.2	47.
Summer	73.6	71.3	73.5	73.6	74.7	76.	71.5	71.3	73.2
Autumn	45.4	48.	49.2	51.1	44.	50.5	51.5	*	48.5

*Not completed at time of publication.

Table showing the maximum and minimum temperatures observed for the years 1876-1883. Observations taken at 7 A. M. and 1 P. M.

TABLE No. III.

YEARS.	JAN.		FEB.		MAR.		APR.		MAY.		JUNE.		JULY.		AUG.		SEPT.		OCT.		NOV.		DEC.		EXTREMES.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1876.	47	12.59	10.48	-10.61	25.87	31.92	39.93	54.93	46.85	35.76	14.63	7.54	93	-24												
1877.	56	19.61	5.70	-6.76	17.84	37.87	52.92	54.86	51.89	41.76	28.62	-1.64	9	-19												
1878.	56	6.59	7.70	23.78	33.81	33.87	50.98	63.94	54.94	35.81	15.68	16.45	98	-15												
1879.	43	30.44	14.76	-1.83	17.85	41.86	46.94	58.93	53.83	30.85	18.75	7.55	23	-30												
1880.	57	3.68	4.64	0.81	25.87	51.87	56.91	54.91	53.83	37.75	19.62	5.41	91	-18												
1881.	35	25.40	16.42	1.76	10.84	41.89	54.90	64.95	62.90	42.72	26.56	8.53	6	-25												
1882.	43	9.55	-6.59	9.47	33.74	35.98	48.85	59.83	53.90	38.79	31.62	13.51	98	-19												
1883.	36	21.39	23.55	2.86	30.73	36.82	51.92	56.86	55.85	36.80	25	92	-23													

The sign minus (-) means below zero.

TABLE No. IV.

Table showing the dates when the earliest and latest frosts occurred for seven years.

YEAR.	April.	May.	June.	July.	August.	Sept.	Oct.
1876.....	25th					27th	1st
1877.....	29th					18th	4th
1878.....		12th				11th	4th
1879.....	17th	6th				14th	19th
1880.....	19th					8th	4th
1881.....	15th					28th	18th
1882.....							
1883.....		31st				9th	

TABLE No. V.

Table showing the monthly and mean annual rainfall for the years 1876-1883. The mean annual precipitation in inches for seven years is 35.22 inches. Snow is melted and measured as water.

MONTH.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.
January.....	2.45	0.40	0.00	0.43	1.25	0.68	0.57	1.24
February.....	0.40	0.00	0.05	1.08	0.05	2.50	1.14	1.39
March.....	2.35	1.41	4.09	0.78	0.35	0.94	3.09	0.32
April.....	1.50	1.96	3.39	1.27	2.66	2.37	2.44	3.55
May.....	4.22	4.43	4.35	4.46	3.06	2.36	5.21	7.11
June.....	4.28	7.94	7.58	4.65	2.37	6.70	7.43	3.52
July.....	6.50	3.60	5.33	0.48	4.18	16.31	2.66	6.30
August.....	8.29	6.48	1.95	3.98	6.02	3.25	2.15	2.92
September.....	5.14	0.90	3.00	2.65	6.34	7.63	0.51	1.67
October.....	0.75	3.14	1.38	3.34	1.18	6.24	3.74	2.80
November.....	1.72	0.69	0.35	5.75	1.20	2.07	2.17	*
December.....	0.02	2.05	0.83	1.22	0.84	0.89	0.98	.....
Totals.....	37.62	33.	32.30	30.09	29.50	51.94	32.09	30.82

*Observations for 1883 not complete when published.

The heaviest rainfall in eight years was in 1881, when it amounted to 51.94 inches. The least was in 1880, 29.5 inches.

The largest amount in one month was in July, 1881, 16.31 inches.

TABLE No. VI.

Table showing the amount of rainfall, in inches, for the seasons from 1876-1882.

	1876.	1877.	1878.	1879.	1880.	1881.	1882.	MEANS.
Winter.....	4.	0.42	2.10	2.34	2.52	3.02	2.60	2.42
Spring.....	8.07	7.80	11.83	6.51	6.07	5.67	10.74	8.08
Summer.....	19.07	18.02	14.86	9.11	12.57	26.26	12.24	16.02
Autumn.....	7.61	4.73	4.73	11.74	8.72	15.94	6.42	8.55

The greatest rainfall occurs in summer, and the least in winter. In spring the amount is about the same as in autumn.

TABLE No. VII.

Table showing the mean daily humidity for the months of April to October, from 1877-1883.

These observations are not taken during freezing weather.

	April.	May.	June.	July.	August.	Sept.	October.	Means.
1877.....	70.6	71.1	73.8	70.	73.8	75.1	82.7	73.8
1878.....	69.7	71.8	74.8	74.8	77.7	77.	70.4	73.7
1879.....	61.9	67.9	73.3	70.2	71.9	71.2	72.1	69.7
1880.....	60.	66.2	66.2	.....	71.5	69.5	67.4	.....
1881.....	.....	61.7	70.	67.2	67.8	71.5	79.2	69.8
1882.....	67.1	67.	70.3	70.6	80.3	81.9	91.1	75.4
1883.....	.....	81.	82.7	76.2	84.2	78.	88.	81.6

Observations taken at Tabor, Fremont county, Iowa, by Dr. J. F. Sanborn, for four and one half years. Latitude, 40°, 50'; longitude, 95°, 40'. Height above the sea, 1,200 feet.

The first column of figures gives the mean height of the barometer for the month, corrected for temperature only. Then follows the mean temperature for the month; the mean wind velocity for the month; the per cent of cloudiness, on a scale of 10; the total rainfall for each month; the number of rainy days, and of days when snow fell.

1876.

MONTHS.	Barometer, mean.	Thermometer mean	Wind velocity, mean.	Cloudiness.	Total rain fall.	No. of rain days.	No. of snow days.
January	29.096	25	17.14	1.233	.31	2	2
February	29.081	27	10.19	1.611	.57	5	3
March	29.096	26	7.84	1.766	4.08	9	7
April	29.050	55	15.00	1.716	2.73	11	3
May	29.050	65	11.16	1.650	2.76	6	...
June	29.061	69	8.50	1.933	4.79	11	...
July	29.110	78	8.30	1.233	5.14	10	...
August	29.150	77	8.73	.583	5.03	5	...
September	29.216	61	8.60	2.083	5.60	10	...
October	29.052	46	8.86	1.833	.80	4	...
November	29.068	30	15.60	2.413	1.58	4	3
December	29.154	13	13.50	1.830	.07	2	4
Mean for year	29.096	48°-1477	10.29	1.657	33.46	76	22

1877.

MONTHS.	Barometer corrected for temperature.	Mean temperature.	Mean wind velocity.	Cloudiness.	Total rainfall.	No. rainy days.	No. snowy days.
January	29.014	14.5	9.06	2.1-6	1.28	3	4
February	29.016	31.19	12.38	1.25-28	.45	3	4
March	29.043	30.9-31	16.	2.2-31	1.47	3	4
April	29.038	53.25	23.9	2.7-30	5.75	4	4
May	29.136	59.13-31	10.5	2.24-31	6.43	17	...
June	29.092	66.	8.75	1.8-15	7.59	6	...
July	28.929	74.15-22	7.71	1.	1.59	4	...
August	28.982	70.7	3.7	1.1-7	14.03	9	...
September	29.009	63.5	6.3	1.1-12	2.30	3	...
October	28.999	48.33	7.1-7	1.5-8	8.08	6	...
November	29.054	32.5	13.41-90	2.5	1.14	4	1
December	29.029	40.16	10.75-186	2.9	1.61	4	1
Means and totals	29.028	45.40	10.8-11	1.194-365	51.73	69	16

January 16, coldest day for two years.
 February 20, robins first seen.
 March 31, high wind, fifty-six miles per hour.
 April 1, high wind, sixty-three miles per hour.
 May, wet month after the 10th.
 June 21, grasshoppers left.
 August, from 25 to 28, 10.35 inches rain.
 October 2, wild geese first seen.
 November 15, earthquake at 11:45 A. M.
 December—Cloudy, warm, damp month.

1878.

MONTHS.	Mean barometer.	Mean thermometer.	Hourly velocity of wind.	Cloudiness.	Precipitation in inches.	No. of rain days.	No. of snow days.
January	29.116	25.28	13.50	2.27	1.56	2	2
February	28.996	32.32	14.33	2.35	.16	3	1
March	28.682	44.25	14.33	2.	2.74	1	2
April	28.791	53.00	13.66	1.80	2.85	9	...
May	28.994	57.06	11.66	2.29	7.88	12	...
June	28.983	66.50	6.33	1.25	8.08	11	...
July	28.991	75.50	6.08	1.45	10.46	9	...
August	28.984	79.18	5.60	.79	1.07	5	...
September	28.999	62.60	9.68	1.11	2.81	5	...
October	28.987	49.80	13.20	1.39	.62	5	...
November	29.050	40.00	14.83	1.35	.43	3	...
December	29.161	18.50	9.18	2.61	.08	4	9
Means and totals	28.977	46.18	11.03	1.55	39.74	69	20

1879.

January	29.084	17.	9.90	1.92	.19	2	2
February	29.087	24.5	19.50	1.51	1.00	4	9
March	29.087	38.	13.00	2.08	1.03	4	5
April	29.069	49.	12.10	1.66	2.28	6	...
May	28.929	66.6	14.25	2.16	3.97	9	...
June	28.784	69.3	11.17	1.63	5.86	6	...
July	28.979	75.1	7.43	1.88	3.08	6	...
August	28.958	70.4	6.59	1.31	1.02	4	...
September	29.064	59.7	10.38	1.36	3.42	7	...
October	29.207	56.4	9.45	1.17	5.07	4	...
November	29.059	34.9	10.69	1.85	5.32	7	...
December	29.011	15.2	10.62	2.43	1.55	6	5
Means and totals	28.943	48.2	11.25	1.75	34.19	49	21

1880.

MONTH.	Mean barometer.	Mean thermometer.	Hourly velocity of wind.	Cloudiness.	Precipitation in inches.	No. of rain days.	No. of snow days.
January	28.975	31.70	9.47	...	8.45	...	...
February	29.092	27.33	14.24	...	.10	...	...
March	29.018	33.00	13.66	...	11.15	...	...
April	28.935	49.33	17.50	...	.74	...	...
May	28.995	70.00	12.63	...	6.04	...	...
June	28.915	69.80	7.82	...	2.06	...	...

SUMMARY OF RESULTS FOR FOUR AND ONE HALF YEARS AT TAVOR, IOWA.

YEAR.	Barometer corrected for temperature.	Mean temperature.	Wind velocity.	Cloudiness.	Total rainfall.	No. rainy days.	No. days snow fell.
1880.....	28.990	46.86	12.55	.....	28.54	.....	.....
1876.....	29.096	48.147	10.29	1.657	33.46	76	22
1877.....	29.028	45.40	10.72	1.531	51.73	69	16
1878.....	28.977	46.18	11.03	1.550	39.74	69	20
1879.....	28.943	48.20	11.25	1.750	34.19	49	21
Totals and means	29.006	46.957	12.4+	1.622	39.48	58+	20-

TABLE No. I.

Table showing the amount of rain and melted snow, in inches, for each month and year from 1872-1882, inclusive, at Davenport, Iowa.

YEAR.	January.	Februa'y.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Total for year.
1872.....	0.13	0.10	1.82	5.06	4.46	3.78	3.80	8.91	5.30	0.61	1.86	0.61	36.44
1873.....	3.56	0.77	1.43	3.96	6.37	2.16	2.37	0.51	1.00	1.48	0.63	3.84	28.08
1874.....	4.34	0.74	1.34	2.64	3.45	5.37	3.10	3.68	7.86	1.30	2.47	0.50	36.79
1875.....	0.38	1.09	0.88	2.30	2.01	4.91	9.36	1.73	4.05	1.63	0.57	3.08	31.99
1876.....	3.47	3.63	4.35	5.39	6.70	4.25	4.82	4.27	5.50	1.54	2.54	0.36	46.82
1877.....	1.41	0.07	3.91	3.28	2.82	5.80	3.42	3.21	1.45	4.88	2.53	2.32	35.10
1878.....	0.36	1.09	2.21	2.89	5.14	4.36	2.19	5.07	1.82	4.21	0.90	0.92	31.21
1879.....	0.79	1.09	1.80	1.54	5.83	4.57	5.87	4.33	1.43	0.92	4.70	1.02	33.89
1880.....	3.13	1.72	2.68	4.50	5.09	7.21	4.31	5.90	4.87	0.94	1.23	1.15	42.73
1881.....	1.34	4.14	3.33	1.11	1.34	7.94	0.91	0.83	5.59	6.85	2.19	1.71	37.28
1882.....	0.90	0.62	2.90	3.15	5.49	8.43	4.41	2.29	1.39	3.75	1.47	1.78	36.60
Means of 11 years.	1.80	1.37	2.42	3.26	4.43	5.34	4.05	3.70	3.66	2.56	1.92	1.58	36.08

TABLE No. II.

Table showing the mean temperature for each month and year from 1872-1882, inclusive, at Davenport, Iowa.

YEAR.	January.	Februa'y.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Annual means.
1872.....	32.6	27.1	32.3	51.2	61.7	72.5	75.5	74.2	64.8	51.6	32.4	18.2	48.7
1873.....	17.1	23.4	36.5	46.9	59.1	77.7	75.2	78.1	62.3	48.3	33.5	29.6	49.
1874.....	23.7	25.9	34.3	41.2	64.3	72.6	77.5	74.3	65.1	52.3	36.3	27.9	49.6
1875.....	9.4	10.4	30.1	45.7	60.5	68.4	73.6	69.3	61.7	48.6	33.4	34.5	45.5
1876.....	29.9	30.1	32.1	50.6	62.1	69.0	75.4	74.6	62.5	49.2	35.2	15.4	48.8
1877.....	16.8	36.3	28.7	49.4	61.6	69.1	75.	72.5	67.1	53.5	37.1	42.5	50.8
1878.....	30.1	36.7	48.2	54.7	57.5	68.	78.	74.	65.1	51.8	42.3	20.3	52.2
1879.....	18.4	25.5	39.5	50.5	53.8	69.5	76.9	71.7	60.5	59.8	39.9	23.8	49.2
1880.....	37.6	32.9	37.	49.7	67.2	72.2	74.5	74.5	62.8	50.7	30.7	21.8	51.
1881.....	13.8	19.9	28.8	44.6	69.	69.7	77.6	77.2	69.8	56.5	39.7	38.2	50.4
1882.....	28.9	40.3	40.3	51.3	55.6	68.6	70.5	72.2	64.4	57.7	42.2	28.2	51.7
Means of 11 years.	22.6	28.	35.3	48.7	61.1	70.7	75.4	73.9	64.2	52.7	36.6	27.3	49.7

Table showing the annual rainfall at Sioux City, Iowa. These results are furnished by the Hon. Geo. H. Wright, of Sioux City.

1871.....	34.05 inches.
1872.....	27.15 inches.
1873.....	31.00 inches.
1874.....	24.70 inches.
1875.....	21.50 inches.
1876.....	30.00 inches.
1877.....	24.00 inches.
1878.....	17.80 inches.
1879.....	22.00 inches.
1880.....	21.90 inches.
1881, up to October 31.....	53.77 inches.
Average for the eleven years.....	27.98 inches.

Meteorological record at Grinnell, Iowa, for four years, furnished by E. G. Worden, giving the mean monthly temperature at noon, and the annual rainfall for nearly four years.

AVERAGE MONTHLY TEMPERATURE AND RAINFALLS.

OBSERVATIONS TAKEN AT NOON.

MONTHS.	Temperature, 1880.	Rainfall, 1880.	Temperature, 1881.	Rainfall, 1881.	Temperature, 1882.	Rainfall, 1882.	Temperature, 1883.	Rainfall, 1883.
January.....	36.3	.82	17.0	.74	25.6	.51	11.5	1.40
February.....	32.	.44	25.4	3.48	39.7	1.75	27.3	1.96
March.....	43.6	.70	33.8	2.50	39.3	2.82	35.3	.89
April.....	57.	4.15	48.9	2.77	56.2	5.47	59.	3.43
May.....	80.7	5.89	76.9	3.50	59.9	7.99	<i>a</i> 64.	7.53
June.....	81.	1.72	79.2	<i>f</i> 12.44	<i>b</i> 73.3	<i>c</i> 4.45	73.6	7.24
July.....	84.6	4.76	87.5	5.66	<i>d</i> 78.	4.50	<i>e</i> 83.	4.30
August.....	77.4	6.85	87.5	4.62	<i>f</i> 85.5	<i>g</i> .60	<i>h</i> 83.	1.66
September.....	71.2	11.64	76.8	8.01	<i>i</i> 67.3	<i>k</i> .29	65.5	2.48
October.....	57.1	2.01	59.3	7.15	62.2	5.40	53.2	5.41
November.....	30.1	1.70	37.4	3.97	42.8	1.57	.....	.....
December.....	20.2	1.56	37.8	1.41	25.	2.14	.....	.....
	55.9	42.24	55.6	56.25	54.6	37.49	55.6	36.30

a. Average for last twenty-seven days.

b. Average for first seventeen days. (Tornado.)

c. Rainfall for first seventeen days. (Tornado.)

d. Average for twenty-five days.

e. Average for twenty-eight days.

f. Average for first twenty-three days.

g. Rainfall for first twenty-three days.

h. Average for first twenty days.

i. Average for last fourteen days.

k. Rainfall for last fourteen days.

The mean annual rainfall for three years is 44.24 inches.

REPORT OF THE CHEMICAL DEPARTMENT.

T. E. POPE, PROFESSOR.

Students commence chemistry at the beginning of the Sophomore year. For the first two thirds of a term they study general chemistry, embracing manipulation, manufacture of gases, acids, bases, etc. Then qualitative analysis is taken up during the rest of the year. Two afternoons a week, through both terms, are required for laboratory work. The text-books used are Barker's College Chemistry and Storer and Eliot's Qualitative Analysis as revised by Wm. R. Nichols. In the class-room problems, reactions and theoretical chemistry are taught, and no student is permitted to enter the Junior year who does not thoroughly understand all these subjects and is able to analyze successfully any inorganic substance that may be given him.

In the Junior year there are four courses, agricultural, veterinary, general and special. Students taking the agricultural course commence their work during the second term, analyzing quantitatively milk, foods, sorghum, water, coal, fertilizers, etc. Three afternoons a week are required for work in the laboratory. The text-book is the same as used in the general course.

The veterinary course extends through the year, and one afternoon a week is given to laboratory work. Two recitations a week are required through the year. The text-book used is Atfield's Chemistry, Medical and Pharmaceutical. The laboratory work embraces manufacture of extracts, tinctures, and pharmaceutical preparations in general, qualitative analyses of drugs, toxicology, quantitative analyses of water, abnormal urine, drugs, patent medicines, etc., etc.

In the general course, two afternoons a week are required for laboratory work in the first term, and three in the second. Fresenius' Quantitative Analysis is used as a guide. Analyses are made of pure chemicals first, and, when the students have become used to the man-

ipulation, ores, alloys, slags, cast iron, mineral water, etc., are given them. A course in assaying will be given next year to those who desire it. The text-book used in the class-room is Blexam's Chemistry, Organic and Inorganic. Two recitations a week are held during the year.

Special students take all in the general course, and have, in addition, more laboratory work and three recitations a week during the year. Text-book, Cook's Chemical Philosophy.

In the Senior year all the students have two lectures a week, during the first term, on agricultural chemistry. The special students continue their laboratory work during the year, and as a text-book use Roscoe Scherlemmer's Organic Chemistry, with a course of reading on such topics as may be designated by the professor. The proficiency attained by these students is often very high, and I have had calls each year from the leading institutions at the East for chemists, not one of whom has so far failed to retain his place, and add to the reputation of the Department.

FACILITIES.

There are one hundred desks, furnished with sinks, water and gas. The laboratories have a ground floor of four thousand square feet, and are well lighted by windows on all sides. The apparatus, exclusive of desks and fixtures, is worth nearly four thousand dollars, and includes five analytical balances capable of weighing to one thousandth of a grain, saccharimeter, spectroscope, combustion furnace, etc., etc. The laboratory is open from nine in the morning to quarter past five in the afternoon for students in quantitative work, and from one to quarter past five for qualitative. No recitations are held in the afternoons, the professor's time being given to personal supervision of the students' work.

REPORT OF DEPARTMENT OF DOMESTIC ECONOMY.

MARY B. WELCH.

To the Hon. Board of Trustees:

Before reviewing the actual work of the past two years in the Department of Domestic Economy, I beg leave to call the attention of the Board to some of the obstacles that make this kind of instruction most difficult to the teacher, and the manner in which such obstacles have been in part at least overcome. In order to make this clear I shall be obliged to give my notion of the true mission of this Department and the character and aim of the lessons given therein.

Two vital errors oppose progress in the household arts. The first is a wrong notion of their value to the world. The second, following as a consequence from the first, is a complete misconception of their relation to other arts.

That a false idea of the value of housework is almost universally prevalent is proven by the fact that it is regarded by most housewives as simple drudgery, and that they are always looking forward to the time when they may escape its demands and rest from its duties. The fact too that of all work it commands as a rule the lowest wages, and that any one is considered capable of doing it, no matter how ignorant or stupid, if only she possesses muscular strength, and still farther the social position in general accorded to such workers, are all proofs of the low rank occupied by the household arts. It is very much with housework as it has been with agriculture. Muscular ability was thought to be the only ability needed by the farmer. Robust health and a strong right arm have been considered the chief essentials in a cook. And just as the boys on the farm have looked with longing eyes toward the professions, so have the daughters aspired to be teachers, dress-makers, milliners, anything rather than

workers in the home kitchen. The world is just beginning to acknowledge that a successful farmer must at the very least equal any professional man in mental acuteness, business ability and general intelligence. And so too a change in the popular opinion respecting housework is slowly but surely coming about. It is still true however that every girl who comes under my instruction is inevitably more or less under the influence of the old, false notions. She recognizes the full value of mental drill and literary culture, because these will fit her for positions she longs to fill. She is fully as ambitious as her brother, and hopes just as ardently for riches, position, influence, as does he. She feels she has but little time to spare for any study that will not return to her some portion of that sort of power which is to help her get on in the world. What cares she for housework? In the dim future when she has realized all she now dreams of she will hire an Irish girl, or a Norwegian, or a Swede, to do her housework, while she gives her time to loftier pursuits. Before she can be interested in the study of domestic economy she must be impressed with its value and its dignity. The Irish cook in her mother's kitchen could teach her to bake bread, perhaps, but she would surely associate the process with the ignorant and uncultivated woman who taught it and look upon both with equal disrespect. So she must be instructed here in more than manual process. If enthusiasm is to be excited, if respect for home attainments is to be cultivated, if sensible and right views of domestic matters are to be inculcated, then manual skill must join hands with mental attainments. The philosophy as well as the practice must be set forth. The relations of food and culinary skill to physical and mental development, the proper care of the body, the innumerable details of household economy and hygiene must all be set forth in such a way as to command both interest and respect. With no text-books, no works of reference, absolutely no thoroughly classified and systematized knowledge to be obtained in this department of instruction, how can this be accomplished. Only by the most persevering study on the part of the teacher, joined to a genuine love of the work and a thorough belief in its importance. She must search through many books for few items. She must arrange these in proper order. She must try every recipe before bringing it to her class-room, and give to her students not only its materials and method, but as nearly as possible the whys and wherefores of every step. She must know all about food history, the compara-

tive economy of special foods, including not only the first cost, but the amount of nutriment supplied and the lasting quality of such nutriment. She must look up food adulterations. She must give advice as to market supplies both as to price and quality. She must know the parts of a beef animal as well as the butcher who sells them; in short she must post herself thoroughly on all questions concerning every article of food she handles. The food supply of Iowa is abundant in quantity and excellent in quality, but comparatively limited in variety. Beef, pork and poultry, milk, eggs, and the hardier fruits and vegetables compose our staple articles of food. Since variety enters very materially into the question of digestion and assimilation, it has been my aim to give as great a number of simple methods of preparing and combining these as possible. This has also required study and practice. Every hour's work in the college kitchen with my class represents many hours of hard labor in my own study and kitchen. So much have I been hampered by the lack of text-books in this department of study that I have myself prepared a Manual of Domestic Economy for school and private use.

I have combated the second error I mentioned by carefully prepared talks on the relation of the domestic arts to the progress of the world. It is easy to prove that the home is the propelling force in social advancement, and that its interests touch every art and impress every pursuit. Sound minds in sound bodies should go forth from it to help civilization forward. Just in proportion as wives and mothers become intelligent and skilled in the management of home interests, including as these do, the development of true manhood and womanhood, physically, mentally and morally, the world will move onward and upward. We can prolong the parallel here between agriculture and domestic economy. The good farmer of to-day is not he who knows simply how to plow, or even how to raise and gather crops. To be successful he must be versed in the manifold duties of a business which embraces as many details and as diverse employments as the home. He must know something more even than these details, for he must take his place among men socially and politically. So the housewife must be more than a cook, a nurse and a seamstress. She must be practically and specifically acquainted with these arts, but she must be ready also to influence character, take her place by her husband's side as a social force, and if need come, assume his duties as a person acquainted with affairs.

As the mistress of a home she may touch the springs that set in motion any social, business, or even political factor at work in the world. Our College is doing a noble work if it helps the young women who come under its influence to appreciate these responsibilities.

The Department of Domestic Economy gives the only practical instruction in the curriculum for girls. The boys have the workshops and the farm. The girls have only the experimental kitchen. This labor too is purely instructive. It has been the constant aim of the Trustees and the teacher in charge to enlarge its facilities and broaden the scope of its instruction. Three years ago the course was improved by adding one term's work for the Freshman class. The plan succeeded admirably the first year, and in 1882 was made still more profitable by increasing the variety of work. Forty-five young ladies were under my instruction this year. For the first half of the first term the Freshman girls prepared dinner for from ten to twenty of the students in the main dining-hall. The material was furnished by the Steward, the same quantity and quality as were used for an equal number in the large kitchen. The class thus cooked under instruction roast beef, beef stew, beefsteak, boiled beef, potatoes, succotash, beans, tomatoes, asparagus, biscuits, dumplings for meat stew, and a variety of puddings and pies. The second half of the term we baked three days a week all the cake consumed in the college dining hall, and as the Steward's Department was most of that time without a baker, were thus able to render it effectual service, besides giving the class excellent drill in plain cake making.

During the same term the Sophomore class met me once a week for drill in the theory of general housekeeping. They took notes from lectures on "Arrangement and Furnishing of the Home," "Ventilation," "Drainage," "Water Supply," "Management of Help," "Care of the Sick," "Sewing and Mending," "Management of Children," "Household Accounts," "Care of Health," "Courtesy," "Hospitality and the Etiquette of Entertaining," and a variety of kindred topics. They also wrote essays for which I dictated subjects and recommended books of reference which they were to consult and take notes from. The following are some of the topics given them for such essays: "Education Necessary to the Skilled Cook," "My Model Kitchen," "Slovenliness a Sin," "Economy a Duty," "Pure Air

a Necessity," "My House and its Situation," "My Cleaning Days, etc., etc.

During the fall term the Junior girls received their instruction in cooking. My method of teaching is as follows: I present to the class a bill of fare for the afternoon's work. The practice is preceded by half an hour's talk on the special foods to be manipulated, the class meanwhile taking careful notes. The recipes are also given and copied. I then proceed to do the cooking, assisted by the different students under my charge. During the whole term bread and yeast are made at every lesson, and it was our good fortune to furnish bread once a week to Prof. Bessey's family. You can find out from them the quality of this bread. We also provided some part of their dinner twice a week for nearly the whole term.

I can give your honorable body an idea of the kind of work done by the class more quickly perhaps by reading a part of the questions given for examination than in any other way. These questions were answered in writing. They do not, of course, cover minutely the whole instruction of the term, but will serve to show its character.

MEAT.

- (a.) What is the effect on raw meat, of cold water?
- (b.) What is the effect on raw meat, of hot water?
- (c.) How is stock made?
- (d.) How to roast meat, and why.
- (e.) How to broil meat, and why.
- (f.) How to boil meat, and why.
- (g.) What meats should be cooked rare?
- (h.) What meats should be cooked well done?

EGGS.

- (a.) Composition of eggs.
- (b.) Why is silver discolored by egg?
- (c.) Are eggs valuable as food?

FLOUR AND BREAD.

- (a.) What renders wheat flour capable of vesciculation?
- (b.) What is meant by vesciculation?
- (c.) Give the five conditions necessary to success in bread-making.
- (d.) Mention some of the most common adulterations of bread, and give the reasons for their use.

THE POTATO.

- (a.) Give its food value.
 (b.) How can it be combined with others foods so as to increase its value?
 (c.) Why is it added to bread?

My class-roll for 1883 has numbered fifty. The year's work has been both pleasant and profitable, and the young ladies have been full of enthusiasm.

I refer the Board to my cash reports, in the hands of the treasurer, for information as to the receipts of the Department. All salable articles have been disposed of to the best possible advantage, and the sales accounted for according to the requirements of the Board.

I have only to call your attention to the favorably-expressed public sentiment in this and other states, to convince you that this department of instruction meets a public want and commands public approval. The fact, too, that I have had several applications to give courses of lessons in cooking in various parts of the State, will further prove that the work here is considered valuable. In one instance I thought it wise to accept such an invitation, and gave a course of six lessons in Des Moines, during the session of the last Legislature. The Register, the Leader, and the Homestead had each a reporter present at every lesson, and I will refer you to their reports and the sixty ladies who composed my class, for information concerning my success.

At the same time I recognize the fact that the same class of people who sneer at "book farming" and a scientific education for the agriculturist and mechanic, will sneer also at any attempt to teach cooking, and the other household arts, in a systematic way. It remains for this Department to teach them better, and to prove conclusively and experimentally that science is the hand-maid of practice, and underlies all the processes that raise the laboring man and woman from the drudgery of mere manual toil into the intelligent and skillful and intellectual plane of systematic and progressive labor.

I cannot sever my connection with the College and the work I love so well, without expressing my sincere regret at the necessity which compels my resignation. I have been officially connected with the Institution since its organization, and have given strength, energy

and enthusiasm to my work. It is my heartfelt desire that the Department of Domestic Economy may continue to be sustained and encouraged until it shall exercise an influence equal to its importance. I commend it to your consideration, feeling sure that it needs only intelligent and unprejudiced attention to ensure your encouragement and support.

DEPARTMENT OF MATHEMATICS.

E. W. STANTON, PROFESSOR.

The work in this Department is as follows:

ALGEBRA.

Algebra is taught during the first term of the Freshman year to all the students of the College, except those in the course in veterinary science. The class being large, is divided into two divisions. Particular attention is given in this study to the explanation of the cardinal principles, and the drill in the solution of problems and equations is conducted with reference to fixing these principles in the minds of the students.

GEOMETRY.

This class follows Algebra in the Freshman year, and is also divided into two divisions. In this class the student is early taught the full meaning of a geometrical demonstration. He is warned against learning the proposition by rote; and, in order that he may not fall into this error, he is, at the end of the first book, assigned original theorems, which he is required to demonstrate. He is expected not only to thoroughly understand each proposition, but to be able to so arrange and present the points of the proof as to form a complete and perfect demonstration. During the past year over one hundred students have received instruction in Algebra and Geometry.

ANALYTICAL GEOMETRY.

This study is pursued by the Sophomore class during the second term. The course of instruction embraces Determinate and Indeterminate Geometry, including a full examination of the Conic Sections. The underlying principles are brought prominently forward and discussed. The student is required to carefully analyze each article, and

solve the problems connected therewith. To secure thoroughness frequent reviews are given. The class numbers twenty-eight.

CALCULUS.

Instruction in Calculus is given during the spring term of the Junior year. In no case can this study be pursued successfully without previous drill in Analytical Geometry. Buckingham's Calculus is used as a text-book. The abstruse principles of this method of mathematical investigation are explained upon the theory of *rates* rather than upon the theory of *infinitesimals*. Instruction is given by daily recitations and lectures, with a review each Friday of the week's work. Twelve weeks are devoted to Integral, and the remainder of the term to Differential Calculus. The sixteen students in the class during the past year did earnest and successful work. The studies in higher mathematics are essential to the Engineering course, and to the special course in Physics, bearing to these something of the same relation that Botany, Entomology and Chemistry do to the course in Scientific Agriculture

PHILOSOPHY.

POLITICAL ECONOMY.—(*Professor Stanton.*)

In this division of Social Science are taught, by text-books, familiar lectures and discussions, the laws of labor, its products and their costs; the principles of capital, money, foreign trade, tariff, taxation, and all the influences that quicken or retard exchange. The student thus gains a thorough acquaintance with the scientific data that underlie and regulate industry. He becomes intelligent, moreover, in all questions of public policy concerning which there is such a wide diversity of opinion.

PSYCHOLOGY.—(*President Welch.*)

In the study of Psychology we aim to avoid all those questions which the discussion of centuries has failed to solve, and which consequently have no bearing either on human conduct or a knowledge of human nature. The object sought by the student in this study is to gain a systematic acquaintance with the phenomena of thought, feeling and volition; to get an insight clear as may be into the workings of his own mind, its modes of action, its limits, its means and order of growth from sense to reasoning. No real progress in Psychology can be made except through the revelations of consciousness. The student must attain the difficult art of rightly scrutinizing his own mental states and modes of thought. Six essays on topics chosen by the professor are written during the term by each member of the class. The facts of Psychology, we may add, are made the basis for the subsequent study of the Philosophy of Science, and, together with the principles of Biology, are properly preparatory to Sociology. The library is well supplied with books of reference.

PHILOSOPHY OF SCIENCE.—(*President Welch.*)

This subject, which occupies the Senior class the first half of the fall term, is presented by lectures on the creation and classification of the sciences; methods of investigation, observation, experiment and hypothesis; inductive and deductive reasoning, necessary and contingent truths, regressive reasoning illustrated by geometry, limits of scientific knowledge, etc.

SOCIOLOGY.—(*President Welch.*)

The remaining portion of the Senior year is given to a rapid survey of the fundamental principles of Sociology. This survey will comprise the data of the science, namely: The feelings, ideas and wants of man; the primitive condition of the human race—its superstitions, erroneous beliefs, and the impulses by which savage tribes struggled up into civilized nations. A brief account will also be given of the origin and growth of government, law, science, religion, industry and art. The object sought is simply to lay the foundation for future acquisitions.

COMMERCIAL LAW.

E. W. STANTON, PROFESSOR.

It is the aim in this study to present the general principles of law relating to ordinary business transactions. Contracts, agency, partnership, sale of goods, commercial paper and real estate, are studied. Parson's Laws of Business and Clark's Commercial Law are used as text-books. The changes in the common law made by the statutes of this State, are set forth by means of lectures.

Particular attention is given to the forms of notes, bills, drafts, checks, etc., and by frequent reviews and examinations, the student is made familiar with the requisites of the more common business papers.

DEPARTMENT OF LITERATURE AND LANGUAGE.

W. H. WYNN, PROFESSOR.

LITERARY CRITICISM.

Six weeks of the second term of the Senior year are devoted to lectures and seminary work on literary criticism. The utmost that can be done in this brief time, in so broad a field, is to secure to the student a general conception of the varied and subtle elements of power in the literary art, by directing his attention to various phases of it, and having him bring his taste and discernment to bear upon the subject. These personal efforts, as furnishing the seed-plot for the more extended discussions of the lecture-room, we denominate seminary work. Judiciously managed, the exercise may be made of great profit, especially to young people coveting mastery in this line of effort. There are five lectures a week.

ETHICS.

The remaining portion of the last term of the Senior year, after the six weeks' work in literary criticism, is devoted to a study of the ground-work of moral science, giving a theory of Ethics, and subjecting to as close scrutiny as may be the recent systems of evolutionary and sociological Ethics, now so extensively claiming the attention of the thinking world, not neglecting as wide application of well-ascertained principles to the practical problems of real life, as the time will permit. There are five lectures a week.

APPLIED RHETORIC.

Three days in the week of the second term of the Freshman year are devoted to a series of exercises in Applied Rhetoric, in which

the design is to familiarize the mind with those details of composition and expression, which are most in requisition in practical life, and are usually most neglected; going no further into the theory or philosophy of this branch than these practical ends will indicate. The work will be, as far as possible, directly under the eye of the professor in charge.

HISTORY.

A course in History has been planned for the Ladies' Course in the Sophomore year, first term. The aim is here instead of running over Universal History in a dry text-book fashion, to take hold of some fruitful epoch in the ages, and develop it, the student furnishing the result of her own researches along a line of references indicated in the lecture-room.

ENGLISH LITERATURE.

The first term of the Junior year is occupied with English Literature proper. As there is but one term devoted to this, and it is impossible in so brief a space to become familiar with the whole history of the English mind, from the days of the Anglo-Saxon Conquest down to the present time, a similar method is pursued here as in History—some specially productive era being selected, and the student required, under the guide of an outline furnished in the lecture-room, to sum up investigations of his own in the literary, social, and religious influences prevailing at that time, and giving character to the masterpieces which were then produced. At this stage of the student's progress, the library becomes his laboratory, and care is taken that the necessary books of reference are furnished to his hand.

LATIN.

A one-year course in Latin is provided in the Freshman year. The design is simply to meet the practical necessities of the scientific curricula that prevail here. A brief preparatory drill introduces the student to Cæsar; after reading carefully two books he enters Virgil's *Æneid*, and continues it to the end of the year. The Roman pronunciation is adopted. Allen & Greenough's text-books are used, and the most advanced methods of imparting instruction are diligently sought for and practiced.

GERMAN.

This subject has been introduced as an optional study in the Freshman year. It is not claimed that anything but a rudimental knowledge of the language can be acquired in the time allotted, but special effort is made to render this knowledge practical, and to make it the basis for future attainment.

FRENCH.

This study falls in the last three terms of the course in Mechanical and Civil Engineering; of the Ladies', and of the course in Special Physics and Mathematics. The chief end in view is not an exhaustive and critical knowledge of the grammar of the language, but as high a degree of its practical mastery as is attainable in the time. Much time is given to reading, in order to familiarize the student with different styles of writing, and to give facility in translating.

In the study of both French and German the student is expected, from the beginning, to use the language in the class-room as much as possible. These two classes are taught by Miss Sinclair.

ENGLISH COMPOSITION AND DISSERTATIONS.

Instruction is given in English Composition during the whole of the first term of the Freshman year. Correct spelling, use of capital letters, punctuation, etc., are taught by frequent exercises. The Juniors, in the second term, and the Seniors, in the first term, write dissertations for public presentation.

VOCAL AND INSTRUMENTAL MUSIC.

MISS ERMINA ATHEARN, TEACHER.

Music is not, by law, a regular study in the College curriculum. Opportunities are given, however, to such as desire it, to take lessons upon the organ or piano, or in vocal training. The charges are as follows:

Lessons upon the piano or organ, per term of twenty lessons, ten dollars.

For use of piano or organ, two hours daily practice, fifty cents per month.

For use of piano or organ, one hour daily practice, twenty-five cents per month.

LIBRARY.

J. K. MACOMBER, LIBRARIAN.

During the present year there have been added to the library of bound volumes:

By purchase.....	251 volumes.
By donation.....	41 volumes.
Periodicals bound.....	64 volumes.
Number of valuable pamphlets donated.....	56 volumes.

Total number added this year.....	412 volumes.
The number added in 1882 was.....	352 volumes.

Making for the biennial period.....	764 volumes.
Total number volumes (exclusive of duplicates).....	5256

The number of volumes added since I took charge as Librarian is one thousand six hundred and fifty-six.

The binding of periodicals and papers this year was let to Mills & Co., of Des Moines at the following prices:

For octavos.....	\$.75 per volume.
For quartos.....	1.00 per volume.
For newspapers and folios.....	1.50 per volume.

All binding to be done in half sheep with marbled paper sides and sprinkled edges.

The work done by them has been satisfactory in every respect.

Among other valuable purchases for the year I will only mention one set of fifty volumes comprising the first series of the American Journal of Science. This set is now very scarce and usually costs two hundred and fifty dollars, but I embraced an opportunity offered to purchase a set for eighty-five dollars. For a detailed account of the remainder I respectfully refer you to my accession catalogue

where all can be found. I recommend that an appropriation of six hundred dollars be made. I recommend that Miss Fannie Wilson be appointed First Assistant Librarian.

I suggest that the Board should at an early day publish our shelf list of books and catalogue of authors. This shelf list contains a complete, classified catalogue of the entire library, and could at a small expense be published. It, with the list of authors which is kept on file, would very much increase the value of the library to those using it.

I append hereto a list of donations to the library for the past two years, and also a list of periodicals kept on file.

QUARTERLIES PURCHASED.

British Quarterly.
 Quarterly Journal of Microscopic Science.
 Edinburgh Review.
 London Quarterly Review.
 Westminster Review.
 Journal of Anatomy and Physiology.
 Mind.

MONTHLIES PURCHASED.

Aurora (donated).
 American Journal of Science.
 American Journal of Forestry.
 Blackwood Magazine.
 Botanical Gazette.
 Canadian Entomologist.
 Dial.
 Eclectic Magazine.
 Gardener's Monthly.
 Journal Franklin Institute.
 Journal Comparative Anatomy and Surgery.
 Journal Speculative Philosophy (donated).
 National Live Stock Journal.
 Popular Science Monthly.
 Philosophical Magazine.
 Papilio.
 Science Gossip.
 Unitarian Review.

Veterinary Journal.
 Wallace's Monthly.
 Western Jurist.
 Veterinarian.

WEEKLIES PURCHASED.

Agricultural Gazette.
 Country Gentleman.
 Chemical News.
 Dubuque Herald.
 Engineering.
 Gardener's Chronicle.
 Gate City.
 Homestead.
 London Times.
 North British Agriculturist.
 Michigan Farmer.
 Muscatine Journal.
 Nation.
 Nature.
 Prairie Farmer.
 Rural New Yorker.
 Scientific American and Supplement.
 Sanitarian.
 Zeitung Botanische.
 Living Age.

WEEKLIES DONATED BY PUBLISHERS.

Floyd County Advocate.
 Christian Register.
 Cedar Rapids Republican.
 Christian Advocate.
 Vinton Semi-Weekly Eagle.
 Charles City Intelligencer.
 Anamosa Eureka.
 Ames Intelligencer.
 Monticello Express.
 Oskaloosa Herald.
 Official Gazette.
 Nevada Representative.

Iowa State Register, Weekly.
 Standard.
 Floyd County Union.
 What Cheer Reporter.
 Marshalltown Times-Republican.
 New York Witness.
 Story County Watchman.
 Jerusalem Messenger.
 South Chicago Tribune.
 Belle Plaine Independent.
 Story City Herald.
 Adams County Union.
 Deaf Mute Hawkeye.
 Larimore Pioneer.
 Iowa Tribune.
 Winterset Madisonian.

DAILIES DONATED AT HALF PRICE.

Daily Register, Des Moines.
 Daily Leader, Des Moines.

LIST OF BOOKS DONATED SINCE MARCH, 1882.

Senate Journal, Third Session Forty-Sixth Congress.
 House Journal, Third Session Forty-Sixth Congress.
 Michigan Board of Agriculture, 1880.
 Annual Report of Commissioners of Patents.
 Alphabetical List of Patents and Inventions.
 United States Geographical Surveys, W. 100 m. Archæology and Geology, two volumes.
 Report of Chief Signal Officers, 1879, 1880, 1881.
 Department of Agriculture Report, 1880, 1881, 1882.
 Geological and Natural History Survey of Minnesota, two volumes
 Geological Survey of Michigan, 1879, 1880.
 Bulletin of United States Geological and Geographical Survey, 1880
 Bulletin of United States Geological and Geographical Survey, 1881.
 Report of Commissioner of Internal Revenue, 1881.
 Principles and Practice of Veterinary Surgery, Williams.
 Geographical and Topographical Survey of United States.
 Michigan Horticultural Society Report, 1882.

American Newspaper Directory.
 Iowa Legislative Documents, Twelfth General Assembly, 1868.
 Report of Smithsonian Institute, 1880.
 Proceedings of Eighth Annual Meeting Iowa Stock Breeders' Association.
 Bulletin United States Geological and Geographical Survey, Volume Four.
 Speeches on Industrial and Financial Questions, Kelley.
 The Aurora, Volumes Eight and Nine.
 United States Coast Survey, from 1873 to 1880.
 Official Gazette United States Patent Office, 13, 17, 18, 19, 20.
 Report of Carolina Board of Agriculture.
 Essays, Philosophical and Literary, Prof. W. H. Wynn.
 Report of the Chief of Ordnance, 1881 and 1882.
 Report of Cattle Commissioner, Lung Plague.
 Thirteenth Annual Report Board of Indian Commissioners.
 American Devon Record, Volume Two.
 Contributions of North American Ethnology, Volume Four.
 Report of Chief Signal Officer, 1877.
 Publications of Bureau of Ethnology.
 Disposition of Bodies of Union Soldiers.
 Roll of Honor.
 Iowa Digest, 1880, Withrow & Stiles.
 Iowa Insurance Report, 1879.
 Sixth Annual Report of Ontario School of Agriculture, 1880.
 Iowa Agricultural Report, 1881.
 Population and Social Statistics of United States, 1870.
 Industry and Wealth of United States in 1870.
 Iowa Senate Journal, 1880.
 Report Commissioner of Education, 1880.
 Report of Tariff Commissioners, two volumes, 1882.
 Report of Union and Confederate Armies in the Rebellion, Volume Six.
 Compendium of Tenth Census of United States, 1882.
 Message and Documents, Department of State, 1881 and 1882.
 United States Senate Journals, 1881 and 1882.
 United States House Journal, 1881 and 1882.
 Slavery and Protection, E. J. Donnell (pamphlet).
 A description of Texas, Roberts.

Bulletin of United States Geological and Geographical Survey of Texas.

Annual Report of Entomological Society of Ontario, 1881 and 1882.

Report of United States Fish Commission.

Report of Secretary of Interior, 1881 and 1882.

Anglo-Swiss Condensed Milk Company, illustrated.

Results of Field Experiments, Atwater.

Proceedings of Eighth, Ninth and Tenth Annual Meetings of the Iowa Stock Breeders' Association, 1880, 1881 and 1882.

Memoirs of Josiah Scott, Colmery.

Illinois Industrial University Reports for 1875, 1876, 1878, 1880 and 1882.

Industrial Education—Reports of United States Bureau of Education, 1883.

Report of Michigan Horticultural Society, 1882.

Transactions Iowa Horticultural Society, 1882.

Records of Union and Confederate Armies, volumes 8 and 9.

Smithsonian Miscellaneous Collections, 1883.

PERIODICALS.

Iowa Agricultural Report, 1882.

Europe, Through a Woman's Eye, L. Y. Culler.

General Index to Ninth Report of Insects of Missouri.

Transactions of Massachusetts Horticultural Society, 1882.

Transactions of American Entomological Society, volumes 8 and 9.

Smithsonian Report, 1881.

American Short-Horn Herd Book, volumes 21 and 22.

Counsels of a Catholic Mother.

Health Notes for Students, Wilder, Burt.

Tenth Census of United States volume 1; population.

United States Geological and Geographical Survey of Wyoming and Idaho, Hayden.

United States Geological Survey.

Maps and Panoramas of Geological and Geographical Survey of Texas.

Transactions California Agricultural Society, 1863, 1864, 1865, 1868, 1869, 1870, 1871, 1872, 1873.

Agricultural Report of Missouri, 1871 and 1872.

FINANCIAL MATTERS

AND

PROCEEDINGS OF BOARD OF TRUSTEES.

APPROPRIATIONS OF THE NINETEENTH GENERAL
ASSEMBLY.

Report of the building committee, having in charge the expenditures of the several appropriations of the Nineteenth General Assembly, for buildings and roads.

The Nineteenth General Assembly appropriated for the following purposes the several amounts stated:

One boarding cottage and addition to another.....	\$6,500.00
Two professor's houses.....	5,000.00
Engineering hall.....	5,000.00
Sheep barn.....	600.00
Creamery, ice house and cold storage.....	1,000.00
Laborers' cottages.....	2,100.00
Repair of highway to Ames.....	300.00
Veterinary hospital.....	500.00

The necessity of having the addition to the old boarding cottage completed for the opening of the fall term of 1882 required that the work should be commenced immediately after the meeting of the Board in the spring.

The foundation and brick work were constructed by the day, under competent supervision. The wood work was contracted to O. P. Stuckslager, for \$635.00.

The construction of the new cottage was let to V. Tomlinson, of Boone, for the sum of \$5,420. Adding to this the amounts paid for advertising, plans by the architect and drainage, and the total sum paid for construction of the new cottage and the addition to the old, was \$6,502.91, which was \$2.91 in excess of appropriation. This excess was met by a transfer of surplus from professors' houses, as provided by law.

The contract for the erection of the following buildings was let to V. Tomlinson:

Two professors' houses.....	\$4,690.00
Engineering hall.....	4,890.00
One sheep barn.....	415.00

Other expenses on construction of professors' houses amounted to \$177.91, including transfer, leaving a balance of \$132.09.

The engineering hall is not yet completed. The amount expended to date is \$4,527.

Expenditures for sheep barns above the contract, \$76.05; transferred to laborers' cottages, \$108.95.

The creamery, ice house and cold storage, and the laborers' cottages were constructed under the supervision of the committee, using the entire amount appropriated, and the sum of \$108.95 transferred from laborers' cottages.

The contract for the construction of the veterinary hospital was let to F. Turner. The sum of \$500 has been paid, leaving a small balance, which will be met by transfer.

The road for which \$300 was appropriated was put in excellent condition under a committee from the college and Ames, liberal contributions having been made, even beyond the sum required by law.

For all these appropriations, itemized statements are herewith submitted.

Respectfully,

GEORGE H. WRIGHT,
Chairman Building Committee.

EXHIBIT A.

RECEIPTS.

Amount received from State Treasurer on account of appropriations for boarding cottages and addition.....	\$ 6,500.00
Amount transferred from professors' houses by order of the Board of Trustees.....	2.91

EXPENDITURES.

1882.			
June 12.	Vou. 1.	C. E. Shepard, tracing plans.....	\$ 4.10
June 15.	Vou. 2.	Iowa State Register, advertising....	8.45
June 15.	Vou. 3.	Republican Printing Co., advertising	2.60
June 15.	Vou. 4.	Times-Republican Printing Co., advertising.....	7.00
June 15.	Vou. 5.	J. Bellangee, for plans.....	18.00
June 26.	Vou. 6.	O. P. Stuckslager, for labor and material.....	150.00
June 26.	Vou. 7.	Bradley & Templeton, for stone.....	7.18
June 26.	Vou. 8.	J. Bellangee, for drawing.....	3.00
June 26.	Vou. 9.	W. Whitehead, for work.....	6.65
June 26.	Vou. 10.	W. S. Lindsay, for labor.....	9.80
June 26.	Vou. 11.	J. Cole, for brick.....	10.00
June 26.	Vou. 12.	G. K. Cameron, for brick....	90.40
June 28.	Vou. 13.	W. S. Lindsay, for laying brick....	100.98
June 29.	Vou. 14.	O. P. Stuckslager, balance of contract.....	485.00
Aug. 5.	Vou. 15.	M. Vincent, for labor.....	4.92
Aug. 5.	Vou. 16.	Stillwell & Younker, for hauling....	38.75
Aug. 5.	Vou. 17.	Book Department, manila paper....	4.11
Aug. 9.	Vou. 18.	J. Watts, for postal cards for advertising.....	3.00
Aug. 10.	Vou. 19.	J. H. Queal & Co., for lumber.....	7.80
Aug. 10.	Vou. 20.	Nichols & Maxwell, for hauling....	8.75
Aug. 10.	Vou. 21.	Wright & Ives, for hauling	10.20
Aug. 10.	Vou. 22.	V. Tomlinson, for labor and material.....	1,445.00
Sept. 1.	Vou. 23.	O. P. Stuckslager, for painting.....	27.50
Sept. 4.	Vou. 24.	Pay roll for August, labor.....	8.24
Sept. 9.	Vou. 25.	Horticultural Department, for tile..	3.25

Sept. 11.	Vou. 26.	M. Vincent, for labor.....	\$ 6.36	
Sept. 11.	Vou. 27.	Bingham & Co., hardware.....	3.25	
Sept. 11.	Vou. 28.	Bingham & Co., hardware.....	4.10	
Sept. 14.	Vou. 29.	V. Tomlinson, on contract.....	1,700.00	
Oct. 3.	Vou. 30.	Horticultural Department, for tile..	7.77	
Oct. 13.	Vou. 31.	V. Tomlinson, on contract.....	994.50	
Oct. 19.	Vou. 32.	O. P. Stuckslager, for labor.....	41.75	
Dec. 5.	Vou. 1.	V. Tomlinson, on contract.....	297.50	
1883.				
Jan. 5.	Vou. 2.	V. Tomlinson, on contract.....	85.00	
Feb. 10.	Vou. 3.	V. Tomlinson, on contract.....	85.00	
Feb. 10.	Vou. 4.	V. Tomlinson, on contract.....	813.00	
			<hr/>	
			\$6,502.91	\$6,502.91

EXHIBIT B.

RECEIPTS.

By amount received from State Treasurer on account of appropriation for Professors' houses.....\$ 4,867.91

EXPENDITURES.

1882.				
June 26.	Vou. 1.	J. Bellangee, for labor.....	\$ 27.00	
Nov. 2.	Vou. 2.	Geo. H. Wright, mileage and expenses	113.50	
1883.				
Jan. 15.	Vou. 1.	V. Tomlinson, labor as per contract.	510.00	
Feb. 10.	Vou. 2.	V. Tomlinson, labor as per contract.	204.00	
Apr. 9.	Vou. 3.	V. Tomlinson, labor as per contract.	484.50	
May 19.	Vou. 4.	V. Tomlinson, labor as per contract.	382.50	
May 25.	Vou. 5.	Geo. H. Wright, expenses and services.....	34.50	
June 6.	Vou. 6.	V. Tomlinson, labor and material...	255.00	
July 19.	Vou. 7.	V. Tomlinson, labor and material...	425.00	
Sept. 8.	Vou. 8.	V. Tomlinson, labor and material...	969.00	
Oct. 6.	Vou. 9.	V. Tomlinson, labor and material...	586.50	
Oct. 12.	Vou. 10.	V. Tomlinson, labor and material...	703.50	
Oct. 26.	Vou. 11.	V. Tomlinson, labor and material...	170.00	
Nov. 22.	Transferred to boarding cottage and addition by order of Board.....		2.91	
			<hr/>	
			\$4,867.91	\$4,867.91

Amount of appropriation not yet drawn from State Treasury.....\$132.09

EXHIBIT C.

RECEIPTS.

Amount received from State Treasurer on account of appropriation for Engineering Hall.....\$ 4,527.00

EXPENDITURES.

1882.				
Jan. 26.	Vou. 1.	J. B. Bellangee, for work.....	\$ 27.00	
1883.				
Aug. 20.	Vou. 1.	V. Tomlinson, labor and material...	1,445.00	
Sept. 8.	Vou. 2.	V. Tomlinson, labor and material...	170.00	
Oct. 26.	Vou. 3.	V. Tomlinson, labor and material...	1,275.00	
Nov. 20.	Vou. 4.	V. Tomlinson, labor and material...	935.00	
Nov. 22.	Amount of cash on hand.....		675.00	
			<hr/>	
			\$4,527.00	\$4,527.00

Amount not yet drawn from State Treasury.....\$473.00

EXHIBIT D.

RECEIPTS.

Amount received from State Treasurer on account of appropriation for sheep barns.....\$600.00

EXPENDITURES.

1882.				
Jan. 19.	Vou. 1.	Bingham & Co., nails.....	\$ 6.55	
Jan. 20.	Vou. 2.	J. W. Todd, for labor.....	21.00	
Jan. 20.	Vou. 3.	Lamb & Sons, for Lumber.....	21.00	
Jan. 22.	Vou. 4.	W. Whitehead, for labor.....	21.00	
Jan. 22.	Vou. 5.	Wright & Ives, for hardware.....	1.39	
1883.				
July 19.	Vou. 1.	V. Tomlinson, for labor and material	415.00	
Aug. 20.	Vou. 2.	Bradley & Templeton, for paints....	5.11	
Nov. 22.	Amount transferred to laborers' cottages by Board of Trustees, as per Act of Assembly..		108.95	
			<hr/>	
			\$ 600.00	\$ 600.00

EXHIBIT E.

RECEIPTS.

Amount received from State Treasurer on account of appropriation for Creamery.

Ice house and cold storage.....	\$ 1,000.00
Amount from freight drawbacks.....	12.57

EXPENDITURES.

1882.

July 28. Vou. 1. Stillwell & Younker, labor.....	\$ 7.00
Aug. 5. Vou. 2. Freight on lumber.....	37.70
Aug. 9. Vou. 3. Independence Manf'g Co., apparatus.....	56.00
Aug. 9. Vou. 4. Queal & Company, lumber.....	226.65
Aug. 12. Vou. 5. L. D. Baskett, labor.....	126.50
Aug. 22. Vou. 6. W. A. Conway, labor.....	7.87
Sept. 1. Vou. 7. Sundry persons, labor.....	39.50
Sept. 4. Vou. 8. Farm department, labor.....	6.42
Sept. 4. Vou. 9. Farm department, labor.....	8.77
Sept. 11. Vou. 10. Queal & Company, lumber.....	314.35
Sept. 11. Vou. 11. Pay roll, August.....	36.56
Sept. 11. Vou. 12. P. H. Castle, plastering.....	11.20
Sept. 11. Vou. 13. Bradley & Templeton, oil.....	3.45
Sept. 11. Vou. 14. Nichols & Maxwell, hauling.....	8.25
Oct. 3. Vou. 15. Peter Cassidy, labor.....	13.50
Oct. 3. Vou. 16. J. W. Vallett, labor.....	26.75
Oct. 11. Vou. 17. Mechanical department, labor.....	13.44
Oct. 11. Vou. 18. Farm department, labor.....	8.60
Oct. 14. Vou. 19. E. Barstow, drugs and paints.....	3.55
Oct. 14. Vou. 20. Wright & Ives, hardware.....	31.61
Oct. 14. Vou. 21. Bradley & Templeton, paints.....	6.90

1883.

April 7. Vou. 1. Queal & Company, lumber.....	10.10
April 7. Vou. 2. Queal & Company, lumber.....	7.90

\$ 1,012.57 \$ 1,012.57

EXHIBIT F.

RECEIPTS.

Amount received from State Treasurer on account of laborers' cottages.....	\$ 2,100.00
Amount from freight drawbacks.....	25.38
Amount transferred from sheep barns, by Board.....	108.95

EXPENDITURES.

1882.

April 3. Vou. 1. L. L. Eastwood, for house.....	\$ 400.00
June 7. Vou. 2. Freight on lumber.....	40.75
June 12. Vou. 3. Ed. Whalen, digging cellar.....	20.00
June 12. Vou. 4. Ed. Whalen, digging well.....	11.30
June 19. Vou. 5. Freight on lumber.....	35.38
June 24. Vou. 6. Gardner, Batchelder & Wells, lumber.....	451.15
June 26. Vou. 7. W. E. Bisbee, work on horticultural cottage.....	100.00
June 26. Vou. 8. Farm department, for sundries.....	13.25
June 26. Vou. 9. Stillwell & Younker, labor.....	24.50
June 26. Vou. 10. W. S. Lindsay, mason work.....	35.00
June 26. Vou. 11. Ed. Whalen, digging well.....	13.00
June 26. Vou. 12. G. K. Cameron, brick.....	105.60
June 26. Vou. 13. J. H. Queal & Company, lime.....	15.40
June 26. Vou. 14. J. C. Seeberger, nails.....	52.30
June 26. Vou. 15. Sexton & Usher, labor.....	5.50
June 28. Vou. 16. W. S. Lindsay, mason work.....	35.79
June 28. Vou. 17. Stillwell & Younker, labor.....	16.62
Aug. 5. Vou. 18. Freight on nails and sash.....	2.67
Aug. 5. Vou. 19. W. E. Bisbee, labor.....	100.00
Aug. 5. Vou. 20. Farm department, labor.....	3.00
Aug. 9. Vou. 21. Wright & Ives, nails.....	21.86
Aug. 9. Vou. 22. J. H. Queal & Company, lumber.....	228.00
Aug. 22. Vou. 23. Geo. Bisbee, lathing.....	31.32
Aug. 22. Vou. 24. G. K. Cameron, brick.....	28.22
Sept. 21. Vou. 25. W. E. Bisbee, on contract.....	145.62
Sept. 1. Vou. 26. P. H. Castle, plastering.....	84.87
Sept. 21. Vou. 27. A. Usher, work.....	3.00
Sept. 4. Vou. 28. Farm department, work.....	1.05
Sept. 11. Vou. 29. P. H. Castle, plastering.....	67.50
Sept. 14. Vou. 30. Wright & Ives, hardware.....	7.35

1883.			
Sept. 9.	Vou. 1.	Gardner, Batchelder & Wells, doors.	\$ 6.98
Sept. 17.	Vou. 2.	John Queal & Company, lumber.....	17.70
Sept. 17.	Vou. 3.	John Queal & Company, lumber and fixtures.....	81.60
Sept. 17.	Vou. 4.	John Queal & Company, lumber and fixtures.....	1.00
Sept. 17.	Vou. 5.	P. H. Castle, labor.....	21.50
Sept. 17.	Vou. 6.	Wright & Ives, hardware.....	5.55
			\$2,234.33
			\$2,234.33

EXHIBIT G.

RECEIPTS.

Amount received from State Treasurer on account of appropriation for public roads..... \$ 300.00

EXPENDITURES.

1883.
Oct. 23. Vou. 1. Paid sundry persons work on public roads..... \$ 300.00

EXHIBIT H.

RECEIPTS.

Amount received from State Treasurer for account of appropriation for veterinary hospital..... \$ 500.00

EXPENDITURES.

1883.
Feb. 10. Vou. 1. Fremont Turner, labor, on contract..... \$425.00
April 2. Vou. 2. Fremont Turner, labor on contract..... 75.00
\$500.00 \$ 500.00

THE STATE EXPERIMENT APPROPRIATION.

The annual sum appropriated by law from the State treasury for experiments in agriculture and horticulture is \$1,500, which the Board of Trustees divided equally between the two departments. For the year 1882 the sum of \$500 was appropriated from this fund by the Board of Trustees, for the purpose of investigating the fruits and trees of the Steppes of Northern Europe, with a view of selecting such as are adapted to our climate. Two hundred and fifty dollars was used to pay for selected plants and cions, with express on the same, purchased in Europe. The remaining \$750 was appropriated for the erection of a building and the purchase of machinery for the manufacture of sorghum.

For the year 1883 the sum of \$1,500 was again divided by the Board of Trustees equally between the departments of agriculture and horticulture. In agriculture the sum of \$750 was used to purchase additional machinery for sorghum—principally a 15-horse boiler, a copper syrup pan, and a centrifugal—and the construction of a pit and the storing of clover for ensilage. (See report on experiments.)

Most of the remainder (appropriated to Horticultural Department) is unexpended, for the reason that the cions, rooted plants, cuttings, etc., for experimental work have not arrived, though ordered, and there is not time to receive the invoices before the close of this report.

About \$200 of the amount are reserved for the construction of a propagating frame, a necessity long delayed on account of lack of funds.

Signed,

S. A. KNAPP,
J. L. BUDD.

EXHIBIT A.

RECEIPTS.

Amount received from State Treasurer on account of appropriation for State Experimental Fund of 1882. \$1,500.00

EXPENDITURES.

1882.			
June 13.	Vou. 1.	Advanced to J. L. Budd by order of Board	\$ 750.00
		(Expended in the following accounts:)	
	No. 1.	J. L. Budd, traveling expenses, trip to Europe	\$500.00
	No. 2.	C. H. Wagner, Riga seeds	3.00
	No. 3.	C. H. Wagner, Riga trees, cions, etc.	39.50
	No. 4.	Edmond Jankowsky, cions	7.50
	No. 5.	P. Tretjackoff, cions	41.75
	No. 6.	American Express Co.	32.66
	No. 7.	C. H. Wagner, Riga cions and trees	32.50
	No. 8.	Bardet Freres, cions.	37.00
	No. 9.	American Express Co., express	13.40
	No. 10.	V. Tomlinson, brick	17.69
	No. 11.	Jerome Fisher, cions and trees	25.00
			<u>\$750.00</u>
July 26.	Vou. 2.	Paid D. J. Bissell, sorghum mill	160.00
Aug. 9.	Vou. 3.	Paid Wright & Ives, hardware	14.61
Aug. 9.	Vou. 4.	Paid J. H. Queal & Co., lumber	235.55
Aug. 10.	Vou. 5.	Paid sundry persons for work	8.08
Aug. 12.	Vou. 6.	Paid sundry persons for work	98.50
Aug. 22.	Vou. 7.	Paid G. K. Cameron for brick	15.00
Sept. 4.	Vou. 8.	Paid Farm Department, work	7.12
Sept. 11.	Vou. 9.	Paid J. H. Queal & Co., lumber	5.65
Sept. 11.	Vou. 10.	Paid Wright & Ives, hardware	3.00
Sept. 11.	Vou. 11.	Paid Bingham & Co., hardware	1.35
Sept. 11.	Vou. 12.	Paid Bradley & Templeton, oil	2.75
Oct. 3.	Vou. 13.	Paid Folger, Wilde & Co., sorghum machinery	27.25

Oct. 10.	Vou. 14.	Paid A. Hague, castings	\$ 15.50
Oct. 11.	Vou. 15.	Paid Mechanical Department, labor and material	57.76
Oct. 11.	Vou. 16.	Paid Farm Department, labor	6.87
Oct. 14.	Vou. 17.	Paid Wright & Ives, spark arrester	16.41
Nov. 3.	Vou. 18.	Paid William Benning, material	17.80
Nov. 8.	Vou. 19.	Paid P. Carmody, work on sorghum	20.00
Nov. 8.	Vou. 20.	Paid Mechanical Department, labor	4.00
Nov. 8.	Vou. 21.	Paid J. D. Seeberger, belting	5.24
Nov. 8.	Vou. 22.	Paid G. K. Cameron, brick	23.40
1883.			
Nov. 10.	Vou. 1.	Paid Wright & Ives, locks	4.16
			<u>\$1,500.00</u>
			\$1,500.00

EXHIBIT B.

RECEIPTS.

Amount received from State Treasurer on account of appropriation for State Experimental Fund of 1883. \$1,500.00

EXPENDITURES.

1883.			
June 6.	Vou. 1.	Paid J. N. Muncey, expenses to Illinois	\$ 27.81
June 9.	Vou. 2.	Paid J. H. Queal & Co., lumber	43.64
July 2.	Vou. 3.	Paid American Express Company, C. O. D. express	17.24
July 3.	Vou. 4.	Paid J. A. Field & Co., centrifugal	45.00
July 19.	Vou. 5.	Paid C. H. Wagner, plants, Horticultural Department	21.50
July 19.	Vou. 6.	Paid Dr. Edward Regel, plants, Horticultural Department	18.63
July 21.	Vou. 7.	Paid Chicago & Northwestern Railroad, freights	15.75
Aug. 2.	Vou. 8.	Paid Wm. Benning, labor on silo	4.50
Aug. 3.	Vou. 9.	Paid Chicago & Northwestern Railroad, freights	5.72
Aug. 7.	Vou. 10.	Paid J. A. Field & Co., copper sorghum pan	75.00
Aug. 11.	Vou. 11.	Paid Chas. P. Willard & Co., boiler	248.00
Aug. 13.	Vou. 12.	Paid W. A. Conroy, work on silo	5.07
Aug. 13.	Vou. 13.	Paid G. W. Staves, drayage on boiler	8.00
Aug. 16.	Vou. 14.	Paid W. C. Shepherd Coal Co., two hundred fire brick	3.25
Aug. 20.	Vou. 15.	Paid J. H. Queal & Co., lime and cement	6.10

Aug. 23.	Vou. 16.	Paid John Cole, 2,000 brick	\$ 16.00
Aug. 28.	Vou. 17.	Paid Chicago & Northwestern Rail- road, freights .....	.68
Sept. 7.	Vou. 18.	Paid American Express Company, express .....	.60
Sept. 7.	Vou. 19.	Paid I. B. McElyea, drayage on brick	9.00
Sept. 7.	Vou. 20.	Paid F. E. Bush, labor	2.80
Sept. 8.	Vou. 21.	Paid F. D. Basket, labor and material	40.75
Sept. 8.	Vou. 22.	Paid Chicago & Northwestern Rail- road, freights	1.95
Sept. 8.	Vou. 23.	Paid Chicago & Northwestern Rail- road, freights .....	.81
Sept. 8.	Vou. 24.	Paid J. D. Seeberger, sundry fixtures	25.02
Sept. 8.	Vou. 25.	Paid C. P. Willard & Co., engine and boiler fixtures	20.70
Sept. 8.	Vou. 26.	Paid J. A. Field & Co., saccharometer	1.69
Sept. 11.	Vou. 27.	Paid Mauck, Conway & Smith, ma- son work	29.00
Sept. 19.	Vou. 28.	Paid G. A. Johnson, labor	1.00
Sept. 25.	Vou. 29.	Paid R. J. Davis, sorghum cane	15.63
Oct. 1.	Vou. 30.	Paid Wm. Kinsley, sorghum	18.00
Oct. 5.	Vou. 31.	Paid pay roll for September, labor....	64.54
Oct. 6.	Vou. 32.	Paid American Express Company, express .....	.50
Nov. 19.	Vou. 33.	Paid Mechanical Department, labor .	9.90
			<hr/>
			\$ 803.78 \$1,500.00
		To balance on hand November 20, 1883.	696.22
			<hr/>
			\$1,500.00 \$1,500.00

REPORT OF THE TREASURER.

(FOR THE YEAR ENDING NOVEMBER 8, 1882.)

The following are the receipts and expenditures on account of the different College funds for the year ending November 8, 1882.

PERMANENT ENDOWMENT FUND.

RECEIPTS.

Balance from last year	\$84,832.72
Amount from sale of College land	6,862.28

EXPENDITURES.

Amount paid State Treasurer for investment, to date. .	\$91,695.00	
	<hr/>	
	\$ 91,695.00	\$ 91,695.00

CONTINGENT PRINCIPAL FUND.

RECEIPTS.

Balance from last year	\$10,800.00
Amount transferred from Interest Fund	6,000.00

EXPENDITURES.

Amount invested by G. W. Bassett in mortgages	\$ 8,350.00	
Total amount expended	\$ 8,350.00	
Amount unexpended	8,450.00	
	<hr/>	
	\$16,800.00	\$ 16,800.00

INTEREST FUND.

RECEIPTS.

Balance from last year	\$ 4,883.32
Amount from G. W. Bassett, College Agent	39,880.53
Amount transferred from Endowment Interest Fund	4,429.13
Amount transferred from Contingent Fund	3,715.37
Amount from interest on sundry notes	105.34
Amount transferred from printing office fund	250.00
	<hr/>
Total receipts	\$53,263.69

EXPENDITURES.

Amount to Contingent Principal Fund for investment, by order of Board of Trustees.....	\$ 6,000.00	
Paid for horticultural department.....	2,349.79	
Paid for farm department.....	3,703.67	
Paid for salaries.....	27,243.08	
Paid for contingent expenses.....	2,044.14	
Paid for sanitary department.....	13.55	
Paid for public rooms.....	2,721.05	
Paid for mechanical department.....	1,153.50	
Paid for botanical department.....	1,175.00	
Paid for veterinary department.....	287.74	
Paid for physical department.....	485.14	
Paid for museum department.....	517.90	
Paid for military department.....	293.73	
Paid for civil engineering department.....	500.00	
Paid for domestic economy.....	275.22	
Paid for chemical department.....	530.40	
Paid for library.....	1,072.44	
Paid for south hall lawn.....	23.11	
Paid for north hall.....	90.41	
Paid for organ.....	1,025.00	
Paid for north hall furniture.....	125.37	
Paid for department circulars.....	17.80	
Paid for chapel exercises.....	95.00	
Paid for cottage cistern.....	132.36	
<hr/>		
Total expended.....	\$ 51,875.40	\$ 53,263.69
Amount unexpended.....	1,388.29	
<hr/>		
	\$ 53,263.69	\$ 53,263.69

STATE TREASURER.

Balance from last year, lands sold.....	\$84,832.72
Amount from same source in 1882.....	6,862.28
<hr/>	
Total in hands of State Treasurer.....	\$91,695.00

MORTGAGES RECEIVABLE.

Balance from last year.....	\$ 6,500.00
Amount sent G. W. Bassett for investment.....	4,350.00
<hr/>	
Total amount invested.....	\$10,850.00
Amount received on mortgages.....	\$ 2,500.00
Amount of mortgages on hand.....	8,350.00
<hr/>	
	\$ 10,850.00 \$ 10,850.00

BILLS RECEIVABLE.

Balance from last year.....	\$ 2,465.25	
Notes received during 1882.....	605.00	
<hr/>		
Total notes received.....	\$ 3,070.25	
Notes paid during the year.....		\$ 1,328.00
Amount of notes on hand.....		1,742.25
<hr/>		
	\$ 3,070.25	\$ 3,070.25

DIPLOMAS.

RECEIPTS.

Balance from last year.....	\$ 101.92
Amount received from students for diplomas.....	65.00

EXPENDITURES.

Amount paid on account of diplomas.....	\$ 59.60
Amount unexpended.....	107.32
<hr/>	
	\$ 166.92 \$ 166.92

DONATION FUND.

RECEIPTS.

Amount received from various sources.....	\$ 1,720.80
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EXPENDITURES.

Amount paid sundry persons, as per vouchers.....	\$ 783.78
Amount unexpended.....	937.02
<hr/>	
	\$ 1,720.80 \$ 1,720.80

FURNACE PIPING APPROPRIATION.

RECEIPTS.

Balance from last year.....	\$ 150.00
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EXPENDITURES.

Amount paid sundry persons, as per vouchers.....	\$ 150.00
<hr/>	
	\$ 150.00 \$ 150.00

PERSONAL ACCOUNTS.

Debit balance from last year.....	\$ 659.43
Paid sundry persons on account.....	88.83

RECEIPTS.

Amount from sundry persons on account.....	\$ 269.73
Amount to balance.....	478.53
<hr/>	
	\$ 748.26 \$ 748.26

CASH.

RECEIPTS.

Balance from last year.....	\$ 7,810.56	
Amount received from all sources.....	84,149.44	
Total receipts.....	\$91,960.00	

EXPENDITURES.

Amount paid out as per vouchers in treasurer's office.....		\$82,507.41
Balance cash on hand, State appropriations...\$	790.74	
Balance cash on hand, other accounts.....	8,661.85	9,452.59
		<hr/>
	\$91,960.00	\$91,960.00

FARM DEPARTMENT.

RECEIPTS.

Amount received from Farm Stock.....	\$ 482.53
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EXPENDITURES.

Paid for farm experiments.....	\$ 1,000.00
Paid for farm produce.....	1,522.38
Paid for farm permanent improvements.....	1,460.00
Paid for farm current improvements.....	67.89
Paid for farm tools.....	135.93
	<hr/>
Total expended.....	\$4,186.20
Total expended over receipts to balance....	3,703.67
	<hr/>
	\$4,186.20 \$4,186.20

HORTICULTURAL DEPARTMENT.

EXPENDITURES.

Paid for horticulture and forestry.....	\$ 1,256.22
Paid for orchard.....	15.89
Paid for propagating houses.....	106.87
Paid for experimental horticulture.....	459.50
Paid for vegetable garden.....	15.55
Paid for small fruits.....	24.07
Paid for ornamental grounds.....	471.69
	<hr/>
Total expended.....	\$2,349.79

GENERAL SUMMARY.

	Dr.		Cr.
State Treasurer.....	\$91,695.00	Permanent endowm't fund.	\$91,695.00
Mortgages receivable.....	8,350.00	Contingent principal fund.	16,800.00
Bills receivable.....	1,742.25	Donation fund.....	937.02
Personal accounts.....	478.53	Diplomas.....	107.32
Cash on hand.....	8,661.85	Interest fund.....	1,388.29
	<hr/>		<hr/>
	\$110,927.63		\$110,927.63

APPROPRIATIONS OF NINETEENTH GENERAL ASSEMBLY.

Total amount received.....	\$13,549.12
Total amount expended.....	\$12,758.38
Total amount unexpended....	790.74
	<hr/>
	\$13,549.12 \$13,549.12

An itemized statement of the receipts and expenditures on account of the State appropriations is shown in the report of the Building Committee.

Respectfully submitted,

J. L. GEDDES, *Treasurer.*

REPORT OF THE TREASURER.

[FOR THE YEAR ENDING NOV. 14, 1883.]

The following are the receipts and expenditures of the different College funds for the year ending November 14, 1883.

PERMANENT ENDOWMENT FUND.

RECEIPTS.

Balance from last year.....	\$91,695.00
Amount from sale of College lands.....	22,821.02

EXPENDITURES.

Amount paid State Treasurer for investment.....	\$114,516.02
	<hr/>
	\$114,516.02 \$114,516.02

CONTINGENT PRINCIPAL FUND.

RECEIPTS.

Balance from last year	\$16,800.00
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EXPENDITURES.

Amount invested in mortgages by G. W. Bassett.....	\$14,550.00
Amount to date unexpended.....	1,250.00
	<hr/>
	\$16,800.00 \$16,800.00

INTEREST FUND.

RECEIPTS.

Balance from last year.....	\$ 1,388.29
Amount received from G. W. Bassett, agent.....	38,257.50
Amount transferred from endowment interest fund.....	5,023.18
Amount transferred from interest and notes.....	120.98
Amount transferred from contingent fund.....	3,548.07
	<hr/>
Total receipts.....	\$48,338.02

EXPENDITURES.

Paid for farm department.....	\$ 2,777.62	
Paid for horticultural department.....	793.74	
Paid for salaries.....	27,805.06	
Paid for department circulars.....	331.03	
Paid for catalogue of 1883.....	125.03	
Paid for College safe.....	500.00	
Paid for public grounds.....	932.85	
Paid for mechanical department.....	651.93	
Paid for water works.....	667.81	
Paid for botanical department.....	225.00	
Paid for veterinary department.....	192.77	
Paid for physical department.....	310.70	
Paid for chemical department.....	292.74	
Paid for civil engineering department.....	192.30	
Paid for museum, entomology and zoology.....	138.55	
Paid for domestic economy.....	180.52	
Paid for military department.....	170.75	
Paid for sanitary purposes.....	37.38	
Paid for contingent expense.....	1,784.40	
Paid for public rooms.....	1,630.15	
Paid for chapel services.....	65.00	
Paid for north hall.....	76.15	
Paid for south hall lawn.....	8.85	
Paid for library.....	1,078.99	
Paid for veterinary hospital fixtures.....	100.00	
Paid for boarding cottage, furniture and water supply	390.33	
	<hr/>	
Total expended.....	\$41,459.65	\$48,338.02
Amount unexpended.....	6,878.37	
	<hr/>	
	\$48,338.02	\$48,338.02

STATE TREASURER.

Balance from last year, land sold.....	\$ 91,695.00
Amount from lands sold in 1883.....	22,821.02
	<hr/>
Total amount in hands of State Treasurer.....	\$114,516.02

MORTGAGES RECEIVABLE.

Balance from last year	\$ 8,350.00
Amount sent G. W. Bassett for investment.....	8,300.00
	<hr/>
Total amount invested.....	\$16,650.00
Amount received on mortgage "No. 3".....	\$ 1,100.00
Amount of mortgages on hand.....	15,550.00
	<hr/>
	\$16,650.00 \$16,650.00

BILLS RECEIVABLE.

Balance from last year.....	\$1,742.25	
Amount for notes received in 1883, "No. 1 to 5,".....	580.54	
		<hr/>
Total notes received.....	\$2,322.79	
Notes paid during year 1883.....		\$ 635.00
Amount of notes on hand.....		1,687.79
		<hr/>
	\$ 2,322.79	\$ 2,322.79

DIPLOMAS.

RECEIPTS.

Balance from last year.....	\$107.32
Amount received from students for diplomas.....	69.00

EXPENDITURES.

Amount paid on account of diplomas.....	\$106.19
Amount unexpended.....	70.13
	<hr/>
	\$176.32
	\$176.32

DONATION FUND.

RECEIPTS.

Amount on hand from last year.....	\$937.02
Amount received during year.....	3.20

EXPENDITURES.

Amount paid sundry persons as per vouchers.....	\$821.49
Amount unexpended.....	118.73
	<hr/>
	\$940.22
	\$940.22

PERSONAL ACCOUNTS.

Debit balance from last year.....	\$478.53
Amount to balance.....	
	<hr/>
	\$478.53
	\$478.53

CASH ACCOUNT.

RECEIPTS.

Balance from last year.....	\$ 9,452.59
Amount received from all sources.....	95,956.52
	<hr/>
Total receipts.....	\$105,409.11

EXPENDITURES.

Amount paid out as per vouchers in Deputy Treasurer's office.....		\$97,727.13
Cash on hand, State appropriations.....	\$1,374.07	
Cash on hand, other sources.....	6,307.91	7,681.98
	<hr/>	<hr/>
	\$105,409.11	\$105,409.11

FARM DEPARTMENT.

RECEIPTS.

Amount received from farm stock.....	\$ 488.42
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EXPENDITURES.

Paid for farm experiments.....	\$ 784.54
Paid for farm permanent improvement.....	793.15
Paid for farm current improvement.....	104.19
Paid for farm tools.....	347.13
Paid for farm produce.....	1,022.95
Paid for creamery apparatus.....	214.08
	<hr/>
Total expended.....	\$3,266.04
Total expended over receipts to balance.....	2,777.62
	<hr/>
	\$3,266.04
	\$3,266.04

HORTICULTURAL DEPARTMENT.

RECEIPTS.

Amount received from orchard.....	\$ 26.05
Amount received from vegetable garden.....	118.26
Amount received from small fruits.....	86.02

EXPENDITURES.

Paid for horticulture and forestry.....	\$ 764.52
Paid for propagating house.....	38.64
Paid for experimental horticulture.....	220.91
	<hr/>
	\$1,024.07
Total expended over receipts to balance.....	793.74
	<hr/>
	\$1,024.07
	\$ 230.33
	\$ 1,024.07

GENERAL SUMMARY.

	Dr.		Cr.
State Treasurer.....	\$114,516.02	Permanent endowm't fund	\$114,516.02
Bills receivable.....	1,687.79	Railroad damages.....	157.00
Mortgages receivable.....	15,550.00	Contingent principal fund.	16,800.00
Personal accounts.....	478.53	Donation fund.....	118.73
Cash on hand.....	6,307.91	Diplomas.....	70.13
		Interest fund.....	6,878.37
	\$138,540.25		\$138,540.25

APPROPRIATIONS OF NINETEENTH GENERAL ASSEMBLY.

RECEIPTS.

Balance on hand from last year.....	\$ 790.74
Amount received from State Treasurer.....	13,087.34
Amount credited from freight drawbacks.....	37.95

EXPENDITURES.

Amount expended as per vouchers.....	\$12,541.96
Cash on hand.....	1,374.07
	<hr/>
	\$13,916.03
	\$13,916.03

For itemized statement of receipts and expenditures on account of State appropriations, see report of Building Committee.

Respectfully submitted,

W. M. GREELEY, *Treasurer.*

REPORT OF THE SECRETARY.

[FOR THE BIENNIAL PERIOD ENDING NOVEMBER 14, 1883.]

IOWA AGRICULTURAL COLLEGE, }
November 22, 1883. }

To the Honorable Board of Trustees:

The law directs that the Secretary shall report to your honorable body the proceedings of the Board of Audit. I herewith submit such report, and also a summary of the account kept by me with the College Treasurer, a statement of the amount and present condition of the College endowment, and an estimate of the future income of the Institution, based upon a careful study of the College accounts.

The rules governing the Board of Audit in the auditing of bills have been heretofore reported to the Board of Trustees. With a view to publication I repeat them. They are in substance as follows:

(1) It is required that all bills of whatever kind, either for supplies or labor, shall be certified to as correct by the head of the department purchasing the supplies, or employing the labor. (2) In the judgment of the Board of Audit each bill must be a just bill against the College, reasonable in amount for the service rendered, and legally payable from the funds of the Institution. (3) An appropriation for the payment of the bill must have been made by the Board of Trustees. These rules have been strictly enforced during the biennial period covered by this report. No bills have been allowed without the required certificate. All bills ordered paid have been proper claims against the College, and payable under the law from its funds. In no cases have the expenditures exceeded the sums appropriated by the Board.

As Secretary of the Board of Audit, I have made monthly examinations of the Treasurer's accounts. In making such examinations, I have compared the stubs of the Treasurer's receipt book and the

duplicate receipts filed in my office with the debit side of the cash account. I have also compared the statement of the State Treasurer, the report of the College land agent, and the cash reports of the heads of the different departments with the Treasurer's accounts. I have proven the additions, and thus determined the total cash received. I have then examined the vouchers for cash paid out, taking careful note that each voucher was properly audited, receipted and correctly entered in the cash-book. I have added the items of expenditure in each department, and thus ascertained the total disbursements. As the result of such examinations, I hereby certify that the errors discovered have been corrected, and the Treasurer's books as they now stand are correct.

As Secretary of the Board of Trustees I am required by law to keep an account with the College Treasurer. This account shows the following receipts and disbursements during the biennial period.

TOTAL RECEIPTS AND DISBURSEMENTS FOR 1882.

RECEIPTS.

Cash on hand at beginning of the year	\$ 7,810.56
From State appropriations	13,549.12
From sales of endowment fund land	6,862.28
From payment of principal on loans	2,500.00
From rental on endowment fund land	39,880.53
From interest on investment of endowment fund	4,429.13
From rental on contingent fund land	3,055.95
From interest on loans of accumulated interest	659.42
From payment of sale notes falling due	1,328.00
From interest on sale notes	105.34
From sales by departments	11,509.94
From sundry persons on old accounts	269.73
Total receipts	\$ 91,960.00

DISBURSEMENTS.

Expended on account of State appropriations	\$ 12,758.38
Endowment fund remitted State Treasurer for investment	6,862.28
Contingent fund principal, remitted agent Bassett for investment	4,350.00
Expended on account of the various college departments	58,447.92
Paid sundry persons on old accounts	88.83
Total disbursements	82,507.41
Cash balance on hand	9,452.59
	\$ 91,960.00

The cash balance on hand belonging to the following funds:

State appropriations	\$ 790.74
Contingent fund principal	8,450.00
Interest fund	211.85
	\$ 9,452.59

TOTAL RECEIPTS AND DISBURSEMENTS FOR 1883.

RECEIPTS.

Cash on hand at the beginning of the year	\$ 9,452.59
From State appropriations	13,087.34
From sales of endowment fund land	22,821.02
From payment of principal on loans	1,100.00
From rental on endowment fund land	38,257.50
From interest on investments of endowment fund	5,023.18
From rental on contingent fund land	2,990.67
From interest on loans of accumulated interest	557.40
From sales by departments	10,947.67
From payment of sale notes falling due	635.00
From interest on sale notes	120.98
From interest on State warrants	5.06
From Chicago and Northwestern Railroad Co., rebate on freights	215.75
From transfer of freight drawback to State appropriations	37.95
Right of way damages	157.00
Total receipts for the year	\$105,409.11

DISBURSEMENTS.

Expended on account of State appropriations	\$ 12,541.96
Endowment fund remitted to State Treasurer for investment	22,821.02
Contingent fund principal remitted agent Bassett for investment	8,300.00
On account of the various College departments	53,262.80
Freight drawbacks paid to contractor and distributed to State appropriations	215.75
Interest on State warrants paid contractor	5.06
Invested on sale notes during the year	580.54
Total disbursements during year	\$ 97,727.13
Cash balance on hand	7,681.98
Balance	\$105,409.11

The cash balance on hand belongs to the following funds:

State appropriations	\$1,374.07
Right of way damages	157.00
Contingent fund principal	1,250.00
Interest fund	4,900.91
	\$7,681.98

The system of book-keeping employed in the Treasurer's office gives general satisfaction. The accounts and vouchers of each department are kept separate from the others, and are thus always available to the Professor in charge. They can be examined by the Board of Trustees without difficulty, and are readily intelligible to one not an expert in accounts.

The endowment of the College is in round numbers \$637,000 and the income therefrom during the past fiscal year amounted to \$46,949.73. Over \$500,000 of the College endowment is invested in land leased on ten year contracts with the privilege of purchase at the expiration of the lease.

During the next fiscal year leases amounting to \$87,000 will become due, and in the year following the leases terminating will aggregate \$134,000. Thus in the next two years over \$221,000 of the College endowment will be paid in. The safe and profitable investment of this sum is a matter of vital importance to the College.

The last General Assembly memorialized Congress to so amend the national law as to permit the State to loan the College endowment on real estate securities.

The law was amended as desired. To secure its benefits, however, further legislation upon the part of the State is necessary. The General Assembly should provide for the loaning of the fund by the Board of Trustees on farm mortgages under such restrictions as will insure its safety. The endowments of many colleges are thus invested. In no other way can that of this Institution be safely handled and yet made to yield an income sufficient to support and develop the College.

Rental on leases is paid in advance. Interest on the fund when it is re-invested will probably be paid at the end of the year. This and the necessary lower rate of interest will cause a considerable reduction in the revenues of the College. If the fund as it is paid in can be invested so as to net the College seven per cent, I estimate the income of the College for the next few years as follows:

For the fiscal year 1884.....	\$40,000.00
For the fiscal year 1885.....	37,000.00
For the fiscal year 1886.....	42,000.00
For the fiscal year 1887.....	42,000.00

The expenditures for the present year on account of salaries and the various departments amount to \$42,315.13. The balance on hand at the close of the year is nearly \$5,000. With this balance rightly distributed over the years, with the privilege of loaning the endowment on real estate securities, and with wise economy in appropriations, I see no reason to apprehend financial embarrassment to the Institution.

Attached to this report are exhibits giving full information regarding the condition of the College funds, the income received therefrom and the expenditure of the same.

Respectfully submitted,

E. W. STANTON, *Secretary.*

EXHIBIT A.

The following statement shows the condition of the lands and funds which constitute the endowment of the College:

Endowment fund land under lease.....	154,638.30 acres...	\$466,401.62
Endowment fund land not under lease.....	469.67 acres...	1,569.01
Endowment fund land sold and proceeds forwarded to State Treasurer.....	49,098.38 acres...	114,516.02
Land purchased with interest money under lease.....	11,333.17 acres...	38,519.51
Land purchased with interest money and sold	3,680.00 acres...	7,800.00
Amount transferred from interest fund for investment.....		9,000.00
Total endowment.....		\$637,806.16
Lands and funds yielding income.....		\$629,221.13
Lands and funds not yielding income.....		8,585.03
		\$637,806.16

The lands and funds yielding income are as follows:

Endowment fund land under lease, eight per cent.....	\$466,401.62
Land purchased with interest money under lease, eight per cent.	38,519.51
Amount invested by the State Treasurer in bonds and State warrants, bearing in most cases six per cent.....	108,750.00
Amount invested in farm mortgages, seven per cent.....	15,550.00
Total investments.....	\$629,221.13

Lands and funds not yielding income are as follows:

Lands not under lease.....	\$ 1,569.01
Cash in the hands of State Treasurer awaiting investment.....	5,766.02
Cash in hands of College Treasurer awaiting investment.....	1,250.00
Total.....	\$ 8,585.03

Investments by the State Treasurer are as follows:

Muscatine city bonds, bearing six per cent	\$ 6,000.00
Davenport city bonds, bearing six per cent.....	10,000.00
Winnebago county bonds, bearing six per cent	5,600.00
Independent school district, Newton, bearing six per cent	7,000.00
Independent school district, East Des Moines, bearing five per ct.	12,500.00
Independent school district, Maquoketa, bearing six per cent	500.00
Independent school district, Woodlawn, bearing seven per cent..	400.00
Independent school district, Afton, bearing six per cent.....	9,500.00
Independent school district, Union No. 4, Lotts Creek township, bearing six per cent.....	400.00
Independent school district, Poe township, bearing six per cent..	600.00
Independent school district, Athens township, bearing six per ct.	1,700.00
Independent school district, Harlan, bearing five per cent.....	11,400.00
Independent school district, Sioux City, bearing six per cent.....	10,000.00
Independent school district, Ames, bearing five per cent	10,000.00
Security Land & Trust Company bonds, bearing six per cent.....	5,500.00
Independent school district, Stuart, bearing six per cent	6,000.00
Independent school district, East Des Moines, bearing six per cent	7,000.00
Independent school district, Woodward, bearing six per cent ...	2,400.00
Stuart city bonds, bearing six per cent	2,000.00
State warrants endorsed.....	250.00
Total.....	\$108,750.00

The investments made by agent Bassett on farm mortgages are as follows:

Elizabeth Clements, March 12, 1879, five years, at nine per cent. ...	\$ 300.00
Rev. W. L. Lyons, October 12, 1880, five years, at seven per cent..	1,600.00
F. M. Leathers, October 20, 1880, five years, at seven per cent	500.00
Andrew Jensen, December 1, 1880, five years, at seven per cent...	500.00
Franklin J. Stone, January 2, 1882, five years at seven per cent ...	400.00
Clarence A. Gabrilson, January 23, 1882, five years at seven per cent.....	500.00
Edward Raftery, January 31, 1882, five years at seven per cent ...	1,000.00
George C. McCauley, April 10, 1882; due January 1, 1885, at seven per cent	1,400.00
C. P. & Julia Brainard, July 15, 1882, nine and a half years at seven per cent	1,050.00
Samuel Flack, January 1, 1883, five years at seven per cent.....	800.00
Henry and Hannah Stanbra, January 11, 1883, one year, at seven per cent.....	600.00
Benson Searle, June 23, 1883; due January 1, 1884, at seven per cent	1,000.00

Frank and Frederica Bartels, June 8, 1883; due January 1, 1884, at seven per cent	\$ 1,000.00
Catharine and C. H. Pendleton, July 3, 1883, ten years, at seven per cent	1,000.00
Martin and Barbara Rahm, June 23, 1883; due January 1, 1889, at seven per cent	700.00
Jeremiah and Mary Kelley, July 10, 1883; due July 1, 1888, seven per cent	1,000.00
Erick Helin, October 1, 1883; due January 1, 1889, at seven per cent	600.00
A. W. Alsever, October 11, 1883; due January 1, 1889, at seven per cent	600.00
Oella and C. L. Harris, October 19, 1883; due January 1, 1889, at seven per cent	1,000.00
Total	\$ 15,550.00

EXHIBIT B.

Showing the ordinary income of the Iowa Agricultural College for the fiscal year ending November 8, 1882, together with the net expenditures on account of the different departments.

INCOME.

Cash balance on hand*November 9, 1881.....	\$ 3,510.56
Net amount realized on sale notes on hand at the beginning of the year.....	723.00
Net amount received on personal accounts due at the beginning of the year	180.90
Interest on endowment fund invested by State Treasurer	\$ 4,429.13
Rental on endowment fund land	39,880.53
Rental on land purchased in 1868 with interest money	3,055.95
Interest on "accumulated interest" loaned on farm mortgages	659.42
Interest on notes received from department sales	105.34
Net amount received for diplomas.....	5.40
Total ordinary income for year.....	\$ 48,135.77
	\$ 48,135.77
	\$ 52,550.23

EXPENDITURES.

Salaries.....	\$ 27,243.08
Farm department, ordinary expenses and new purchases.....	\$1,243.67
Farm experiments.....	1,000.00
Farm permanent improvements.....	1,460.00
	3,703.67
Horticultural department.....	\$1,878.10
Ornamental grounds.....	471.69
	2,349.79
Mechanical department.....	1,153.50
Department of domestic economy.....	275.22
Military department.....	293.73
Veterinary department.....	287.74
Physics.....	485.14
Botany.....	1,175.00
Chemistry.....	530.40
Entomology, zoology and museum.....	517.90
Civil engineering.....	500.00
Library.....	1,072.44
Contingent expenses.....	2,044.14
Chapel organ.....	1,025.00
Public rooms.....	2,721.05
South hall lawn	23.11
Sanitary department.....	13.55
North hall (heating and cleaning).....	90.41
Wrapping steam pipes.....	150.00
Cottage cistern.....	132.36
North hall furniture	125.37
Conducting chapel service on the Sabbath.....	95.00
Department circulars.....	17.80
Net amount expended on account donation fund.....	312.98
Total ordinary expenses for the year.....	46,338.38
Amount transferred to contingent fund, principal.....	6,000.00
Cash balance on hand.....	211.85
	\$52,550.23

EXHIBIT C.

Showing the ordinary income of the Iowa Agricultural College for the fiscal year ending November 14, 1883, together with the expenditures on account of the different departments.

INCOME.

Cash balance on hand November 10, 1882.....	\$	211.85	
Amount received on sale notes on hand at the beginning of the year.....		635.00	\$846.85
Interest on endowment fund invested by the State			
Treasurer.....		5,023.18	
Rental on endowment fund land.....		38,257.50	
Rental on land purchased in 1868 with interest money.....		2,990.67	
Interest on "accumulated interest" loaned on farm mortgages.....		557.40	
Interest on notes.....		120.98	46,949.73
			<hr/>
			\$47,796.58

EXPENDITURES.

Salaries.....	\$27,805.06	
Farm department, ordinary expenses and purchases of apparatus and stock.....	\$ 1,199.93	
Farm experiments.....	784.54	
Farm permanent improvements.....	793.15	2,777.62
		<hr/>
Horticultural department.....	793.74	
Public grounds.....	932.85	
Mechanical department.....	651.93	
Department of domestic economy.....	180.52	
Military department.....	170.75	
Veterinary department.....	192.77	
Physics.....	310.70	
Botany.....	225.00	
Chemistry.....	292.74	
Entomology, zoology and museum.....	138.55	
Civil engineering.....	192.30	
Library.....	1,078.99	

Contingent expense.....	\$ 1,784.40
Public rooms.....	1,630.15
South hall lawn.....	8.85
North hall (heating and cleaning).....	76.15
Sanitary department.....	37.38
Pump, boiler and fixtures for water-works.....	667.81
Boarding cottage (furniture and water supply).....	390.33
Veterinary hospital fixtures.....	100.00
Safe for Treasurer's office.....	500.00
Catalogue for 1883 (several bills not yet paid).....	125.03
Conducting chapel services on the Sabbath.....	65.00
Department circulars.....	331.03
Net amount expended on diploma account.....	37.19
Net amount expended on account of donation fund.....	818.29
	<hr/>
Total ordinary expenses for the year.....	\$42,315.13
Amount invested in sale notes during the year.....	580.54
Cash balance on hand.....	4,900.91
	<hr/>
	\$47,796.58

EXHIBIT D.

Statement, showing for the fiscal year ending November 14, 1883.

- (1) Total expenditure of each department.
- (2) Total income of each department.
- (3) Excess of expenditures over income showing net amount of appropriation used.
- (4) Appropriations by the Board.

DEPARTMENT.	Total expenditures.	Total income from sales.	Net amount of appropriation expended.	Amount of appropriation.
Farm department	\$ 8,437.88	\$ 5,660.26	\$ 2,777.62	\$ 2,800.00
Mechanical department	2,564.41	1,912.48	651.93	1,000.00
Horticultural department	3,064.86	2,271.12	793.74	900.00
Domestic economy	208.46	27.94	180.52	200.00
Military department	170.75		170.75	185.00
Veterinary department	245.67	52.90	192.77	1,200.00
Physics	313.95	3.25	310.70	350.00
Botany	254.26	29.26	225.00	225.00
Chemistry	1,195.32	902.58	292.74	300.00
Entomology and zoology	148.90	10.35	138.55	150.00
Civil engineering	197.63	5.33	192.30	200.00
Library	1,078.99		1,078.99	1,100.00
Salaries	27,805.06		27,805.06	27,805.06
Contingent expense	1,784.40		1,784.40	1,993.20
Public grounds	932.85		932.85	995.05
Public rooms	1,630.15		1,630.15	1,900.00
South hall lawn	8.85		8.85	25.00
Sanitary department	37.38		37.38	100.00
North hall (heating and cleaning)	76.15		76.15	85.00
Pump, boiler and fixtures for water works	667.81		667.81	700.00
Boarding cottage—furniture and water supply	390.33		390.33	460.00
Veterinary hospital fixtures	100.00		100.00	100.00
Safe for Treasurer's office	500.00		500.00	500.00
Catalogue, 1883	125.03		125.03	500.00
Sabbath services	65.00		65.00	100.00
Department circulars	331.03		331.03	400.00
Diplomas	106.19	69.00	37.19	106.19
Donation fund	821.49	3.20	818.29	940.22
	\$ 53,262.80	\$ 10,947.67	\$ 42,315.13	\$ 45,319.72

SETTLEMENT WITH LAND AGENT BASSETT.

REPORT OF THE SECRETARY.

[SETTLEMENT EXTENDING FROM NOVEMBER 1, 1881, TO NOVEMBER 1, 1883.]

AGRICULTURAL COLLEGE, November 23, 1883.

To the Honorable Board of Trustees:

GENTLEMEN—During the last biennial period annual settlements have been made by your Secretary with Agent Bassett of all matters relating to his agency. The results of such settlements are herewith submitted.

At the beginning of the biennial period, the Agent was charged on my books with the following lands:

Land included in the Congressional grant	167,490.79 acres.
Land purchased with interest fund	11,333.17 acres.
Total	178,823.96 acres.

In the settlement with Agent Bassett made November 1, 1881, the above land was accounted for as follows:

Land included in the Congressional grant under lease	157,047.06 acres.
Land included in the Congressional grant in market for lease	10,443.73 acres.
Land purchased with interest fund under lease	10,173.17 acres.
Land purchased with interest fund in market for lease	1,160.00 acres.
Total	178,823.96 acres.

In the settlement made November 1, 1883, the same land was accounted for as follows:

Land included in Congressional grant sold during biennial period.....	12,382.82 acres.
Land included in Congressional grant under lease.....	154,638.30 acres.
Land included in Congressional grant not under lease.....	469.67 acres
	<hr/>
	167,490.79 acres.
Land purchased with interest money under lease.....	11,333.17 acres.
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	178,823.96 acres.

All the land charged against the Agent is thus accounted for.

The amount realized from the sale of land belonging to the Congressional grant is as follows:

For the year ending November 1, 1882.....	\$ 6,862.28
For the year ending November 1, 1883.....	22,821.02
	<hr/>
Total for the biennial period.....	\$29,683.30

The books of the College Treasurer show that this amount has been received by him from the Agent and duly forwarded to the Treasurer of State for investment. Added to the \$84,832.72 previously transmitted it gives the sum of \$114,516.02 elsewhere reported as in his hands.

Rent upon leases of land belonging to the grant has been collected as follows:

For the year ending November 1, 1882.....	\$39,912.53
For the year ending November 1, 1883.....	38,259.30
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Total for the two years.....	\$78,171.83

The above amount is accounted for as follows:

Remitted College Treasurer during fiscal year 1882,	
vouchers 140-151.....	\$39,880.53
Overcharge in receipt 7696 of the previous year.....	32.00
	<hr/>
Remitted College Treasurer during fiscal year 1883,	
vouchers 152-163.....	\$38,257.50
Overcharge in receipts 9040 and 7992.....	1.80
	<hr/>
Total.....	\$78,171.83

The collections of rental on land purchased with interest fund are as follows:

For the fiscal year 1882.....	\$3,055.95
For the fiscal year 1883.....	2,990.67
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Total for the two years.....	\$6,046.62

The above sum was duly remitted to the College Treasurer as shown by vouchers number fifty-seven to number eighty-one inclusive.

The investments of interest fund in farm mortgages amounted at the beginning of the biennial period to.....\$ 6,500.00
Mortgages have since been paid and remittances made by the Agent to the College Treasurer to the amount of..... 3,600.00

Amount remaining invested.....\$ 2,900.00

On November 1, 1881, the cash balance in the hands of the Treasurer to the credit of this fund was.....\$ 4,300.00
Received as above from collections by Land Agent..... 3,600.00
Transferred from interest fund in 1882 by order of Board of Trustees..... 6,000.00

Total to the credit of the fund.....\$16,800.00

The Agent has drawn from the college treasury since November 1, 1881, and invested in farm mortgages.....\$12,650.00
Amount of previous loans not collected..... 2,900.00

Total invested November 1, 1883.....\$15,550.00

Balance in college treasury awaiting investment..... 1,250.00

Total.....\$16,800.00

On the above investments Agent Bassett has collected interest as follows:

For fiscal year 1882.....	\$ 659.42
For fiscal year 1883.....	557.40
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Total for the two years.....\$1,216.82

This amount was paid over to the College Treasurer as shown by vouchers number five to number sixteen inclusive.

The foregoing comprises all the lands and funds included in the agency of Mr. Bassett. By a comparison of his books with those

kept in my office, and by a searching examination of the Agent's accounts, I have satisfied myself that he has correctly accounted for all the lands and funds placed under his charge.

The attention of the Board is called to the early expiration of a large number of leases.

From a careful examination of the list I estimate that the principal upon those now in force will be paid in about as follows:

In 1884.....	\$ 87,000.00
In 1885.....	134,000.00
In 1886.....	25,000.00
In 1887.....	20,000.00
In 1888.....	25,000.00
In 1889.....	4,000.00
In 1890.....	78,000.00
In 1891.....	49,000.00
In 1892.....	44,000.00
Total.....	\$466,000.00

The effect of these large annual payments upon the future income of the College is elsewhere discussed.

A question of almost equal importance relates to the procuring of patents for lessees, upon the expiration of their leases. The laws governing the leasing of College land are fully set forth in the report of Land Agent Bassett. I will only briefly refer to them here. When the General Assembly, by the act of 1864, first authorized the leasing of the land derived from the Congressional grant, it placed no limitation upon the amount which might be leased to any one person. Section 2 of the act of 1866 however provided "that any of the said lands might be leased in amounts not to exceed one hundred and sixty acres to any one man," etc. This provision was repeated in section 1 of the act of 1874. Since the passage of the law of 1866 no leases have been issued to any person in excess of one quarter section. These leases were, however, from the first held to be assignable, and in some cases they were so assigned that one person came to hold by this means leases upon more than one hundred and sixty acres. Section 2 of the act of 1874 provided for the renewal of all leases "hitherto issued." It placed no limitation upon the renewals and all leases presented were therefore renewed even though one person received renewals upon more than a quarter section.

The legality of these assignments and renewals was never ques-

1883.]

tioned prior to 1881. The College authorities and the State Land Office treated them as valid, and the Register of the State Land Office issued patents accordingly. In that year the Attorney-General rendered an opinion that no patent should issue upon more than one hundred and sixty acres to any one person. This decision was, in 1883, so modified as to except all renewals of land leased under the act of 1864 from the limitation in question. Acting upon the Attorney-General's interpretation of the law, the Secretary of State now requires your Secretary to attach to each certificate of purchase a list of the assignees of the lease upon which the certificate of purchase is issued, and a further certificate that none of the parties thus named ever held, as lessee, a lease not afterward forfeited for any other land than the tract described. Under this ruling all renewals in excess of one hundred and sixty acres to one person are void; also all leases or renewals which have passed by assignment through the hands of a person who holds or has previously held another College lease not since forfeited. Unless relieved by law great hardships must result from this ruling to a large class of lessees. Men who have dealt with the College in good faith and who have paid interest upon their leases for ten or fifteen years would be compelled to surrender their homes to the State.

Neither the College nor the State can afford to be a party to such a robbery. I urge therefore upon your consideration the necessity of legislative action providing for the patenting of College lands and requiring the Secretary of State to issue patents to any lessee or his assigns upon the certificate of the proper College officer showing the purchase of the tract or tracts of land covered by the lease or leases mentioned, and the payment in full of the purchase price of the same.

All of which is respectfully submitted.

E. W. STANTON,
Secretary Board of Trustees.

REPORT OF LAND AGENT.

To the Board of Trustees of Iowa State Agricultural College and Farm:

The following report of the transactions of the Land Department of the Iowa State Agricultural College, from November 1, 1881, to October 31, 1883, inclusive, is hereby submitted for your consideration.

Interest, or rent, upon leases of the lands belonging to the Congressional grant has been collected as follows:

1881.	
To amount collected month of November.....	\$ 3,891.50
To amount collected month of December.....	3,966.95
1882.	
To amount collected month of January.....	1,793.98
To amount collected month of February.....	2,014.00
To amount collected month of March.....	2,738.47
To amount collected month of April.....	2,728.84
To amount collected month of May.....	2,313.59
To amount collected month of June.....	4,841.34
To amount collected month of July.....	3,721.37
To amount collected month of August.....	3,798.27
To amount collected month of September.....	3,492.97
To amount collected month of October.....	4,611.75
1881.	
By amount remitted November 30, voucher number 140	\$ 3,859.50
By error, receipt number 7,696, double charge.....	32.00
By amount remitted December 31, voucher number 141	3,966.95
1882.	
By amount remitted January 31, voucher number 142	1,793.98
By amount remitted February 28, voucher number 143	2,014.00
By amount remitted March 31, voucher number 144...	2,738.47
By amount remitted April 30, voucher number 145....	2,728.84
By amount remitted May 31, voucher number 146.....	2,313.59
By amount remitted June 30, voucher number 147.....	4,841.34
By amount remitted July 31, voucher number 148.....	3,721.37
By amount remitted August 31, voucher number 149..	3,798.27
By amount remitted September 30, voucher number 150	3,492.97
By amount remitted October 31, voucher number 151..	4,611.75
Total amount collected and paid to College Treasurer during the fiscal year ending october 31,	
1882.....	\$39,912.53 \$ 39,912.53

1882.	
To amount collected month of November.....	\$ 4,108.41
To amount collected month of December.....	3,894.06
1883.	
To amount collected month of January.....	2,241.50
To amount collected month of February.....	1,782.53
To amount collected month of March.....	3,005.27
To amount collected month of April.....	1,358.49
To amount collected month of May.....	2,478.80
To amount collected month of June.....	4,961.79
To amount collected month of July.....	3,669.61
To amount collected month of August.....	3,623.22
To amount collected month of September.....	3,236.94
To amount collected month of October.....	3,898.68
1882.	
By amount remitted November 30, voucher number 152	4,106.61
By error receipt number 9,040.....	1.00
By error receipt number 7,992.....	.80
By amount remitted December 31, voucher number 153	3,894.06
1883.	
By amount remitted January 31, voucher number 154..	2,241.50
By amount remitted February 28, voucher number 155	1,782.53
By amount remitted March 31, voucher number 156...	3,005.27
By amount remitted April 30, voucher number 157....	1,358.49
By amount remitted May 31, voucher number 158.....	2,478.80
By amount remitted June 30, voucher number 159....	4,961.79
By amount remitted July 31, voucher number 160.....	3,669.61
By amount remitted August 31, voucher number 161..	3,623.22
By amount remitted September 30, voucher number 162	3,236.94
By amount remitted October 31, voucher number 163..	3,898.68
Total amount collected and paid to the College Treasurer during the fiscal year ending October 31, 1883.....	
	\$ 38,259.30 \$ 38,259.30

CONTINGENT INTEREST.

1881.	
To amount collected month of November	\$ 35.20
To amount collected month of December	316.80
1882.	
To amount collected month of January	\$ 163.20
To amount collected month of February	128.00
To amount collected month of March	115.20
To amount collected month of April	438.35
To amount collected month of May	166.40
To amount collected month of June	342.40
To amount collected month of July	153.60
To amount collected month of August	377.60
To amount collected month of September	294.40
To amount collected month of October	524.80
1881.	
By amount remitted November 30, voucher number 57	\$ 35.20
By amount remitted December 31, voucher number 58	316.80
1882.	
By amount remitted January 31, voucher number 59...	163.20
By amount remitted February 28, voucher number 60	128.00
By amount remitted March 31, voucher number 61...	115.20
By amount remitted April 30, voucher number 62.....	438.35
By amount remitted May 31, voucher number 63	116.40
By amount remitted June 30, voucher number 64.....	342.40
By amount remitted July 31, voucher number 65.....	153.60
By amount remitted August 31, voucher number 66...	377.60
By amount remitted September 30, voucher number 67	294.40
By amount remitted October 31, voucher number 68...	524.80
By amount remitted October 31, voucher number 69 ..	50.00
	<hr/>
	\$ 3,055.95 \$ 3,055.95

CONTINGENT INTEREST.

1882.	
To amount collected month of November.....	\$ 35.20
To amount collected month of December.....	313.60
1883.	
To amount collected month of January.....	128.00
To amount collected month of February.....	172.80
To amount collected month of March.....	163.20
To amount collected month of April.....	310.35
To amount collected month of May.....	240.00
To amount collected month of June.....	275.20
To amount collected month of July.....	235.52
To amount collected month of August.....	128.00
To amount collected month of September.....	297.60
To amount collected month of October.....	691.20
1882.	
By amount remitted Nov. 30, voucher number 70.....	\$ 35.20
By amount remitted Dec. 31, voucher number 71.....	313.60
1883.	
By amount remitted Jan. 31, voucher number 72.....	128.00
By amount remitted Feb. 28, voucher number 73.....	172.80
By amount remitted March 31, voucher number 74.....	163.20
By amount remitted April 30, voucher number 75.....	310.35
By amount remitted May 31, voucher number 76.....	240.00
By amount remitted June 30, voucher number 77.....	275.20
By amount remitted July 31, voucher number 78.....	235.52
By amount remitted Aug. 31, voucher number 79.....	128.00
By amount remitted Sept. 30, voucher number 80.....	297.60
By amount remitted Oct. 31, voucher number 81.....	691.20
	<hr/>
	\$ 2,990.67 \$ 2,990.67

INTEREST ON LOANS OF CONTINGENT FUND.

1881.			
Dec. 1, to interest collected.....	\$	194.17	
Dec. 7, by remitted, voucher number 5.....			\$ 194.17
Dec. 31, to interest collected.....		118.80	
Dec. 31, by remitted, voucher number 6.....			118.80
1882.			
Jan. 31, to interest collected.....		112.00	
Jan. 31, by remitted, voucher number 7.....			112.00
Feb. 28, to interest collected.....		72.45	
Feb. 28, by remitted, voucher number 8.....			72.45
April 29, to interest collected.....		95.50	
April 29, by remitted, voucher number 9.....			85.00
April 29, by error, loan number 6.....			10.00
April 29, by recording satisfaction loan number 1.....			.50
Sept. 21, to interest collected.....		77.00	
Oct. 9, by remitted, voucher number 10.....			77.00
	\$	669.92	\$ 669.92
1882.			
Dec. 30, to interest collected.....	\$	210.00	
Dec. 30, by remitted, voucher number 11.....			\$ 210.00
1883.			
Jan. 31, to interest collected.....		133.15	
Jan. 31, by remitted, voucher number 12.....			133.15
March 31, to interest collected.....		72.25	
March 31, by remitted, voucher number 13.....			72.25
May 31, to interest collected.....		27.00	
May 31, by remitted, voucher number 14.....			27.00
July 31, to interest collected.....		28.00	
July 31, by remitted, voucher number 15.....			28.00
Oct. 1, to interest collected.....		87.00	
Oct. 1, by remitted, voucher number 16.....			87.00
	\$	557.40	\$ 557.40

PRINCIPAL ON LOANS.

1882.			
April 30, to amount collected.....	\$	2,500.00	
April 30, by remitted, voucher number 1.....			\$ 2,500.00
	\$	2,500.00	\$ 2,500.00
1883.			
Oct. 1, to amount collected.....	\$	1,100.00	
Oct. 31, by remitted, voucher number 2.....			\$ 1,100.00
	\$	1,100.00	\$ 1,100.00

ENDOWMENT FUND.

1882.			
To collected during month February.....	\$	480.00	
To collected during month April.....		400.00	
To collected during month May.....		1,032.00	
To collected during month June.....		120.00	
To collected during month July.....		1,020.00	
To amount collected during month August.....		387.16	
To amount collected during month September.....		2,703.12	
To amount collected during month October.....		720.00	
1882.			
By amount remitted March 31, voucher number 59.....	\$	480.00	
By amount remitted April 30, voucher number 60.....		400.00	
By amount remitted June 10, voucher number 61.....		376.00	
By amount remitted June 17, voucher number 62.....		656.00	
By amount remitted June 30, voucher number 63.....		120.00	
By amount remitted July 25, voucher number 64.....		1,020.00	
By amount remitted September 6, voucher number 65.....		387.16	
By amount remitted September 14, voucher number 66.....		1,239.12	
By amount remitted October 9, voucher number 67.....		1,464.00	
By amount remitted October 31, voucher number 68.....		720.00	
	\$	6,862.28	\$ 6,862.28

1882.	
To collected during month November.....	\$ 3,589.36
To collected during month December.....	1,449.77
1883.	
To collected during month January.....	1,265.81
To collected during month March.....	183.71
To collected during month April.....	1,400.00
To collected during month May.....	1,374.77
To collected during month June.....	1,960.00
To collected during month July.....	5,233.60
To collected during month August.....	1,360.00
To collected during month September.....	1,760.00
To collected during month October.....	3,244.00
1882.	
By amount remitted Nov. 30, voucher number 69.....	\$ 3,589.36
By amount remitted Dec. 30, voucher number 70.....	1,449.77
1883.	
By amount remitted Jan. 31, voucher number 71.....	1,265.81
By amount remitted March 31, voucher number 72.....	183.71
By amount remitted April 11, 23 and 30, vouchers number 73, 74 and 75.....	1,400.00
By amount remitted May 31, voucher number 76.....	1,374.77
By amounts remitted June 8 and 30, vouchers number 77 and 78.....	1,960.00
By amounts remitted July 2, 14 and 30, vouchers number 79, 80 and 81.....	5,233.60
By amount remitted Aug. 31, voucher number 82.....	1,360.00
By amount remitted Oct. 1, voucher number 83.....	1,760.00
By amount remitted Oct. 31, voucher number 84.....	3,244.00
	<hr/>
	\$ 22,821.02 \$ 22,821.02

RIGHT OF WAY DAMAGES FOR RAILROADS.

1883.	
To amount received August 1.....	\$ 157.00
By remitted August 31, voucher number 1.....	\$ 157.00
	<hr/>
	\$ 157.00 \$ 157.00

RECAPITULATION.

Amount interest fund collected during year ending October 31, 1882.....	\$ 39,912.58	
Amount interest fund collected during year ending October 31, 1883.....	38,259.30	
Amount contingent fund collected during year ending October 31, 1882.....	3,055.95	
Amount contingent fund collected during year ending October 31, 1883.....	2,990.67	
Amount interest on loans collected during year ending October 31, 1882.....	669.92	
Amount interest on loans collected during year ending October 31, 1883.....	557.40	
	<hr/>	
Total income since last report.....	\$ 85,445.77	\$ 85,445.77
Amount of endowment fund collected since date of last report.....	\$ 29,683.30	
Amount of principal on loans collected since date of last report.....	3,600.00	
Amount of right of way damages collected since date of last report.....	157.00	
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	\$ 33,440.30	\$ 33,440.30
	<hr/>	
Total collections since last report.....		\$ 118,886.07

Since the establishment of this agency, August, 1865, I have collected and remitted to the Treasurer of the College, on account of income up to October 31, 1881, as follows:

Interest fund.....	\$ 472,264.10
Contingent interest fund.....	12,554.20
Interest on loans.....	213.89
	<hr/>
	\$ 485,032.19
Income collected and paid over since Oct. 31, 1881...	85,445.77
Total income since establishment of this agency.....	\$ 570,477.96
Amount of endowment fund collected up to October 31, 1881..	84,832.72
Amount of endowment fund collected since October 31, 1881..	29,683.30
Amount of contingent fund principal up to October 31, 1881..	6,400.00
Amount of principal on loans since October 31, 1881.....	3,600.00
Amount of right of way damages, October 31, 1881.....	157.00
	<hr/>
Total amount collected and paid over since establishment of this agency.....	\$ 695,150.18

I have loaned of the contingent fund principal since date of last report, \$12,650, at seven per cent, secured on improved farming land as follows:

Loan number 8.	Franklin J. Stone.....	\$ 400.00
Loan number 9.	Clarence A. Gabrilson.....	500.00
Loan number 10.	Edward Rafferty.....	1,000.00
Loan number 11.	George C. McCauley.....	1,400.00
Loan number 12.	C. P. & Julia J. Brainard.....	1,050.00
Loan number 13.	Samuel Flack.....	800.00
Loan number 14.	Henry and Hannah Stanbra.....	600.00
Loan number 15.	Benson Searle.....	1,000.00
Loan number 16.	Frank Bartels and wife.....	1,000.00
Loan number 17.	Catharine Pendleton and husband.....	1,000.00
Loan number 18.	Martin Rahm and wife.....	700.00
Loan number 19.	Jeremiah Kelley and wife.....	1,000.00
Loan number 20.	Erick Helin.....	600.00
Loan number 21.	A. W. Alsever.....	600.00
Loan number 22.	Oella P. Harris and husband.....	1,000.00
Amount loaned since last report.....		\$ 12,650.00
Amount loaned prior to last report.....		6,500.00
Total amount loaned.....		\$ 19,150.00
Amount of principal on loans paid.....		3,600.00
Amount of loans outstanding.....		\$ 15,550.00

Interest upon leases and on loans is now promptly paid, there being but few delinquents, and but a small amount of over-due interest.

There are now in force one thousand and twenty-three leases of lands included in the Congressional grant, and seventy-three leases of the Sioux City purchase. A separate account is kept with each lease, showing date and amount of all payments, and the name of the person by whom payment is made. There are about six hundred and fifty correspondents paying interest on leases as owners.

The total amount of interest-bearing funds is as follows:

Value of lease of lands of the Congressional grant now in force, interest bearing, at eight per cent..	\$466,445.11
Annual interest on same.....	\$ 37,315.60
Value of leases at ten per cent.....	880.00
Annual interest on same.....	88.00
Value of leases on lands of the Sioux City purchase	38,519.51
Annual interest on same at eight per cent.....	3,081.56
Amount loaned, bearing seven per cent.....	15,550.00
Annual interest on same.....	1,088.50
Total interest-bearing funds in this department.....	
\$ 521,394.62	
Total income of the College from Congressional grant, payable at this office.....	\$ 41,573.66
Amount of endowment fund heretofore collected, and now in the hands of the Treasurer of State.	\$ 114,516.02
Total.....	\$ 635,910.64

On the 16th day of October, 1882, all the lands of the College had been leased. Number of acres forfeited since that date..	320
Number acres under lease, Congressional grant.....	154,654.25
Number acres patented.....	49,098.39
The n. w. qr. 30, 97, 28, not leased on account of conflict with swamp land entry.....	149.67
	204,222.31
Number acres of Sioux City purchase now under lease.....	11,333.17
Number acres patented.....	3,040.00
	14,373.17

This does not include the lands of the Sioux City purchase sold while in the care of agent Stone, of Sioux City.

I have leased of the endowment lands since my last biennial report.....	11,965.38 acres.
Of the Sioux City purchase.....	1,480.00 acres.
Total leased.....	13,445.38 acres.

A list of lands leased since date of last biennial report is herewith transmitted.

Amount of endowment fund falling due upon leases on or before December 31, 1885.....	\$221,821.94
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The following is a statement of total forfeitures made since the establishment of the Agency up to February 14, 1883, and the increased value of subsequent appraisement:

Number of acres which have once been forfeited to the College.....	91,807.77	
Re-appraised and leased at an advance of.....		·\$83,184.37
Number of acres subjected to a second forfeiture.....	30,083.78	
Increased valuation.....		8,683.88
Number of acres subjected to a third forfeiture.....	5,869.16	
Increased valuation.....		2,176.20
Number of acres subjected to a fourth forfeiture.....	480.00	
Increased valuation.....		320.00
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Total forfeitures.....	128,240.71	
Total advance in valuation.....		\$94,364.45

Forfeited lands are in all cases re-appraised by the Trustees of the College before being again offered in the market.

Your attention is especially called to the manner of patenting the lands of the College to purchasers, and to the necessity for legislation upon that subject to enable lessees, who in good faith have held and paid interest upon their leases for a series of years, to perfect their titles by purchase.

The first leases made on the establishment of this Agency in 1865 were issued under the authority of chapter 117 of the acts of the Tenth General Assembly, approved March 29, 1864. This act grants to the Iowa State Agricultural College all the lands donated to the State by act of Congress approved July 2, 1862, and authorizes the Trustees to lease any of the lands for a period of ten or more years at an annual rental of six per cent upon the appraised value of the tract, and also gives to the lessee a right to purchase the tract at the expiration of the lease.

The Trustees were also authorized to sell the lands for cash or upon partial payments, and the act further provides for the patenting of the lands in case of sale, and prescribes the form of certificate to be issued to the purchaser, upon the presentation of which, with the prescribed evidence of payment of the purchase money, the holder was entitled to receive from the Register of the State Land Office a patent for the tract.

In this act no limitation is made on the amount to be leased to one person.

Of the leases now in force one hundred and eighty-nine were issued under this act.

This statute was modified by chapter 71 of the acts of the Eleventh General Assembly, approved March 29, 1866.

The last named act authorizes the Trustees to "sell or lease all the lands granted," etc.

Section 2 provides "that any of said lands may be leased in amount not to exceed one hundred and sixty acres to any one man, for any term not exceeding ten years, the lessee paying eight per cent per annum in advance upon the price of said land," and the lessee to have the privilege of purchasing the tract at or before the expiration of the lease.

Under the act the lands were offered and leased in quarter section tracts, not more than one quarter section being at any time leased to one person.

There are now upon my books and in force three hundred and eighty-two (382) leases issued under the provisions of this act.

Neither of these acts appear in the Code of 1873, but section 1616 provides for leasing the College lands and for renewing leases. No lease was however made under this section, and only two renewals. Chapter 71 of the acts of the Fifteenth General Assembly, approved March 28, 1874, repeals section 1616 of the Code of 1873, and provides in section 1 for leasing the College lands, retaining the limitation of one hundred and sixty acres to one person; also retaining substantially the provisions of the former acts so far as they relate to leasing, purchase, forfeiture for non-payment of interest, etc.

Section 2: "The Board of Trustees are also authorized to renew leases heretofore made for a term not exceeding ten years from the date of such renewal," etc.

All the leases issued under chapter 117, acts of 1864, and chapter 71, acts of 1866, which were not forfeited or paid up and patented at the expiration of the term were renewed under the second section of the above act.

Of such renewals five hundred and seventy-one are now in force.

After the passage of the act of 1866 the limitation of one quarter section to one person was strictly observed in issuing leases, but leases were from the first held to be assignable.

Leases were presented for renewal by assignee, in some cases holding more than one lease. It did not appear that under the provis-

ion of the second section such renewals could be denied. The act makes no limitation as to renewals, neither is there any limitation upon the right of assignment, nor is there any provision in the statute for recording assignments nor any other method by which the ownership of leases can be kept in this office. The provisions of the statute did not warrant any attempt to follow and limit such ownership.

Hence renewals were made as leases were presented, in some cases at successive dates to persons who had previously received renewals of one or more leases, and in a few cases more than one lease was renewed to one person under the same date.

Following the provisions of chapter 117, acts of 1864, patents had been obtained from the State Land Office upon the presentation of the certificate of purchase as therein required until the present year, when the Secretary of State, following the opinion of the Attorney-General, declined to issue patents without an additional certificate as to ownership of the lease, which in most cases would prevent purchasers from obtaining patents.

The question, at the request of the College authorities, was again referred to the Attorney-General and heard upon an oral and written argument. The Attorney-General, by a second opinion modifying his first, holds:

1st. That leases issued under chapter 117, acts of 1864, and renewed may be patented without reference to the number of acres held by one person.

2d. That where assignments of more than one lease, issued under chapter 71, acts of 1866, have been made to one person patents should be refused.

Acting on this opinion the Secretary of State now requires, in order to obtain a patent, an additional certificate showing the successive assignments as they appear on the lease, and a further provision as follows:

"I further certify that the records of my office, including the several leases, on file, do not show that any one of the parties named herein ever held a lease for any other land than the tract described, as lessee, issued subsequent to the taking effect of the act aforesaid, approved March 29, 1866, which has not been forfeited or relinquished to the College, and same rendered null and of no effect."

The result of such ruling and of the requirements of the certificate as I understand them is as follows:

1st. Where more than one lease issued subsequent to the taking effect of act of 1866 has been renewed to one person such leases are void.

2d. Where the present holder of a lease or any assignee in the chain of title has heretofore received a lease from the College such lease cannot be patented.

3d. That the receiving of a lease from the College subsequent to the taking effect of the act of 1866, and which lease has not been forfeited, or the holding of such lease at any time by assignment forever disqualifies such lessee or assignee from subsequently holding any other lease issued under said act, and such lease subsequently acquired is void in the hands of a purchaser receiving title through such disqualified assignee.

I have no means of determining how many leases may hereafter be found subject to the objections stated in paragraphs two and three above.

In the renewals that appear upon my books there are about two hundred leases subject to the first objection, and upon which patents cannot now be obtained.

This failure to obtain patents has in some cases worked great hardship to lessees, many of whom are settlers upon the lands, having paid interest to the College for at least the full term of their leases, and have made valuable improvements and now wish to complete their titles by availing themselves of the privilege of purchase granted in the lease.

A cloud has furthermore been thrown upon the title of lease holders which has heretofore been regarded as beyond question.

When applications are made to pay up on a lease and receive a patent before the the term expires, I have, in accordance with your order, charged the lessee two per cent per annum on the purchase money for the remainder of the unexpired term. Nearly all the purchases made since the date of my last biennial report have been made on these terms.

The cases of conflict of title under the College grant, and claims under swamp land selections, have received attention. A case is now pending in the District Court of Kossuth county, Iowa, to cancel the swamp claim on the s hf of ne qr section 29, township 95, range 30,

and steps have been taken to remove the swamp claim from ne qr section 24, township 85, range 31, in Greene county.

The Nineteenth General Assembly, by an act approved March 25, 1882, chapter 169, provided for "the taxation of leasehold estates in Agricultural College lands." Under this act, I am informed, leases coming within the provisions of the act have been taxed in the several counties.

Notice, so far as practicable, has been communicated by me through a circular letter to lessees, advising them of such action of the Legislature and of the taxation of the lands.

In a number of cases, railroad corporations have instituted proceedings to obtain a right of way over College lands by condemnation; and in some instances proceedings have been instituted to appropriate land for cemetery purposes. In some of these cases applications have been made to me to appear on behalf of the College, which, however, I have not felt authorized to do. Such applications have been referred to the Trustees for action thereon.

In cases of condemnation for right of way, the damages awarded have been received by me and paid to the Treasurer of the College, as ordered by the Board of Trustees.

In the proceedings to obtain the right of way, lessees were not made parties, and hence have not the right of appeal. Their interests do not appear to be sufficiently protected in some cases.

Respectfully submitted,

GEO. W. BASSETT, *Agent.*

LIST OF LANDS LEASED FROM NOVEMBER 1, 1881, TO OCTOBER 31, 1883, INCLUSIVE.

Fiscal year ending October 31, 1882.

No. lease.	PART OF SECTION.	Section.	Township.	Range.	Acres.	Price.	Total valuation.	NAME OF LESSEE.	Date of purchase.	Term, years.	Per cent.	First payment.	Fee.
1994	se qr of se qr.	35	87	42	40	4	160	John Fritchard.....	Nov. 4 10	8 12.80	14		
1995	ne qr.....	24	86	43	160	3.75	600	Thos. J. Rumbaugh.....	Nov. 10 10	8 48.00	14		
1996	se qr.....	10	90	47	160	4	640	W. A. Daniel.....	Nov. 25 10	8 51.20	14		
1997	nw qr.....	24	98	34	160	3.50	560	J. K. Macomber.....	Nov. 25 10	8 44.80	14		
1998	nw qr.....	8	99	34	160	4	640	Mrs. J. K. Macomber.....	Nov. 25 10	8 51.20	14		
1999	sw qr.....	4	86	44	160	3	480	John E. D. Taylor.....	Dec. 14 10	8 38.40	14		
2000	sw qr.....	10	86	41	160	3	480	Charles P. Taylor.....	Dec. 14 10	8 38.40	14		
2001	se qr.....	6	86	44	160	4	640	John A. Showen.....	Dec. 14 10	8 51.20	14		
2002	e hf of se qr.	22	98	29	80	6	480	Geo. R. Randolph.....	Dec. 21 10	8 38.40	14		
2003	se qr.....	8	98	27	160	3.50	560	John Metcalf.....	Jan. 7 10	8 44.80	14		
2004	sw qr.....	12	98	27	160	3.50	560	Holton Tabor.....	Jan. 7 10	8 44.80	14		
2005	ne qr.....	1	98	30	168.05	4	672.20	Winchester Tabor.....	Jan. 7 10	8 53.78	14		
2006	sw qr.....	23	93	48	160	4	640	Robert G. McCormack.....	Jan. 7 10	8 51.20	14		
2007	nw qr.....	28	93	48	160	4	640	Jennie Gordon McCormack.....	Jan. 7 10	8 51.20	14		
2008	se qr.....	11	89	42	160	3	480	L. L. Runyon.....	Jan. 13 10	8 38.40	14		
2009	sw qr.....	32	99	30	160	4	640	Wm. P. Coolbaugh.....	Feb. 18 10	8 51.20	14		
2010	nw qr.....	8	90	46	160	4	640	John W. Webber.....	Feb. 18 10	8 51.20	14		
2011	se qr.....	18	90	46	160	4.50	720	Rebecca A. Webber.....	Feb. 18 10	8 57.60	14		
2012	se qr.....	20	88	43	160	3	480	Viola M. Webber.....	Feb. 18 10	8 38.40	14		
2013	ne qr.....	30	88	43	160	3	480	Rolly A. Bartlett.....	Feb. 18 10	8 38.40	14		
2014	ne qr.....	30	86	44	160	3.50	560	S. C. Palmer.....	Feb. 18 10	8 44.80	14		
2015	se qr.....	30	86	44	160	3.50	560	Geo. D. Corey.....	Feb. 18 10	8 44.80	14		
2016	ne qr.....	12	97	34	160	3.50	560	Ellen Greene.....	Mch. 4 10	8 44.80	14		
2017	nw qr.....	28	96	31	160	5	800	E. K. Greene.....	Mch. 13 10	8 64	14		
2018	ns qr.....	24	94	39	160	3.50	560	R. W. Hill.....	Mch. 13 10	8 44.80	14		
2019	ne qr.....	22	96	31	160	5	800	Levi Ladd.....	Mch. 13 10	8 64	14		
2020	ne qr.....	30	96	33	160	5.50	880	Levi Smith.....	Mch. 13 10	8 70.40	14		
2021	nw qr.....	32	100	34	160	4	640	Patrick J. O'Neil.....	Mch. 13 10	8 51.20	14		
2022	sw qr.....	32	100	34	160	4	640	Margaret O'Neil.....	Mch. 13 10	8 51.20	14		
2023	ne qr.....	6	87	43	160.72	3	482.16	A. Bassett.....	Mch. 15 10	8 38.57	14		
2024	se qr.....	18	97	32	160	5	800	Frank P. Pitcher.....	Mch. 15 10	8 64	14		
2025	e hf of se qr.	32	86	44	80	3	240	C. M. Bryant.....	Mch. 17 10	8 10.20	14		
2026	se qr of sw qr.	32	86	44	40	3	120	G. H. Bryant.....	Mch. 17 10	8 9.60	14		
2027	sw qr.....	24	97	34	160	3.50	560	A. M. Underhill.....	Mch. 17 10	8 44.80	14		
2028	ne qr.....	32	100	34	160	3	480	Nora Pitcher.....	Mch. 17 10	8 38.40	14		
2029	se qr.....	32	100	34	160	4	640	A. F. Pitcher.....	Mch. 17 10	8 51.20	14		
2030	ne qr.....	10	94	39	160	4	640	Louis Wright and J. W. Fairbanks.....	Mch. 17 10	8 51.20	14		
2031	sw qr.....	12	98	31	160	3.50	560	William Williams.....	Mch. 30 10	8 44.80	14		
2032	se qr.....	9	95	30	160	6	960	Henry Shyfield.....	Mch. 30 10	8 76.80	14		
2033	ne qr.....	18	97	32	160	4	640	H. P. Barksdale.....	Apr. 6 10	8 51.20	14		
2034	e hf of ne qr.	34	94	37	80	4	320	J. W. Fairbanks.....	Apr. 7 10	8 25.60	14		
2035	ne qr.....	26	98	34	160	3.50	560	Solomon Mulock.....	Apr. 8 10	8 44.80	14		
2036	se qr.....	26	98	34	160	3.50	560	A. Mulock.....	Apr. 8 10	8 44.80	24		
2037	ne qr.....	4	98	34	153.31	4	613.24	John Filkner.....	Apr. 8 10	8 49.06	14		
2038	nw qr.....	4	98	34	152.33	4	609.32	S. Filkner.....	Apr. 8 10	8 48.75	14		
2039	ne qr.....	24	98	34	160	3.50	560	John Kline.....	Apr. 8 10	8 48.75	14		
2040	n hf of ne qr.	25	90	7	80	5	400	Miles Barrett.....	Apr. 8 10	8 44.80	14		
2041	nw qr.....	35	92	49	160	4	640	William G. Gibson.....	May 18 10	8 51.20	14		
2042	nw qr.....	30	86	44	163.44	3.50	572.04	Wm. Steinhoff.....	May 18 10	8 45.76	14		
2043	ne qr.....	9	98	29	160	5	800	S. S. Sessions.....	May 22 10	8 64	14		
2044	ne qr of se qr.	12	92	40	40	5	200	Wm. A. Sanford.....	May 27 10	8 16	14		
2045	sw qr.....	33	92	49	160	4	640	A. J. Jeffries.....	May 30 10	8 51.20	14		

LIST OF LANDS LEASED—CONTINUED.

No. lease.	PART OF SECTION.	Section.	Township.	Range.	Acres.	Price.	Total valuation.	NAME OF LESSEE.	Date of purchase.	Term, years.	Per cent.	First payment.	Fee.
									1882.				
2046	sw qr.....	34	98	30	160	5.00	800.00	Julius and Martin Jensen	June 13	10	8	64.00	14
2047	nw qr.....	30	92	48	162.60	3.50	569.10	R. E. Blades	June 14	10	8	45.52	14
2048	nw qr.....	32	89	46	160	6.00	960.00	James W. Drake	June 14	10	8	76.80	14
2049	sw qr.....	32	89	46	160	6.00	960.00	N. A. McFaul	June 14	10	8	76.80	14
2050	ne qr.....	30	92	48	160	3.50	560.00	E. J. Gilleland	June 20	10	8	44.80	14
2051	se qr.....	26	90	47	160	4.00	640.00	W. U. Dart	July 18	10	8	51.20	14
2052	s hf ne qr.....	26	90	47	80	4.00	320.00	E. F. Holway	July 18	10	8	25.60	14
2053	se qr.....	10	90	48	160	4.00	640.00	David Gibbs	July 25	10	8	51.20	14
2054	ne qr.....	15	96	27	160	6.00	960.00	Joseph Byers	Aug. 12	10	8	76.80	14
2055	sw qr.....	24	94	32	160	4.50	720.00	John Ansherman	Aug. 12	10	8	57.60	14
2056	ne qr.....	36	96	34	160	5.00	800.00	Palmer R. King	Aug. 14	10	8	64.00	14
2057	sw qr.....	4	93	36	160	3.75	600.00	Geo. Wykoff	Aug. 21	10	8	48.00	14
2058	w hf se qr.....	4	93	36	80	3.75	300.00	Solomon Wykoff	Aug. 21	10	8	24.00	14
2059	n hf sw qr.....	30	86	44	82.11	3.50	287.39	F. N. Holway	Aug. 21	10	8	22.99	14
2060	s hf sw qr.....	30	86	44	82.37	4.00	329.48	F. N. Holway	Aug. 21	10	8	26.36	14
2061	sw qr.....	34	97	28	160	5.00	800.00	J. M. St. John	Sept. 1	10	8	64.00	14
2062	nw qr.....	6	89	47	161.17	5.00	805.85	Miss E. P. Baker	Sept. 6	10	8	64.46	14
2063	se qr.....	28	99	48	160	3.50	560.00	J. Roberts	Sept. 6	10	8	44.80	14
2064	sw qr.....	11	97	48	160	3.00	480.00	Robert Hemingaster	Sept. 12	10	8	38.40	14
2065	se qr.....	4	94	36	160	3.00	480.00	E. M. Purcell	Sept. 12	10	8	38.40	14
2066	n hf ne qr.....	9	94	36	80	4.00	320.00	E. N. Cadwell	Sept. 12	10	8	25.60	14
2067	se qr.....	27	94	36	160	5.00	800.00	D. A. Parson	Sept. 12	10	8	64.00	14
2068	sw qr.....	27	94	36	160	4.00	640.00	R. A. Parsons	Sept. 12	10	8	51.20	14
2069	ne qr of se } qr and s } hf of se qr }	21	99	48	120	4.00	480.00	E. D. Harvey	Oct. 11	10	8	38.40	14
2070	e hf of sw qr	28	99	48	80	3.50	280.00	G. A. Crain	Oct. 12	10	8	22.40	14
2071	w hf of sw qr	28	99	48	80	5.00	400.00	G. A. Crain	Oct. 12	10	8	32.00	14
2072	se qr.....	6	89	47	160	5.00	800.00	H. G. Koehler	Oct. 31	10	8	64.00	14

Fiscal year ending October 31, 1883.

No. lease.	PART OF SECTION.	Section.	Township.	Range.	Acres.	Price.	Total valuation.	NAME OF LESSEE.	Date of purchase.	Term, years.	Per cent.	First payment.	Fee.
									1882.				
2073	sw qr.....	14	89	43	160	5.00	800.00	H. B. Cary	Dec. 2	10	8	64.00	14
2074	ne qr.....	32	95	27	160	5.00	800.00	John Manning	Dec. 16	10	8	64.00	14
2075	nw qr.....	32	95	27	160	5.00	800.00	Enos Hoagland	Dec. 16	10	8	64.00	14

CONTINGENT LANDS LEASED FROM NOVEMBER 1, 1881, TO OCTOBER 31, 1883, INCLUSIVE.

Fiscal year ending October 31, 1882.

No. lease.	PART OF SECTION.	Section.	Township.	Range.	Acres.	Price.	Total valuation.	NAME OF LESSEE.	Date of purchase.	Term, years.	Per cent.	First payment.	Fee.
									1882.				
161	sw qr.....	29	98	47	160	5.00	800.00	John F. Eccleston	Jan. 27	10	8	64.00	14
162	sw qr.....	17	99	47	160	5.00	800.00	Marcus W. Dickenson	Feb. 2	10	8	64.00	14
163	nw qr.....	21	100	48	160	3.50	560.00	Miller & Thompson	Mch. 13	10	8	44.80	14
164	se qr.....	19	100	48	160	3.50	560.00	George Harlan	July 8	10	8	44.80	14
165	sw qr.....	20	100	48	160	3.50	560.00	M. E. Manley	Aug. 12	10	8	44.80	14
166	sw qr.....	26	93	36	160	5.00	800.00	Lizzie T. Williams	Aug. 23	10	8	64.00	14
167	ne qr.....	36	93	36	160	5.00	800.00	Manford E. Williams	Aug. 23	10	8	64.00	14
168	ne of sw qr } and s hf } of sw qr }	28	93	36	120	5.00	600.00	A. W. Partridge	Oct. 10	10	8	48.00	14
169	se qr.....	32	93	36	160	5.00	800.00	Geo. E. Loring	Oct. 10	10	8	64.00	14
170	w hf nw qr.....	34	93	36	80	4.00	320.00	E. N. Cadwell	Oct. 10	10	8	25.60	14

GEO. W. BASSETT,

Agent.

ABSTRACT OF THE PROCEEDINGS OF THE BOARD OF TRUSTEES, 1882-1883.

PRESENT MEMBERS OF THE BOARD.

THE HON. GEORGE H. WRIGHT, Sioux City.....	1884.
THE HON. S. J. KIRKWOOD, Iowa City.....	1884.
THE HON. H. G. GRATTAN, Waukon.....	1886.
THE HON. C. S. STRYKER, Creston.....	1886.
THE HON. S. R. WILLARD, Ft. Madison.....	1886.

OFFICERS OF THE BOARD.

THE HON. GEORGE H. WRIGHT, Sioux City.....	CHAIRMAN.
E. W. STANTON, Ames.....	Secretary.
J. L. GEDDES, Ames (during 1882).....	Treasurer.
W. M. GREELEY, Ames (during 1883).....	Treasurer.

STANDING COMMITTEES.

- Executive and Finance Committee*—Trustees GRATTAN, KIRKWOOD and WRIGHT.
- Committee on Faculty and Courses of Study*—Trustees KIRKWOOD, WILLARD and WRIGHT.
- Committee on Farm and Farm Buildings*—Trustees WILLARD, GRATTAN and STRYKER.
- Committee on Horticulture*—Trustees STRYKER, GRATTAN and WILLARD.
- Committee on Workshop*—Trustees STRYKER, WILLARD and KIRKWOOD.
- Committee on College Lands*—Trustees KIRKWOOD and WRIGHT.
- Building Committee*—Trustees WRIGHT, STRYKER and GRATTAN.

Trustees Grattan, Stryker and Willard were elected by the Nineteenth General Assembly to succeed Messrs. Dixon, Little and McClintock, whose terms of office expired May 1, 1882. Previous to this date, and subsequent to the last biennial report, two meetings were held by the old Board—one in January and one in March. The proceedings of these meetings are included in this report.

In October, 1882, Trustee Tenney, of Cerro Gordo county, whose term of office extended to May 1, 1884, resigned on account of ill health, and Hon. S. J. Kirkwood, of Iowa City, was appointed by Governor Sherman to fill the vacancy. He was assigned to the position on the various committees formerly held by Mr. Tenney, since which the Board of Trustees and its committees have been constituted as now given.

MEETINGS.

During the biennial period the following meetings have been held:

1882.

<i>First meeting</i>	January 11-13.
<i>Second meeting</i>	March 28-29.
<i>Third meeting</i>	May 2-5.
<i>Fourth meeting</i>	May 23-26.
<i>Fifth meeting</i>	July 4-5.
<i>Sixth meeting</i>	November 7-8.
<i>Seventh meeting</i>	November 21-25.

1883.

<i>First meeting</i>	May 22-25.
<i>Second meeting</i>	August 21-24.
<i>Third meeting</i>	November 10-14.
<i>Fourth meeting</i>	November 23-29.

APPROPRIATIONS OF THE GENERAL ASSEMBLY.

The following appropriations were made by the Nineteenth General Assembly to the Agricultural College:

Two houses to be used as residences by professors.....	\$5,000.00
One boarding cottage and an addition to the present one.....	6,500.00
Building to be occupied by the engineering departments.....	5,000.00
Sheep barns.....	600.00
Experimental creamery, with ice house and cold storage room.....	1,000.00
Three cottages, to be occupied by farm foreman, horticultural foreman and farm laborer.....	2,100.00
Repairing highway to Ames.....	300.00
Veterinary hospital.....	500.00
Annual appropriation for experimentation in agriculture and horticulture, \$1,500.....	3,000.00

The following was appropriated by the Eighteenth General Assembly:

Annual fund for management of lands and repairs of buildings—	
\$1,000.....	\$2,000.00

In May, 1882, the Board advertised for sealed proposals for the erection of the buildings included in the first three items of the appropriations. Bids were submitted by various builders; but being in excess of the appropriations, all were rejected.

It being desirable that the addition to the boarding cottage should be completed by the beginning of the Fall term, separate bids were requested upon this part of the work, and the contract let to O. P. Stuckslager, of Ames, Iowa, he agreeing to construct the addition, furnishing all material and labor except for the brick work, for \$635. Professors Budd and Thomson were appointed to superintend the work. Arrangements were made by them for the purchase of brick, and masons were employed by the day at reasonable rates. The addition was completed at a cost of \$1,000.

For the erection of the remaining buildings the Secretary advertised for new proposals. These bids were opened at the July meeting of the Board, and again were found in excess of the appropriations. The plans were slightly modified, new bids requested, and the contract finally let to V. Tomlinson, of Boone, upon the following terms:

Boarding cottage.....	\$5,420.00
Engineering hall.....	4,890.00
Professors' houses.....	4,690.00

The Chicago and Northwestern Railway Company having granted the College a rebate of thirty-three and a third per cent on freight on building material, the Board agreed to allow the successful bidder the advantage of such reduction. All drawbacks received on transportation of material used in the construction of these buildings have therefore been paid over by the Board to Mr. Tomlinson.

It was provided in the contract with Mr. Tomlinson that payments should be made on monthly estimates, and that fifteen per cent of said estimates should be reserved until the completion and acceptance of the buildings. It was also provided that Mr. Tomlinson should give a bond in the sum of \$5,000 for the faithful performance of his contract. Said bond was given and approved by the Board. Trustee Wright was chosen Superintendent, and has had general supervision of all matters relating to Mr. Tomlinson's contract.

The boarding cottage and professors' houses are completed, and have been accepted by the Board. The total cost of the new boarding cottage and the addition to the old one was \$6,502.91. It was

thus found necessary to transfer the sum of \$2.91 to this account from the fund for professors' houses. The total cost of the professors' houses, including this transfer, was \$4,867.91, leaving a balance of \$132.09 in the hands of the State Treasurer available for transfer to the other appropriations.

Engineering hall is not yet completed. The report of the building committee shows that of the appropriation of \$5,000 for its erection the sum of \$4,500 has been drawn from the State treasury, and the sum of \$3,825 expended. The contract with Mr. Tomlinson calls for the completion of the building by February 1, 1884.

In May, 1882, bills amounting to \$71.94 for fitting up sheep barn were allowed by the Board, and charged to the sheep barn appropriation. In May of the following year the Board let the contract for the erection of a new barn to Mr. Tomlinson, upon his bid of \$415. The entire amount of the appropriation has been drawn, and the balance not expended on sheep barn account has been transferred, with the consent of the Executive Council, to the other appropriations.

At the meeting of the Board in May, 1882, Professors Knapp and Budd were appointed a committee to take charge of the erection of the creamery, ice house and cold storage room. The appropriation of \$1,000 was drawn and expended under their direction.

In March, 1882, the Board purchased of L. L. Eastwood the house built by him upon the College grounds, paying therefor from the appropriation for laborers' cottages the sum of \$400. At the meeting of the Board in the following May, Professors Knapp and Budd were appointed a committee to prepare plans and specifications, purchase material, employ the necessary labor and superintend the construction of the two cottages for the foremen of the farm and horticultural departments. The balance of the appropriation — \$1,700 — was appropriated to this purpose. It was afterward found necessary, in order to complete the cottages in good shape, to transfer to this fund from the appropriation for sheep barns the sum of \$108.95. The approval of the Executive Council was obtained and the transfer made.

The sum of \$37.95 received from the Chicago and Northwestern Company as rebate on freight was credited by the Board to the proper accounts as follows:

Creamery, ice-house and cold storage room.....	\$12.57
Laborers' cottages.....	25.38
	<hr/>
	\$37.95

The appropriation of \$300.00 for the repair of the highway to Ames running on south side of College farm, being conditional upon the citizens of Ames contributing a like amount, the Board, in May, 1882, appointed President Welch, Professor Macomber, and D. A. Bigelow, of Ames, to secure the necessary subscriptions, collect the funds and superintend the work of such repairs. The report of the committee to the Board in November following showed that the sum of \$301.00 had been collected from the citizens and expended in repairing the highway. Bills to the amount of \$300.00 were thereupon paid from the appropriation by the State.

The contract for the erection of the veterinary hospital was let in November, 1882, to Fremont Turner for \$600.00, less whatever discounts could be obtained by the College on the lumber used in its construction. The amount of the appropriation, \$500.00, has since been paid Mr. Turner, and at its late meeting in November of this year the Board voted him the sum of \$33.00 in full payment of the balance due, directing the same to be paid from the sum remaining to the credit of the engineering hall appropriation after the completion of that building.

The annual appropriation of \$1,500.00 for experimentation in agriculture and horticulture was divided equally between these two departments. The reports of Professors Knapp and Budd, to the Board, found on page 91, show in full the purposes for which the appropriation has been used.

Of the annual fund of \$1,000.00 for the management of lands and repair of buildings the sum of \$1,701.87 has been drawn during the biennial period and, under the orders of the Board, used for the following purposes:

Repairing college building.....	\$ 617.29
Repairing farm buildings.....	291.19
Repairing horticultural buildings.....	194.68
Repairing roof of boiler house.....	117.10
Repairing chemical recitation room.....	192.76
Repairing rooms in physical laboratory.....	15.00
Repairing north hall.....	63.77
Repairing south hall.....	4.56
Repairing house occupied by Secretary (tornado damages).....	9.50
Repairing bell tower.....	10.55
Expenses connected with management of lands.....	182.62
Balance on hand.....	2.85
	<hr/>
	\$1,701.87

The cash in the hands of the College Treasurer, \$2.85, together with the amount, \$298.13, not drawn from the State treasury, leaves a balance of \$300.98 of this fund yet unexpended.

The Board at its November meeting made the following appropriations from this balance:

Expenses connected with the management of lands.....	\$ 67.17
Repairing chemical recitation room.....	190.00
Repairing north hall.....	16.00
Repairing farm buildings.....	27.00
	<hr/>
	\$300.17

At the date of the last biennial report a balance of \$39.68 remained in the hands of the State Treasurer to the credit of the fund appropriated by the Eighteenth General Assembly for the repair of the domestic economy building. This sum has since been drawn by the Board and used for the repair of said building.

For detailed statement of expenditures on account of the State appropriations see the report of the chairman of the building committee, page 83.

STATE PROVIDENTIAL FUND.

The damage to the College buildings by the tornado of April 8, 1882, being too great to be met by the annual repair fund, the Board at its May meeting appointed Trustee Tenney a committee to present to the Governor a statement of the damage done, the necessity for immediate repairs and to urge an appropriation from the State providential fund for that purpose. Mr. Tenney reported that the Executive Council, after considering the matter, voted to allow the sum of \$1,500.00. A warrant for this amount was drawn payable to the order of the College Treasurer. The Board ordered that the repairs should be made immediately, and Prof. Thomson was appointed to superintend the work. His report shows the following expenditures:

Repairing north hall.....	\$1,191.93
Repairing main building.....	195.87
Repairing south hall.....	112.20
	<hr/>
	\$1,500.00

Under direction of the Board duplicate vouchers were taken for all expenditures and filed in the office of the Auditor of State.

COLLEGE APPROPRIATIONS.

At each annual meeting of the Board of Trustees, appropriations for the succeeding year are made from interest fund. These appropriations, under the law, limit the expenditures of the different departments. The report of the board of audit shows that during the last biennial period this law has been strictly enforced. The expenditures under the appropriations for 1882 and 1883 are reported in exhibits "B" and "C," attached to the secretary's report. (See pages 112 and 113.)

The Board, at its late meeting, made the following appropriations to cover the expenses of the fiscal year beginning November 15, 1883:

From Interest Fund.

For salaries.....		\$ 24,700.00	
For Farm Department—			
For current expenses.....	\$ 600.00		
For stock purchases.....	700.00		
For farm experiments.....	800.00		
For permanent improvements.....	200.00	2,300.00	
For Horticultural Department—			
For current expenses and experiments.....		1,100.00	
For Mechanical Department—			
For current expenses.....	300.00		
For setting up machinery.....	75.00		
For water tank.....	50.00		
For boilers.....	225.00		
For stools and chairs.....	107.00		
For cases for tools and model room.....	200.00		
For testing machine.....	700.00	1,657.00	
For Department of Civil Engineering—			
For current expenses.....	200.00		
For chairs.....	50.00		
For two stoves for recitation rooms.....	75.00	325.00	
For Department of Botany—			
For current expenses.....	250.00		
For case.....	35.00		
For table.....	30.00	315.00	

For Department of Zoology and Entomology—			
For current expenses.....	150.00		
For microscopes.....	300.00		
For exhibition case.....	75.00		
For glass models and skeletons.....	75.00		
For experiments.....	25.00	625.00	
For Department of Chemistry—			
For current expenses.....	300.00		
For chairs.....	225.00	525.00	
For Department of Veterinary Science—			
For current expenses.....	200.00		
For model of Arab horse.....	975.00	1,175.00	
For Department of Physics.....		300.00	
For Department of Military Tactics.....		100.00	
For Library.....		600.00	
For Public Grounds.....		660.00	
For Public Rooms—heating, lighting and cleaning.....		1,000.00	
For North Hall—care of recitation rooms.....		75.00	
For Sabbath service in College Chapel.....		300.00	
For Department Bulletins.....		400.00	
For furnishing Agricultural recitation room.....		150.00	
For use of Sanitary Committee.....		100.00	
For Contingent Expenses—			
For catalogue of 1883, with cuts.....	\$ 350.00		
For advertising the College by means of circulars...	200.00		
For clerk hire.....	100.00		
For ringing bell for recitations.....	75.00		
For bus to Ames during the year.....	275.00		
For stationery and printing.....	225.00		
For telephone service.....	85.00		
For tuning organ.....	10.00		
For pumping organ.....	15.00		
For services of janitor.....	200.00		
For services of Assistant Preceptress.....	95.00		
For President's expenses at Washington, in service of College.....	100.00		
For legal services of Mr. McCarthy.....	10.00		
For sundries.....	50.00	1,790.00	
Total from interest fund.....		\$38,197.00	

From Donation Fund.

For fitting up stock barn on north farm..... 108.73
 In addition to the foregoing, there was appropriated to the Departments the proceeds of their ordinary sales.

OFFICERS.

The names and salaries of the officers and teachers of the College for 1882 were reported to the General Assembly in the ninth biennial report.

At the meeting of the Trustees in July, 1882, the Faculty petitioned the Board to allow President Welch leave of absence in order that he might accept the appointment of Commissioner Loring to visit and report upon the agricultural colleges of Europe. Leave of absence was granted, extending from September first to the opening of the spring term of 1883. As the absence of President Welch would make Vice-President Geddes acting President, and thus by law a member of the Board of Audit, to audit bills which he would afterward, as treasurer, be called upon to pay, the Board relieved Gen. Geddes of the duties of Vice-President and elected Professor C. E. Bessey to that position.

No other changes in officers occurred during that school year.

At the annual meeting in November, 1882, the following action was taken:

The salary of President A. S. Welch was reduced from \$3,100.00 to \$2,800.00 per annum.

The services of Gen. J. L. Geddes were discontinued.

The salary of Professor W. H. Wynn was reduced from \$1,700.00 to \$1,600.00 per annum.

Professor C. E. Bessey resigned the Vice-Presidency. Zoology and Entomology were added to his department, and his salary increased from \$1,600.00 to \$1,800.00 per annum.

Professor S. A. Knapp was elected Vice-President in addition to his duties as Professor of Experimental and Practical Agriculture, and his salary increased from \$1,800.00 to \$2,000.00 per annum.

Professor F. E. L. Beal was relieved of the duties of Professor of Civil Engineering and acting Professor of Zoology, and elected Professor of Geology and Manager of the College boarding departments. His salary was fixed at \$1,400.00 per annum and board during the school year. He was afterward assigned the classes in free hand drawing, for which he was allowed the sum of \$125.00.

The salary of Professor J. K. Macomber, as Professor of Physics, was fixed at \$1,600.00 per annum, the same as for the preceding year. He was allowed the additional sum of \$200.00 per annum as College Librarian. He was also given charge of the school book department.

The salary of E. W. Stanton, as Secretary of the College, was increased from \$200.00 to \$400.00 per annum, his salary as Professor of Mathematics and Political Economy remaining unchanged.

C. F. Mount, formerly Assistant, was elected Professor of Civil Engineering. He was also appointed Recorder of the College. His salary was advanced from \$1,000.00 to \$1,400.00 per annum.

Comparative Anatomy was assigned to Professor D. S. Fairchild, and his salary increased from \$500.00 to \$800.00.

The salary of Mrs. Mary B. Welch, Lecturer on Domestic Economy, was reduced from \$1,000.00 to \$700.00, and the salary of Herbert Osborn, Assistant in Zoology and Entomology, was increased from \$700.00 to \$1,000.00 per annum.

The instruction in book-keeping was added to the duties of Mr. J. C. Hainer, the assistant in mathematics, and his salary as proctor and teacher increased from \$800.00 to \$1,000.00 per annum.

Col. John Scott was elected Professor of Military Tactics at a salary of \$500 per annum.

Fremont Turner was continued as foreman of the college workshops and his compensation increased from \$2.50 to \$3.00 per day for time actually employed during the school year.

Mr. G. W. Curtis having been appointed deputy by Treasurer Greeley, his salary was fixed at \$300.00 for his term of service extending from March 1, 1883, to the first of December following.

Miss Ermina Athearn, teacher of music, was granted leave of absence for one year and was authorized to employ Miss Bill, of Cleveland, as substitute during that time.

The Board directed that all advanced salaries and salaries of newly elected officers should begin March 1, 1883, except in the cases of the Secretary of the College and Professor Osborn whose advanced salaries were fixed to commence with the fiscal year, November 9, 1882.

Miss Mary W. McDonald was appointed first assistant, and Miss Fannie Wilson second assistant in the library for the school year of 1883 at the usual compensation.

The services of the other officers of the College were continued at the salaries of the preceding year.

The Board, at this November meeting, ordered that the Faculty of the College should include the full Professors, the Preceptress and the Lecturer on Domestic Economy.

At their meeting in May, 1883, the Board voted Mr. T. W. Shearer, the assistant in chemistry, the sum of \$50.00 in addition to the salary of \$300.00 previously allowed him.

At the first meeting of the Board last November Mrs. Mary B. Welch, Lecturer on Domestic Economy, presented her resignation because of ill health. The resignation was accepted and her salary for the full year ordered paid.

The following is the action of the Board at its second meeting in November. The orders relating to the Presidency are given in full:

1. *Ordered*, That A. S. Welch be removed from the position of President of the Iowa Agricultural College, and that the Treasurer be directed to pay him his full salary for the present school year.

2. *WHEREAS*, The interest of the College requires that the term of office of the President, Vice-President, Secretary, Treasurer and Steward commence at the same date, therefore it is

Ordered, That the term of office of said officers commence on the first day of December each year, and that the terms of office of all said officers expire on the first day of December next and annually thereafter.

3. *Resolved*, That Prof. S. A. Knapp be elected President of the College and Professor of Practical and Experimental Agriculture at a salary of \$2,500 per annum, his services as President and his additional salary of \$500 for the same to commence December 1, 1883, and his salary as Professor of Practical and Experimental Agriculture to commence March 1, 1884.

Upon these three resolutions Trustees Grattan, Stryker and Wright voted aye; Kirkwood and Willard, no. Upon all the remaining matters relating to the faculty and officers the vote of the Board was unanimous.

Professor C. E. Bessey was elected Vice President.

The salary of Professor T. E. Pope was increased from \$1,600 to \$1,700 per annum.

The resignation of Prof. F. E. L. Beal was presented and accepted.

Capt. J. R. Lincoln, of Boone, was chosen Steward and his salary fixed at \$1,000 per annum and board during the school year.

The resignation of J. K. Macomber, Professor of Physics and Librarian, was accepted and a resolution ordered spread upon the minutes by the Board expressing their high appreciation of the value of his services to the Institution, their regret at his resignation and their best wishes for his success in his future profession.

J. C. Hainer was elected Assistant Professor of Physics and Professor, at a salary of \$1,200 per annum.

Herbert Osborn was elected Assistant Professor of Zoology, Entomology and Geology and Curator of the Museum, at an annual salary of \$1,200.

Herman Knapp having been appointed deputy by Treasurer Greeley, his salary was fixed at \$400 per annum.

Miss Mary W. McDonald was elected Librarian and Instructor in Mathematics and Book-keeping, at a salary of \$600 per annum.

The following is a full list of the officers and teachers for 1884 with their salaries as fixed by the Board of Trustees:

- S. A. KNAPP, LL. D., PRESIDENT,
Professor of Practical and Experimental Agriculture.
Salary, \$2,500.
- C. E. BESSEY, M. Sc., Ph. D., VICE-PRESIDENT,
Professor of Botany, Zoology and Entomology.
Salary, \$1,800.
- W. H. WYNN, A. M., Ph. D.,
Professor of English Literature, Belles Letters, Latin,
History and Ethics.
Salary, \$1,600.
- A. THOMSON, C. E.,
Professor of Mechanical Engineering and Superintendent
of the Workshop.
Salary, \$1,600.
- T. E. POPE, A. M.,
Professor of Chemistry.
Salary, \$1,700.
- M. STALKER, B. Sc., V. S.,
Professor of Veterinary Science.
Salary, \$1,600.
- J. L. BUDD, M. H.,
Professor of Horticulture.
Salary, \$1,800.

- E. W. STANTON, B. Sc.,
Professor of Mathematics and Political Economy, and
Secretary Board of Trustees.
Salary, \$2,000.
- D. S. FAIRCHILD, M. D.,
Professor of Pathology, Histology, Therapeutics and Com-
parative Anatomy.
Salary, \$800.
- C. F. MOUNT, C. E.,
Professor of Civil Engineering and College Recorder.
Salary, \$1,400.
- J. C. HAINER, B. Sc.,
Assistant Professor of Physics and College Proctor.
Salary, \$1,200.
- MARTHA SINCLAIR, PRECEPTRESS,
Instructor in English, French and German.
Salary, \$1,100.
- HERBERT OSBORN, M. Sc.,
Assistant Professor of Zoology, Entomology and Geology,
and Curator of the Museum.
Salary, \$1,200.
- T. W. SHEARER, B. Sc.,
Assistant in the Chemical Laboratory.
Salary, \$400.
- MARY W. McDONALD,
Librarian and Instructor in Mathematics and Book-
keeping.
Salary, \$600.
- W. M. GREELEY,
Treasurer.
Salary, \$300.
- HERMAN KNAPP, B. Sc.,
Deputy Treasurer.
Salary, \$400.
- JAMES RUSH LINCOLN,
Steward.
Salary, \$1,000 and board during the school year.
- ERMINA ATHEARN,
Teacher of Instrumental and Vocal Music.
Allowed the tuition charged students; also a room,
board, fires and lights, and incidentals during the
school year for assisting in keeping order in ladies'
hall.

The salary of the Steward is paid from the receipts of the board-
ing department. All other salaries are paid from interest fund.

The Professor of Mechanical Engineering was authorized to em-
ploy a foreman for the workshop, and to allow him \$3.00 per day for
time employed during the school year.

The following appropriations were made by the Board:

For instruction in Domestic Economy	\$500.00
For instruction in Military Tactics	200.00
For instruction in Drawing	250.00

An executive committee of the Faculty, consisting of the Presi-
dent, Vice-President and Secretary of the College, was appointed, to
have charge of such matters as may be specifically assigned to it.
The matter of providing instruction in Domestic Economy and
Drawing was referred to this committee. The committee have en-
gaged the services of Mrs. Emma P. Ewing, of Chicago, to take
charge of the Department of Domestic Economy, and Miss Etta M.
Budd, of Ames, to give instruction in Drawing.

The appointment of Assistant Librarian was referred to this com-
mittee.

COLLEGE TREASURER AND COLLEGE ACCOUNTS.

Gen. J. L. Geddes was elected Treasurer in December, 1881. Set-
tlement was made with ex-Treasurer William D. Lucas on the 16th of
that month, and upon the same day Gen. Geddes entered upon the
duties of his office. His salary was fixed at \$400 per annum, without
deputy, or clerk hire.

In November, 1882, W. M. Greeley was chosen Treasurer, at a sal-
ary of \$300 per annum. George W. Curtis was appointed by him
Deputy Treasurer, at a salary fixed by the Board of \$300 per annum.
Settlement was made by the Secretary of the Board with Gen. Ged-
des, and, on December 16th, Mr. Greeley took charge of the office.

At the last annual meeting of the Board, Mr. Greeley was re-elected
Treasurer for the year, commencing December 1, 1883, at a salary of
\$300 per annum. He appointed Herman Knapp Deputy Treasurer,
whose salary was fixed by the Board at \$400 per annum.

The reports of the Treasurer for 1882 and 1883 will be found on
pages 95 and 100 of this Biennial Report. Monthly examinations
of the Treasurer's books and vouchers have been made by the Secre-
tary, and duly reported to the Board. The Trustees have made such

further examination of the Treasurer's accounts as they deemed necessary.

The following is the report of the Executive and Finance Committee:

"To the Board of Trustees:

"We hereby certify that we have examined the books, accounts and vouchers of the Treasurer of the College, and find them correct.

H. G. GRATTAN,

S. R. WILLARD,

Committee."

In order to aid the Board of Audit and Treasurer in keeping the accounts of the College in such shape that they will present a full and accurate exhibit of all financial transactions, the Board of Trustees passed the following orders:

(1.) *Ordered*, That the Board of Audit shall not approve any bill presented for allowance unless the same shall contain the date at which the goods were purchased or the service rendered, and such full and precise statement of the subject-matter as will furnish the Board and this Board sufficient grounds for determining the propriety of allowing or disallowing the claim.

(2.) *Ordered*, That all officers of the College, who may sell any property of the College, shall return to the Treasurer with the money received therefor, a clear, itemized statement of the amount and kind of property sold, the date of sale, the party to whom sold and the price.

(3.) *Ordered*, That all bills for telegraph service paid by the College shall be accompanied by a certified copy of the message sent or received.

(4.) *Ordered*, That the professor or teacher in charge of each department be required to make an itemized inventory of all property in such department at the close of each fiscal year, appraising all property at its present value; and file said inventory with the Secretary, who shall report to this Board the amount of each inventory.

The Treasurer was directed to collect all notes in favor of the College which are past due.

LAND DEPARTMENT.

At the late meeting of the Board of Trustees, a detailed report of the transactions of this Department for the biennial period ending October 31, 1883, was submitted by Agent Bassett. The report was ordered printed, and will be found on page 122.

Annual settlements have been made by the Secretary of the Board with the Agent. The report of the Secretary on these settlements will be found on page 117.

The Nineteenth General Assembly having passed an act providing for the taxation of leasehold estates in Agricultural College lands, the Board, at its first meeting thereafter, directed the Secretary to furnish to the auditor of each county in which College lands were situated a list of such lands held under renewed leases. Corrected lists of such lands are now sent to the auditors of the counties interested, on or before January first of each year. The State law provides that the leasehold interest in College lands shall be sold for delinquent taxes the same as other real estate. In order to prevent complications the Board, in addition to the authority previously conferred upon Agent Bassett to enter forfeiture of leases for non-payment of lease interest, authorized and directed him, on the first day of October of each year, to declare forfeited all leases upon which interest remained unpaid and delinquent for a period of sixty days prior to said date.

Agent Bassett was also authorized to accept payment of principal upon all renewed leases expiring on or before December 31, 1885, provided the holders pay, in addition to the principal, interest upon said principal at the rate of two per cent per annum for the remaining portion of the unexpired term estimated from the date to which, at the time of purchase, the interest shall have been paid.

The Board instructed the Agent to inform the lessees of College land, by printed circular, of the taxation of renewed leases, the action of the Board in respect to the forfeiture of leases for the non-payment of interest, and their policy regarding the payment of the principal of renewed leases.

A question having arisen regarding the proper disposition to be made of damages to be assessed for right of way for railroads over leased College lands, the land committee recommended at the meeting in November, 1882, that the money in each case be placed in the custody of the Treasurer of the College as a special fund to be re-

tained until the lessee in each case shall have forfeited his lease or paid for his land; the money, then, in the first case to become part of the College land fund, and in the last case to be paid to the lessee." The Secretary was directed by the Board to obtain the opinion of the Attorney-General upon the legality of this plan. The opinion of the Attorney-General being favorable, it was adopted by the Board at their meeting in May, 1883. The sum of \$157.00 has since been paid to the College Treasurer and credited to the right of way fund.

In January, 1881, the Attorney-General filed with the Governor of the State an opinion in substance as follows:

(1.) Leases of Agricultural College lands are assignable without the consent of the College, and the assignee takes the same interest in the lands and has the same rights as the original lessee.

(2.) While leases issued subsequent to the act of 1866 are assignable, no lessee or other person can, by assignment, take in excess of one quarter section.

(3.) Leases renewed under the act of 1874 are *new* leases, and an assignee of a lease issued under the law of 1864 (which law contained no clause limiting the number of acres to be leased to one man) cannot obtain, and the authorities should not give, a lease or renewal for more than one hundred and sixty acres.

At the meeting of the Board of Trustees in November, 1882, Hon. S. J. Kirkwood was appointed a committee to correspond with the Attorney-General and request him to review his former opinion. Arguments upon the legal points involved were submitted by Judge Nourse and Agent Bassett. In May, 1883, the Attorney-General decided as follows:

(1.) In all cases where the original lease was made under the Act of 1864, since which time a renewal of the lease has been made and the party has complied with the terms thereof, a patent should issue regardless of the number of acres claimed by one person, and regardless of the fact whether he holds as lessee or by assignments of one or more leases.

(2.) Where the lease or assignments to one man cover more than one hundred and sixty acres, and was issued under the act of 1866, a patent should be refused.

The Secretary of State, in consultation with the Board, stated that in accordance with the first part of this last decision of the Attorney-General, he would issue patents to all lessees or their assigns who

held leases originally issued under the Act of 1864, upon the certificate of the Secretary of the Board that said leases were issued under the Act of 1864 and that payment of principal upon the same had been made to the Treasurer of the College. The Secretary was directed by the Board to furnish such certificate.

In case of leases covered by the second part of this decision, the Secretary of State requires the Secretary of the Board to give the names of the original lessee, the party to whom the renewal was granted, and all subsequent assignees in their regular order, and the following certificate:

"I further certify, that the records of my office, including the several leases on file, do not show that any one of the parties named herein ever held a lease for any other land than the tract described, as lessee, issued subsequent to the taking effect of the act aforesaid, approved March 29, 1866, which has not been forfeited or relinquished to the College, and the same rendered null and of no effect."

As a majority of the outstanding leases were issued under the act of 1866, and as the certificate required cannot be furnished in many of these cases, the Board, at its late meeting in November, instructed the Secretary to prepare a bill for presentation to the General Assembly which shall grant relief to the lessees who, under the present rulings, cannot obtain patents.

The necessity for such legislation is fully set forth in the reports of the Land Agent and the Secretary of the Board.

The following tracts of College land have been re-appraised during the biennial period:

Endowment fund land forfeited March 17, 1882.

PART OF SECTION.	Section.	Township.	Range.	Acres.	Old Price.	New price.
ne qr	9	98	29	160	\$ 3.00	\$ 5.00
ne ne qr	12	92	40	40	3.75	5.00

Endowment fund land forfeited November 16, 1882.

PART OF SECTION.	Section.	Township.	Range.	Acres.	Old price.	New price.
ne qr.....	32	95	27	160	\$ 3.00	\$ 5.00
nw qr.....	32	95	27	160	3.00	5.00
sw qr.....	14	89	43	160	4.00	5.00

Endowment fund land forfeited October 3, 1883.

PART OF SECTION.	Section.	Township.	Range.	Acres.	Old price.	New price.
ne qr.....	30	86	44	160	\$ 3.50	\$ 4.00
se qr.....	30	86	44	160	3.50	4.00

Agent Bassett was authorized to intervene in behalf of the College in the suit now pending involving the question of the title to a portion of ne qr 29-95-30, in order to protect the interests of the College.

He was also authorized to cause an examination of the ne qr of 94-85-31 to be made to determine the quality of the land, whether it is swamp within the meaning of the act of Congress of September 20, 1850, and if not swamp, to bring suit to remove the cloud upon the title of the College, at the expense of the College.

DONATION FUND.

This fund consists of the proceeds of the sales of land donated to the College and of the products of such donated land. It is not limited in its use by the stringent laws which govern the endowment and interest fund of the College. A statement of the receipts and expenditures on account of this fund during the biennial period will best show the action of the Board in regard to it.

RECEIPTS.

Transfer from the printing office fund (to which it had been loaned) of the amount originally received from the Chicago & Northwestern Railway Company for gravel, and water from College spring.....	\$ 1,250.00
Lumber sold.....	202.00
Se $\frac{1}{2}$ ne $\frac{1}{2}$ 8, 82, 25, in Boone county, sold to M. Stalker.....	265.60
Rent on land near Ontario.....	6.40
Total receipts.....	\$ 1,724.00

EXPENDITURES.

For barn for horticultural department.....	\$ 202.00
For barn for veterinary department.....	225.60
For repairing grade across bottom land.....	100.00
For legal services of Judge C. C. Nourse in land matters.....	50.00
For expenses of Dr. E. E. Edwards.....	15.00
For cottage out-building.....	70.00
For purchase of lot 2, section 33, township 84, range 24, containing 21 acres of desirable land adjoining the college farm.....	797.61
For repairing house and fixing for stock on north farm.....	145.06
Total expenditures.....	\$ 1,605.27
Balance on hand.....	118.73
	\$ 1,724.00

This balance was appropriated by the Board for fitting up building for stock on north farm.

ENDOWMENT FUND.

The Nineteenth General Assembly memorialized Congress to so amend the national law as to permit the State of Iowa to loan the endowment fund of the Agricultural College on real estate securities. In March, 1882, the Board authorized the President to visit Washington for the purpose of securing the passage of the desired amendment. The amendment was passed. It remains for the Legislature to give it effect.

In 1882 the Board transferred from the interest fund to the endowment fund the sum of \$6,000.00, making the total endowment fund of the College \$637,805.16, as reported by the Secretary on page 110. At the last meeting the Board transferred the additional sum of \$3,200.00, making the present total permanent resources of the Institution \$641,006.16.

SCHOOL-BOOK DEPARTMENT.

During the school year of 1882 the School-Book Department was under the charge of Gen. Geddes. His report to the Board shows the following transactions for the year:

RECEIPTS

Cash on hand at the beginning of the year.....	\$	92.17
Cash received from sales, express and drayage.....		3,538.68

EXPENDITURES.

Amount expended for school books, stationery, express and drayage as per vouchers.....	\$	3,373.08
Cash on hand at the close of the year.....		257.77
	\$	3,630.85
	\$	3,630.85

INVENTORY.

Live stock.....	\$405.76
Dead stock.....	102.30
Total.....	\$508.06

At the annual meeting of the Board in November, 1882, the Librarian was given charge of the School-Book Department for the school year of 1883. At the close of the year he reported as follows:

RECEIPTS.

Cash on hand at the beginning of the school year including balance from previous year of \$257.77, and receipts from all sources during the winter vacation, \$26.30.....	\$	284.07
Cash received from sales, express and drayage.....		3,944.15
Cash surplus arising presumably from small sales not noted.....		12.88

EXPENDITURES.

Amount expended for school books, stationery, express and drayage as per vouchers.....	\$3,717.06
Cash on hand at the close of the year.....	534.04
	\$ 4,251.10
	\$ 4,251.10

INVENTORY.

Live stock on hand.....	\$333.97
Dead stock on hand.....	20.00
Total.....	\$353.97

SUMMARY.

Cash on hand.....	\$534.04
Stock on hand.....	353.97

Total assets of the Department.....	\$888.01
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At the last annual meeting of the Board the Executive and Finance Committee made a thorough examination of the books and vouchers of the Department, and found the accounts to agree with the above statement.

The Executive Committee of the Faculty was authorized to place the Department for 1884 under the charge of the Deputy Treasurer and to determine the compensation to be allowed him for supervising the same, said compensation to be paid from the proceeds of the Department.

COLLEGE BOARDING DEPARTMENTS.

The Boarding Department in the main college building, during 1882, was under the management of Professor S. A. Knapp. The following extract from his report summarizes the operations of the year:

"The school opened with a very large attendance, which necessitated unusual expenditures. The cost of furniture and improvements in the Boarding Department alone was \$478.27 for articles necessary to start and operate the Department. In addition to this the cost of provisions advanced enormously. Flour went up to \$9.00 per barrel, potatoes to \$1.55 per bushel. The increase on flour amounted to \$180 for the spring term, and on potatoes to \$300. At the same time the price of board had been reduced from \$2.25 per week to \$2.15. In the fall term it was found necessary to make another expenditure of considerable amount for apparatus. The refrigerator used was not suitable for the purpose, and the Department purchased one of Stevens' best refrigerators, size 6x10 feet, at a cost of \$240. A further sum of nearly \$100 was expended to construct a room for it and place it in position. Other expenditures increased the total investment to over \$900 for the year. When I entered upon my duties the total cash turned over was \$261.49. At the close of the year the cash balance was \$219.36. In addition there was on hand in canned fruits and groceries \$190.01."

The accounts of the Department were examined by the Board of Trustees, and found correct.

The boarding cottage during this year was under the charge of a committee consisting of Professors Stanton and Budd and Mrs. Welch. Under the appointment of the committee Professor Stanton acted as manager, and Mrs. Fogarty, of Ft. Dodge, as housekeeper. The committee reported as follows:

"(1.) The management has been able, notwithstanding the high price of supplies, to furnish satisfactory board at the price fixed, viz., \$2.00 per week for *board, fires and lights*.

(2.) The accounts at the close of the year show the following balances:

Supplies on hand.....	\$160.06
Cash on hand to credit of boarding cottage account....	114.17
Cash on hand to credit of cottage room rent.....	30.71
	\$304.94

During the two years in which the cottage has been running, furniture to the value of over \$300 has been purchased and paid for from the receipts of the Department. The cottage has, therefore, in furniture, supplies and cash, assets to the amount of about \$600.

These figures speak for themselves as to the economy and careful management of the housekeeper in charge."

The accounts of the cottage were examined and found correct.

In May, 1882, Professors Macomber, Stanton and Thomson were appointed a committee to ascertain whether the present plan of lighting the College building was not unnecessarily costly.

The committee, by an examination of the accounts of the previous year, determined the cost of gas at the College. It also ascertained the charges for furnishing gas in different cities, and investigated and tested the different methods of manufacture.

The committee reported:

"(1.) That the cost of manufacturing gas at the College was \$2.50 per thousand feet; that the quality was, however, much superior to that commonly furnished in cities, and that if comparison were made with the gas of the Des Moines gas works, on the basis of the same candle power, the cost at the College would be \$1.10 per thousand feet.

(2.) The charges for gas in a few of the leading cities, at that time, were as follows:

Des Moines, \$3.00 per thousand feet.

Davenport, \$3.50 per thousand feet.

Dubuque, \$3.25 per thousand feet.

Chicago, \$2.50 per thousand feet.

Cedar Rapids, \$3.50 per thousand feet.

Cincinnati, \$1.80 per thousand feet.

(3.) That the committee were unable to find any system of gas-making better than the one in use at the College.

(4.) That the present gasometer was about worn out, and because of its proximity to the college building, endangered much valuable property."

The committee recommended the erection of a new gas house and the purchase of a gasometer, with a capacity of six thousand to ten thousand feet. By economy in manufacture a saving of perhaps twenty-five cents per thousand could thus be effected. The Board ask of the Legislature an appropriation of \$4,500 for this purpose.

At the meeting of the Board in November, 1883, Professor F. E. L. Beal was given charge of all the College boarding departments. His salary was fixed at \$1,000 per annum and board during the school year, the salary to be paid from the receipts of the department. His bond was fixed at \$5,000. He was directed to keep the expenditures of the year within the receipts, and at the close of the year to render a full and accurate account of all moneys received and expended, and furnish vouchers for the same.

Professor Thomson was appointed a committee to take charge of all matters involving expenditures on account of fires and lights.

Board per week, in the main building, for 1883, was fixed at \$2.25; board, fires and lights, in the boarding cottage, at \$2.10; students paying by the term to be allowed a reduction of ten cents per week. Room rent per term in the main building was fixed at \$1.50 to \$3.00, and in the cottage at \$2.00. The janitor's fee charged students not boarding in any of the college buildings was increased from \$3.00 to \$4.00 per term.

At the close of the year, Professor Beal, after paying all bills, reported the following balances:

Cash to the credit of boarding department in main building	\$353.07
Cash to credit of cottage boarding department.....	180.67
Cash to credit of room rent account in cottages.....	326.71
Total	\$860.45

This amount was verified by the Executive and Finance Committee, and paid over to the College authorities. A considerable quantity of wood, coal and canned fruit was also reported on hand.

In arranging for the school year of 1884 it was provided that the Steward shall have charge of the following:

(1.) The boarding departments in the college and boarding cottages.

(2.) The heating and lighting of the college building, the boarding cottages, the physical laboratory and north hall, and the care and repair of all apparatus necessary thereto.

(3.) The repair of these and such other buildings as the Board of Trustees shall designate.

(4.) The purchase, repair and care of all furniture in the college building and boarding cottages.

(5.) The care of the grounds immediately surrounding these buildings.

(6.) Care and repair of water closet system and college sewer; also the entire water supply system on the college domain.

(7.) Cleaning college building and boarding cottages.

All of the above to be subject to such regulations as the Executive Committee of the Faculty, or the Board of Trustees may make.

It was further ordered: that the Steward shall keep the expenditures for the year within the income; render to the Board a full and accurate account of all moneys received and expended; and furnish a bond in the sum of \$5,000.00 for the faithful performance of his duties, to be approved by the Executive Committee of the Faculty.

Professor Thomson was appointed a committee to inspect the character of the labor performed and material used in the department of fires and lights, during the year, and report to the Board of Trustees.

The Steward was directed to consult with the Secretary of the Board in regard to the plan and method of keeping the books of the

department, and at the close of each month pay all bills, make all collections, and, at as early a date in the succeeding month as possible, prepare his books for inspection by the Secretary of the Board, who was instructed to thereupon make a full and complete examination of the same and furnish certificate to the Steward of their condition. The Secretary was also ordered to report to the Board of Trustees at their annual meeting, and at such other times as he may deem necessary, the result of such examinations.

It was ordered that the room rent fund be collected by the Steward and at the end of each month paid over to the College Treasurer, the Steward filing with the College Treasurer, at the time of each monthly payment, a detailed statement of the amount collected during the month.

The Steward was authorized to discontinue the College laundry during or at the close of the first term of next school year, if, in his judgment, such action should be expedient.

The Executive Committee of the Faculty were empowered to contract with the Steward for the heating and lighting of the public rooms in the College buildings, and decide upon the compensation to be allowed the Steward's Department for such service.

The charges for the school year of 1884 were fixed as follows:

IN THE MAIN COLLEGE BUILDING.

Board, per week.....	\$ 2.25
Fires and lights, per week.....	.40
Incidentals, per week.....	.21
Room rent, per term.....	\$1.50 to 3.00

IN THE BOARDING COTTAGES.

Board, per week, including fuel and lighting, wood furnished without splitting.....	2.10
Janitor's fee.....	3.00
Room rent, per term.....	2.00

OUTSIDE STUDENTS.

Janitor's fee for students boarding outside college boarding departments.....	4.00
Students boarding in any of the College boarding departments, by paying for board by the term secure a reduction of ten cents per week.	

The Board ordered that the following deposits be required of students:

Security for payment of monthly bills in main boarding department..	\$20.00
Security for payment of monthly bills in boarding cottages.....	15.00
Security for safety of furniture in student rooms—required of all students boarding in College buildings.....	5.00
General security fund, for safety of College property.....	1.00

These deposits are returned on final settlement at the close of the term.

Professor Beal having resigned, Capt. J. R. Lincoln, of Boone, was elected Steward for the school year of 1884. His salary was fixed at \$1,000.00 per annum and board during the session of school.

PROFESSORS' HOUSES.

It was ordered by the Board, that the Professors occupying houses upon the College grounds be required, as a condition of such occupancy, to keep them in first-class repair. It was also provided that the Professors shall keep the grounds immediately surrounding their houses in neat condition—the limits of such grounds to be determined by the Public Grounds Committee.

At the request of Professor Wynn he was excused from occupying the house erected for him upon the College grounds, for one year from June 1, 1883. Professor Osborn was allowed to occupy the same until the further orders of the Board.

COLLEGE PRINTING.

At the meeting in May, 1883, the Board ordered that all printing for the College be submitted to competition. Professors Knapp and Stanton were appointed a committee on printing. The reports of the committee show that under this order of the Board, the following contracts have been let:

A sixty-four page bulletin for the Horticultural Department, on book paper, two thousand copies, to Mills & Co., of Des Moines, for...	\$140.00
An eighty-six page catalogue, including three cuts and double-page map, book paper, three thousand copies, to the Republican Printing Company, of Cedar Rapids.....	244.00

MATTERS RELATING TO STUDENTS.

At the College Commencements in 1882 and 1883, the following students were graduated:

CLASS OF 1882.

In the Course in Sciences Related to the Industries.—Etta May Budd, Mary Helen Coe, Nellie B. Merrill, Della A. Neal, Hattie A. Perrett, Lizzie Perrett, Kittie E. Reeves, Sarah E. Smith, William D. Atkinson, John Alva Blaine, William V. Dodds, Willie M. Dudley, Henry J. Gabel, Charles I. Lorbeer, Edwin A. McDonald, John R. McKim, John H. Patten, Oscar C. Peterson, Charles F. Saylor, David T. Stockman, William S. Summers, William W. Wheeler, and William U. White.

In the Course in Mechanical Engineering.—James B. Marsh.

In the Course in Civil Engineering.—George W. Catt.

In the Course in Veterinary Science.—Robert M. Nicholson.

CLASS OF 1883.

In the Course in Sciences Related to the Industries.—Adolphus M. Allen, Guy M. Burnham, Jennie Colclo, Luberta Carson, Jennie L. Christman, Clarence M. Doxsee, Lottie Estes, Jessie Frater, Rollin M. Hunter, Minnie Knapp, Mary W. McDonald, Kate McNeil, A. M. Miller, Emily A. Reeve, Samuel C. Scott, Effie Slater, Ferd J. Smith, William D. Wells, Marion E. Wells, Agatha M. West, and Mabel Young.

In the Course in Agriculture.—George W. Curtis, Herman Knapp, and Charles H. Keigley.

In the Course in Civil Engineering.—A. G. Andrews, George Caven, and Morris J. Riggs.

In the Course in Veterinary Science.—William B. Welch and Charles H. Flynn.

Upon students graduating in the "Course in Sciences Related to the Industries," there was conferred the degree of Bachelor of Science (B. Sc.); upon students graduating in the "Course in Agriculture," the degree of Bachelor of Scientific Agriculture (B. S. A.); upon students graduating in the "Course in Mechanical Engineering," the degree of Bachelor of Mechanical Engineering (B. M. E.); upon students graduating in the "Course in Civil Engineering," the degree of Bachelor of Civil Engineering (B. C. E.); and upon the students

graduating in the "Course in Veterinary Science," the degree of Doctor of Veterinary Medicine (D. V. M.).

Post graduate degrees were conferred as follows: the degree of Master of Science (M. Sc.) upon Thomas W. Shearer, of the Class of 1881; the degree of Master of Philosophy (M. Ph.) upon Oscar C. Peterson, of the Class of 1882; and the degree of Civil Engineer upon Elwood Mead, Professor of Civil Engineering in the Colorado Agricultural College.

The changes in the courses of study, recommended by the Faculty, were adopted. The Sub-Freshman class was abolished.

MILEAGE AND PER DIEM.

The following is the mileage and per diem of the different members of the Board of Trustees for the biennial period:

1882.

NAMES.	RESIDENCE.	Number of meetings.	Total number miles.	Mileage.	Total number days.	Per diem.	Total.
J. N. Dixon.....	Oskaloosa.....	2	323	\$ 16.15	7	\$ 28.00	\$ 44.15
Wm. McClintock.....	West Union.....	2	740	37.00	6	24.00	61.00
H. G. Little.....	Grinnell.....	2	244	12.20	7	28.00	40.20
C. W. Tenney.....	Plymouth.....	1	356	17.80	5	20.00	37.80
Geo. H. Wright...	Sioux City.....	2	900	45.00	5	20.00	65.00

1882.

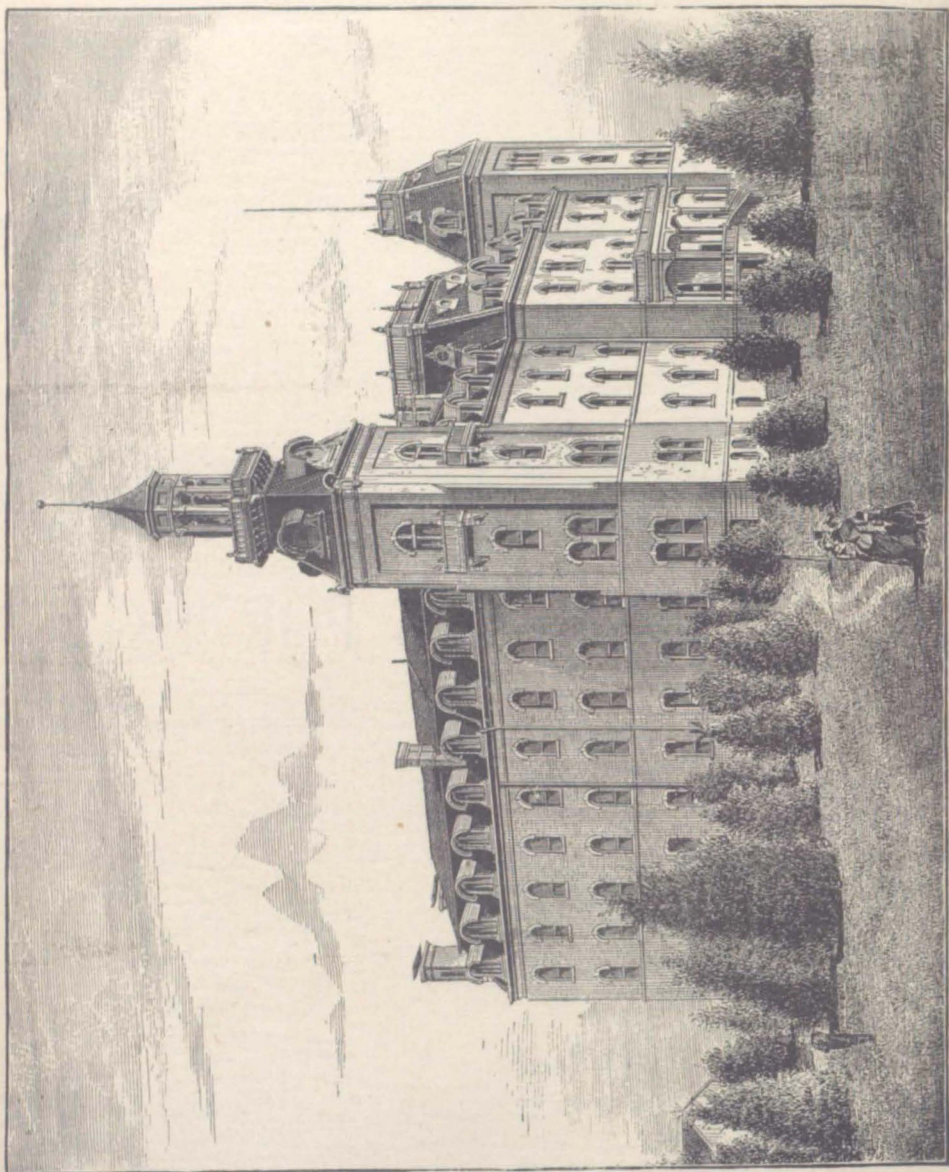
NAMES.	RESIDENCE.	Number of meetings.	Total number miles.	Mileage.	Total number days.	Per diem.	Total.
H. G. Grattan....	Waukon.....	5	2180	\$ 109.18	30	\$ 120.00	\$ 229.18
C. S. Stryker.....	Creston.....	5	2060	103.00	30	120.00	223.00
C. W. Tenney.....	Plymouth.....	3	822	41.10	15	60.00	101.10
S. R. Willard.....	Ft. Madison.....	5	2320	116.00	30	120.00	236.00
Geo. H. Wright...	Sioux City.....	5	2250	112.50	30	120.00	232.50
S. J. Kirkwood...	Iowa City.....	2	640	32.00	8	32.00	64.00

1883.

NAMES.	RESIDENCE.	Number of meetings.	Total number miles.	Mileage.	Total number days.	Per diem.	Total.
H. G. Grattan....	Waukon.....	4	1744	\$ 87.26	28	\$ 112.00	\$ 199.26
C. S. Stryker.....	Creston.....	4	1612	80.60	27	108.00	188.60
S. R. Willard.....	Ft. Madison.....	4	1856	92.80	28	112.00	204.80
Geo. H. Wright...	Sioux City.....	4	1800	90.00	28	112.00	202.00
S. J. Kirkwood...	Iowa City.....	2	640	32.00	11	44.00	76.00

E. W. STANTON, *Secretary.*

ANNOUNCEMENTS FOR 1884.



MAIN BUILDING.

ANNOUNCEMENTS FOR 1884.

CALENDAR FOR 1884.

First Term opens.....	Wednesday, February 27.
Entrance Examinations.....	{ Wednesday, February 27.
	{ Thursday, February 28.
Recitations begin.....	Friday, February 29.
Term Examinations.....	June 19 to 25.
Junior Exhibition.....	Wednesday, 7:30 P. M., June 25.
Summer Recess begins.....	Thursday, June 26.
Second Term begins.....	Tuesday, July 22.
Recitations begin.....	Wednesday, July 23.
Term Examinations.....	November 5 to 12.
Address before the Trustees.....	Tuesday evening, November 11.
Commencement Exercises.....	Wednesday, November 12.

Winter Vacation from November 13, 1884, to February 26, 1885.

LOCATION.

The College occupies a pleasant and healthful location, one and a half miles west of the town of Ames, on the Chicago & Northwestern Railway, in the central county of the State (Story), and thirty-seven miles north of the city of Des Moines. The railroad facilities for reaching Ames from any part of the State are very good. Regular conveyances for passengers and baggage run between the station and College three times each day.

OFFICERS OF INSTRUCTION.

- S. A. KNAPP, LL. D., President, Agriculture.
- C. E. BESSEY, M. Sc., Ph. D., Vice-President, Botany.
- W. H. WYNN, A. M., Ph. D., English Literature.
- A. THOMSON, C. E., Mechanical Engineering.
- T. E. POPE, A. M., Chemistry.
- M. STALKER, B. Sc., V. S., Veterinary Science.
- J. L. BUDD, M. H., Horticulture.
- E. W. STANTON, B. Sc., Mathematics and Political Economy.
- D. S. FAIRCHILD, M. D., College Physician, Physiology.
- C. F. MOUNT, C. E., Civil Engineering.
- MARTHA SINCLAIR, Preceptress, English, French, German.
- HERBERT OSBORN, M. Sc., Zoology and Entomology.
- J. C. HAINER, B. Sc., Proctor, Physics.
- T. W. SHEARER, M. Sc., Chemistry.
- EMMA ATHEARN, Music.
- MARY W. McDONALD, B. Sc., Librarian, Mathematics and Book-keeping.
- MRS. EMMA P. EWING, Domestic Economy.
- ETTA M. BUDD, B. Sc., Drawing.
- FREMONT TURNER, B. M. E., Practical Mechanics.
- CAPT. J. R. LINCOLN, Steward.

BUILDINGS AND GROUNDS.

The main College building is four stories high above the basement, and is one hundred and fifty-two feet long by one hundred and twelve feet deep through the wings. In the basement are the dining-rooms, kitchens, laundry, post-office and armory. On the first floor are the President's office, Treasurer's office, chapel and library. The second floor contains several recitation rooms, and rooms for students. The third and fourth floors contain students' rooms and the zoological and geological museum. About two hundred persons can be accommodated in this building. All the rooms are heated by steam and lighted with gas. Water is supplied in all the stories.

The Boarding Halls are two brick buildings, affording room for ninety students, with kitchens, store-rooms and dining-rooms.

The Chemical and Physical Hall is a large, two-story brick building, seventy by forty-four feet, with a wing sixty-one by thirty-three feet. The first floor contains the chemical laboratories, the second the physical laboratory, apparatus and lecture-room, while two draughting-rooms occupy the attic. In the basement are the machine shops and a large recitation room. This building is warmed by steam and supplied with water and gas.

North Hall is a two-story brick building, forty by seventy feet. On the first floor it affords room for the departments of Agriculture and Veterinary Science. On the second floor are the Microscopical Laboratory and the rooms for the Botanical Department.

Horticultural Hall is a wooden structure, containing on the first floor a large lecture room, and a tool room. On the second floor is the Horticultural museum. The cellar has two large rooms, one for the storage of garden products, the other for the use of the nursery propagating department. A grafting room and propagating house are attached, heated with hot-water pipes.

Engineering Hall, recently completed, contains the work-shop, mechanical museum, draughting rooms, and recitation and lecture rooms for the departments of Mechanical and Civil Engineering.

The farm buildings consist of the creamery, supplied with steam power for churning; the sorghum works, also supplied with steam power; the barns for horses and cattle; a large piggery, besides sheds and outhouses.

The work-shop, laundry and gas-works are some distance back of the main College building. The work-shop is a two-story frame building, fitted up with machinery and tools for the prosecution of repairs and for instruction in mechanical work.

The farm house is a plain, substantial brick building, occupied by the President of the College. Five other dwelling houses on the College grounds are occupied by professors' families.

THE COLLEGE GROUNDS.

The College Domain includes nine hundred acres, and of this about one hundred and twenty acres are set apart for College grounds. These occupy the high land of the southwest part of the farm, and include the campus, shrubbery, young forestry plantations, the flower borders and garden, with the surroundings of the professors' dwelling houses. Excellent gravel walks and drives have been laid down, leading to all parts of the grounds and to the various buildings.

DIRECTIONS TO CANDIDATES AND STUDENTS.

REQUIREMENTS FOR ENTRANCE.

1. AGE.

The age of students seeking admission to the Agricultural College must be sixteen years or over.

2. ENTRANCE EXAMINATIONS.

Candidates for admission to the Freshman class must give evidence of a thorough knowledge of English grammar, English analysis, arithmetic, human physiology and (except to enter the veterinary course) algebra through simple equations.

3. CERTIFICATES.

Proficiency in the foregoing studies may be proved by actual examination by either the principal of a high school or a county superintendent. A list of the questions asked must accompany each certificate, which should be of the following form:

I have this day examined M.....
in the following studies with the results appended:
 Arithmetic.....
 Algebra through (equations of the first degree).....
 English Grammar.....
 Analysis.....
 Human Physiology.....
 Spelling.....
 Signed.....

(Place).....

(Date).....

☞ Teacher's certificates will not be accepted.

☞ Hereafter there will be no Sub-Freshman Class.

EXPENSES, ETC.

1. TUITION.

No charge is made for tuition.

2. BOARD, WASHING, ETC.

For board, washing, heating, lighting and cleaning the College building, students pay what the items actually cost the Institution. Injury to College property, of whatever sort, will be charged to the author when known; otherwise to the section or to the entire body of students.

Students boarding in the College buildings furnish their own bedding and all furniture for their rooms, excepting bedsteads, washstands, tables and wardrobes.

3. CURRENT EXPENSES.

The current expenses of students during the year 1884 will be as follows:

In the Main College building:—

Board per week.....	\$2.25
Lighting and heating, per week.....	.40
Incidentals, per week.....	21
Room-rent, per term.....	\$1.50 to 3.00

In the Boarding Halls:—

Board per week, including fuel and lighting.....	2.10
Janitor's fee, per term.....	3.00
Room-rent, per term.....	2.00
For day students:—	
Janitor's fee, per term.....	4.00

Students can, by paying for board by the term, secure a reduction of ten cents per week. This applies to all the boarding departments.

4. DEPOSITS.

As security for the payment of all bills against him, each student, at the opening of the term, makes deposits with the Steward as follows:

On board account in main building.....	\$20.00
On board account in boarding halls.....	15.00
On room and furniture account.....	5.00
On general breakage and damage account.....	1.00

These deposits will be returned on final settlement at the close of the term.

5. MONTHLY SETTLEMENTS.

All bills for each month must, without fail, be settled at the Steward's office, on the first Saturday of each month following. Those who neglect this settlement cannot be permitted to remain in the College.

6. THE DINING ROOM.

The dining room will be opened on the evening preceding the respective days on which the spring and fall terms commence. No allowance on board bills is made for absences of less than one week's duration. Students and others bringing friends are required to pay or such twenty-five cents each meal.

7. TEXT-BOOKS.

Text-books and stationery may be purchased at the College bookstore at ten per cent advance on cost. Our stock is bought at publishers' prices.

CARE OF MONEY.

Students are advised to keep their money and other valuables in the College safe. While doing all in their power to prevent loss and punish theft, the officers will not be responsible for money or articles lost or stolen from the persons or rooms of students.

MANUAL LABOR.

The manual labor required by law of students in the College is divided into two kinds, viz.: unproductive labor, which shall be compensated by the payment of wages; and instructive labor, which shall be compensated by the instruction given and the skill acquired.

COURSES OF STUDY.

The branches of learning taught in the College are arranged under several courses of study, which are distinguished as General and Technical. Under the first, the

Course in the Science related to the Industries aims to give a liberal

culture in the sciences and other branches of learning which underlie the great industries of the country, without especially confining it to any particular pursuit or profession.

The Technical courses, while giving a liberal culture, aim to direct that culture so as to meet the requirements of a special pursuit or profession. The Technical courses are as follows:

1. *The Course in Agriculture*, which requires four years of study, and leads to the degree of Bachelor of Scientific Agriculture (B. S. A.).
2. *The Course in Mechanical Engineering*, of four years, and leading to the degree of Bachelor of Mechanical Engineering (B. M. E.).
3. *The Course in Civil Engineering*, of four years, leading to the degree of Bachelor of Civil Engineering (B. C. E.).
4. *The Course in Veterinary Science*, two years in length, leading to the degree of Doctor of Veterinary Medicine (D. V. M.).

COURSE IN THE SCIENCES RELATED TO THE INDUSTRIES.

The purpose of this course is to give a scientific training in the branches which are related to the industries, and to furnish a liberal and practical education for young men and women in the several pursuits and professions of life.

As this course is taken by students of both sexes, it is given a considerable degree of flexibility to meet the wants of each. This is accomplished by certain "additional studies," which have been carefully selected for their value to the student. This course thus provides for the young women of the College opportunities for devoting more time to Domestic Economy and kindred subjects, while the young men are permitted to give greater attention to those applications of science which are of more especial value to them.

COURSE IN AGRICULTURE.

The design of the course in Agriculture is to furnish a broad and thoroughly practical education, giving it such a direction as will be especially applicable to the life and duties of the farmer. The course has been framed to combine that knowledge and skill which will best prepare the pupil for the highest demands of agricultural industry, and to meet the requirements of an educated citizenship.

COURSE IN MECHANICAL ENGINEERING.

The object of this course is to impart such scientific knowledge and practical skill as are essential to success in Mechanical Engineering. This demands a thorough mastery of the principles of mathematics and a diligent study of their application to the construction of machines. In addition to the technical instruction given, it aims to furnish the means for obtaining a liberal and practical education.

COURSE IN CIVIL ENGINEERING.

It is the object of this course to educate and thoroughly train the student for the work of the Civil Engineer. It furnishes a thorough and practical course of instruction in the application of the mathematical and physical sciences to the profession of Civil Engineering. It furnishes a systematic drill in pure mathematics, and includes, in common with other courses, the studies necessary to a liberal education.

THE COURSE IN VETERINARY SCIENCE.

The purpose of this course is to furnish a thorough, practical and theoretical training in the veterinary specialty of medicine and surgery. It aims, furthermore, to prepare young men for the practical work of the Veterinary profession.

The course of study includes two years, and embraces a portion of the Course in Sciences related to the Industries, together with the lectures on the technical and special topics of the course, and practice in the microscopical and anatomical laboratories and the veterinary hospital.

LIST OF STUDIES.

Instruction in the following studies is given each year in the several courses.

FRESHMAN YEAR.

Algebra, Geometry, Book-keeping, English Analysis, Rhetoric, Latin, German, Drawing, Composition, Practical Agriculture, Military Drill, Domestic Economy, Mechanical Drawing, Elementary Botany, Elementary Zoology, Practical Horticulture, Dairying, Model Drawing.

SOPHOMORE YEAR.

Botany, Chemistry, Zoology, Entomology, Physics, Plane and Spherical Trigonometry, Land Surveying, History, Domestic Economy, Stock Breeding, Horticulture, Vegetable Anatomy, Principles of Mechanism, Analytical and Descriptive Geometry, Railroad Surveying.

JUNIOR YEAR.

Vegetable Anatomy and Physiology, Physics, English Literature, Quantitative and Organic Chemistry, Differential and Integral Calculus, Farm Economy, Horticulture, Principles of Mechanism, Analytical Mechanics, Stereotomy, Railroad Surveying, Draughting, Anatomy of Domestic Animals, Materia Medica, Comparative Anatomy, Political Economy, Commercial Law, Landscape Gardening, Domestic Economy, Domestic Chemistry, French, How Crops Feed and Grow, Machine Construction, Veterinary Medicine, Writing of Dissertations.

SENIOR YEAR.

Geology, Psychology, Agricultural Chemistry, Anatomy of Domestic Animals, French, Grasses and Forage Plants, Mechanical Engineering, Mechanical Drawing and Designing, Roof and Bridge Structures, Veterinary Medicine and Surgery, Medical Botany, Therapeutics, Chemistry and Toxicology, Histology and Physiology, Literary Criticism, Ethics, Sociology, Experimental Agriculture, Prime Movers, Lectures on Fungi and Insects, Astronomy, Docks and Retaining Walls, Sanitary Engineering, Comparative and General Pathology, Veterinary Obstetrics, Pharmaceutical Chemistry, Veterinary Sanitary Science, Writing of Dissertations and Thesis.

VOCAL AND INSTRUMENTAL MUSIC.

Music is not, by law, a regular study in the College curriculum. Opportunities are given, however, to such as desire it, to take lessons upon the piano, reed organ and pipe organ, or in vocal training.

MEANS OF ILLUSTRATION.

The Farm, consisting of a great variety of soil and aspect, and including the woodlands and meadows of Montgomery and Clear creek bottoms, and the adjacent high rolling, gravelly, and loamy prairie lands.

The Experimental Plats of Grains and Grasses.

The Barns for horses, cattle and sheep, also piggery with ample yards attached.

The Stock, consisting of improved breeds of horses, cattle, sheep and swine.

The Experimental Sorghum Works.

The Creamery.

The Tools and Implements of the farm.

The Agricultural Cabinet of seeds and grasses.

The Gardens and Orchards.

The Experimental Nurseries, including many rare trees and shrubs recently introduced from Europe and Asia.

The Forestry Plantations.

The Propagating Pits, including many green-house plants.

The Collection of Wood Specimens.

The Collection of Wax Fruit-Models.

The Work-Shops, supplied with tools and machines.

The Instruments used by the Civil Engineer.

The Veterinary Cabinet.

The Experimental Kitchen.

The Physical Cabinet, containing \$8,000 worth of apparatus.

The Chemical Laboratory with its apparatus, accommodating one hundred students.

The Herbarium, consisting of ten thousand to twelve thousand specimens.

The Microscopical Laboratory, supplied with twenty-three microscopes and a full set of apparatus.

The Geological and Zoological Museum.

The Zoological Laboratory, supplied with twenty-two microscopes.

The Entomological Cabinet, including the largest collection of insects in the State.

The College Library and Reading Room, of about five thousand bound volumes, and a large list of magazines and other periodicals.

The College Pianos, a Large Pipe Organ, and other instruments.

The Guns and Accoutrements of the Military Department.

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