RELIGIOUS DENOMINATIONS.

DENOMINATIONS.	Church Members.	Church Preference.	Total.
Amana Society	1	....	1
Apostolic	1	....	1
Baptist	84	51	135
Baptist (Free)	2	....	2
Baptist (German)	1	....	1
Baptist (St. John)	1	....	1
Brethren (Plymouth)	2	....	2
Brethren (Progressive)	1	....	1
Brethren (United)	14	2	16
Catholic	185	14	199
Christian	72	48	120
Christian (Reformed)	2	1	3
Christadelphian	2	....	2
Christian Science	2	4	6
Church of England	1	....	1
Church of God	3	....	3
Congregational	169	142	311
Congregational (Welch)	1	....	1
Episcopal	69	37	106
Episcopal (Reformed)	1	....	1
Evangelical (German)	2	....	2
Evangelical (St. Johns)	1	....	1
Evangelical (United)	6	....	6
Friends	14	3	17
Jewish	1	....	1
Latter Day Saints	9	1	10
Lutheran	40	7	47
Lutheran (English)	14	3	17
Lutheran (Norwegian)	6	....	6
Lutheran (Swedish)	4	....	4
Lutheran (German)	20	2	22
Menonite	2	....	2
Methodist	327	211	538
Mormon	1	....	1
Presbyterian	203	123	326
Presbyterian (Cumberland)	2	....	2
Presbyterian (United)	18	....	18
Reformed	10	9	19
Seventh Day Advent	2	1	3
Unitarian	7	28	36
Universalist	1	4	5
Any Protestant Church			91
No peference whatever			12
Statistics not given			38
Total			2,138

Respectfully,

H. C. DORCAS.

TWENTY-FIRST BIENNIAL REPORT

OF THE

Iowa State College of Agriculture and Mechanic Arts

MADE TO

THE GOVERNOR OF IOWA

For the Biennial Period

July 1, 1903 to June 30, 1905

DES MOINES, IOWA
B. MURPHY, STATE PRINTER
1906

LETTER OF TRANSMITTAL.

IOWA STATE COLLEGE OF AGRICULTURE
AND THE MECHANIC ARTS.
AMES, IOWA, December 1, 1905.

To His Excellency, A. B. CUMMINS:

In accordance with the statute defining the duties of the Secretary of the Board of Trustees of the Iowa College of Agriculture and the Mechanic Arts, I have the honor to transmit herewith the twenty-first biennial report of the Board.

E. W. STANTON,
Secretary

PRESIDENT'S REPORT.

To the Board of Trustees of the Iowa State College of Agriculture and Mechanic Arts:

GENTLEMEN: It becomes my duty to make to you for his excellency, Albert B. Cummins, Governor of Iowa, and for the people of Iowa, the following biennial report.

While this is the second biennial report which I have had the honor to prepare, it is the first covering any portion of my official administration of the affairs of the College. For the first two months of the biennial period included in this report, Acting President E. W. Stanton, was in charge, my own active incumbency in office beginning with the opening of the school year of 1903-4.

THE ORGANIZATION OF THE COLLEGE.

For the greater efficiency of administration, it has appeared desirable that the College should be organized under deans. Accordingly, the Trustees approved the classification of the college students into Junior and Senior Colleges, all students below the junior year being included in the Junior College and all above the sophomore year in the Senior College.

Professor E. W. Stanton was made Dean of the Junior College, and has charge of the classification of all Junior College students. To his thorough and careful oversight and systematizing of this work is due the greatest credit. Professor A. Marston was made Dean of the School of Engineering, Professor G. W. Bissell, Vice-Dean, their duties in these respective offices beginning with the fiscal year 1904-5. Professor C. F. Curtiss was already in charge of the School of Agriculture and Dr. J. H. McNeil of the Veterinary School. The President has been made Dean of the Division of Science.

From this organization have come very gratifying results. Dean Marston and Vice-Dean Bissell are rendering most valuable assistance in the development and administration of the entire School of

Engineering. The courses of study are being carefully revised and co-ordinated; instructors and assistant and associate professors are being chosen with the greatest care. The results in the improved character of our work, the improved personnel of the teaching force, and the general increased efficiency of the School of Engineering, have abundantly justified the wisdom of this change in organization.

DIVISION OF AGRICULTURE.

DEPARTMENT OF AGRONOMY.

Professor P. G. Holden, Vice-Dean of the Division of Agriculture and head of the Agronomy Department, has general supervision of the work in the sub-departments of Soils, Farm Crops and Agricultural Engineering, giving special attention himself, to the lecture and laboratory work in grains.

FARM CROPS.

No work is of more far-reaching importance than that which is undertaken in the sub-department of Farm Crops, yet this work has been quite inadequately provided for thus far. It is Professor Holden's intention to strengthen this sub-department in all of its varied lines of instruction and investigation.

SOILS.

The equipment of a soils laboratory in Agricultural Hall for student work and also the equipment of a similar laboratory for experimental work, and the organization of the courses for the study of soil physics and soil fertility, have proven very attractive to students. A considerable number of graduate students and a large number of undergraduate students are paying especial attention to these subjects. Under the competent administration of Professor W. H. Stevenson and his thoroughly qualified assistants, this promises to become, in the near future, one of the most important branches of our educational and experimental work.

An arrangement has been made with the Department of Agriculture, for the services here at the College of two or three scientific experts in the subdepartment of Soils.

These men are salaried by the Government, the College furnishing them with laboratory conveniences for the prosecution of their work.

The importance and value of such scientific research can scarcely be overestimated in its relation to the industrial advance and the industrial supremacy of our country. The time is already ripe for such scientific treatment and handling of the soil of the middle west as shall conserve their fertility and save this granary of the world from the blight of exhaustion, which has fallen upon much of the older, eastern lands that are now, in whole or in part abandoned.

In the election of Mr. Ira Obed Schaub, B. S., of the University of Illinois, as Assistant Professor of Soils, the subdepartment of Soils has been strongly reinforced.

AGRICULTURAL ENGINEERING.

The subdepartment known as Farm Mechanics, has been changed in name to that of Agricultural Engineering. Upon the resignation of Professor C. J. Zintheo, Mr. Jay B. Davidson, of the University of Nebraska, was elected Assistant Professor and placed in charge of this work for the year 1905-6.

In this subdepartment, which was newly housed in the Hall of Agricultural Engineering during the year of 1903-4, are taken up general courses in drawing and drafting with special reference to field engineering for the farm, drainage, road construction, carpentry, blacksmithing, and farm implement laboratory work. In connection with this subdepartment, research work in irrigation, drainage experiments, windmill experiments, traction tests, the testing of corn planters, grain drills, binders, and so forth, are offered; also special work in rural architecture and farm implement design.

It is the purpose of the College that the courses offered and the work done in the subdepartment of Agricultural Engineering, shall be thoroughly scientific, basing the work upon a knowledge of engineering principles, and that the application of these principles shall be carried out to the problems of agriculture. There is, obviously, a very large field for educational and experimental work in agricultural engineering, but the Iowa State College is, we believe, the first institution to take up this work in an extensive manner and with an independent equipment. The great demand for this course among our students of agricultural science, shows the keen appeciation of this special department of applied engineering.

DEPARTMENT OF DAIRYING.

During the year 1904-5, the Dairy Department has been at a standstill owing to the wreckage of the old and the construction of the new dairy building. Students writing to the College or contemplating

entering with special reference to dairy science, were advised to postpone their coming until the completion of the new building and the purchase of a dairy farm. With these equipments, the Iowa State College will be excelled by no other institution in facilities for comprehensive and thorough investigation and instruction in the various branches of dairying.

Under the careful oversight of Professor G. L. McKay the Dairy Building has been completed and when the furniture and equipment are installed, will be ready for occupancy and use.

Already the United States Department of Agriculture has arranged to send two scientific experts for residence at the College and for continuous experimental work in the dairy laboratories, the one in the line of dairy bacteriology and the other in the line of dairy chemistry These investigations will be continued for a series of years and the results are certain to be of great value to the dairy industry of the State and of the country, and of value also to science as such.

Mr. Frank William Bouska, M. S. A., after graduate work in the University of Wisconsin and four months spent in study in Germany, has been elected Assistant Professor of Bacteriology, it being the purpose of Mr. Bouska to give special attention to dairy and soil bacteriology.

DEPARTMENT OF ANIMAL HUSBANDRY.

Professor Willard J. Kennedy was granted a year's leave of absence for study in Europe, from April, 1904, to April, 1905. Professor William J. Rutherford was made Assistant Professor of Animal Husbandry and placed in charge of the Department during Professor Kennedy's absence. Mr. Wayne Dinsmore, B. S. A., instructor in Animal Husbandry, has been promoted to an Assistant Professorship.

It is the policy of this Department in a marked degree to bring the students in Animal Husbandry into direct contact with all of the professors of the Department from their first year through to graduation. The results are very beneficial to the students and, indirectly, to the professors themselves. It gives a unity, co-operation and strength to the Department which it otherwise could not have.

DEPARTMENT OF HORTICULTURE.

For the two years of the biennial period, Associate Professor A. T. Erwin has given most satisfactory service as acting head of the Department of Horticulture. As an expression of their appreciation, the Board promoted him from Assistant Professor to Associate Professor in

the fall of 1904. In the spring of 1905, the College secured the acceptance of Profesor Spencer A. Beach, the noted pomologist and horticulturist of the Experiment Station of New York, to the Professorship of Horticulture and the headship of the Department. Professor Beach did not begin his duties until after the close of the biennial period covered by this report.

FORESTRY.

While the work in Foresty is not new at the Iowa State College, having been included in its course for many years, its development has received a new impetus by the arrival of Professor Hugh P. Baker, who by an arrangement with the Bureau of Forestry, gives one-half of his time to instructional work in the College and one-half to the investigation of forestal conditions in Iowa, the College paying one-half of his salary and the Government one-half. The value of such expert study of the forestry conditions of the State, coupled with the instructional work, is very great. The College counts itself fortunate in being able to secure the services of such a man as Professor Baker under these favorable conditions.

DIVISION OF VETERINARY SCIENCE.

The experiment of making the course in Veterinary Medicine four years in length has proven successful. It was apprehended that the competition of a number of private schools of veterinary medicine with short and easy courses, would prove formidable. It would appear, however, that in veterinary medicine as in human medicine, the school that seeks to furnish the most thorough and scientific education to its students is appreciated by the better class of young men, who are expecting to qualify themselves for a creditable, professional career.

Owing to the meagre salaries paid the professors and instructors in Veterinary Science Department, we have been unable to retain our faculty from year to year as would have been desired. However, thus far we have been very fortunate in securing the services of such men as Dr. Leslie M. Hurt, a graduate of the Veterinary School of the Iowa State College in 1904, and Dr. Dykstra, a graduate of the class of 1905, and to retain the services of Dr. Walter A. Stuhr, who has been promoted to Associate Professorship of Histology, Pathology and Therapeutics.

DIVISION OF ENGINEERING.

DEPARTMENT OF CIVIL ENGINEERING.

In making Professor A. Marston, head of the Civil Engineering Department, Dean of the Division, we should have relieved him of the direct responsibility and care of the Civil Engineering Department. This we have not been able as yet to accomplish fully. However, with the assistance of Associate Professor Ashbaugh and other members of the Civil Engineering Department instruction force, the work has been carried very successfully.

ELECTRICAL ENGINEERING DEPARTMENT.

Upon the death of Assistant Professor B. S. Lanphear of the Electrical Engineering instructional force, an Associate Professorship was created in place of an Assistant Professorship, and Mr. Frederick A. Fish, of Ohio State University was elected to the position, Mr. Adolph Shane, B. S. in E. E., being elected Acting Professor of Electrical Engineering. More recently Mr. A. B. Anderson, Ph. D. of the University of Wisconsin, and Mr. A. H. Hoffman, B. Sc. in E. E., a graduate of the Iowa State College in the class of 1905, have been appointed instructors in physics. The changes have materially strengthened the department of Physics and Electrical Engineering.

MINING ENGINEERING DEPARTMENT.

In the Department of Geology and Mining Engineering, Mr. Edward E. Bugbee, E. M., and Mr. I. A. Williams, B. Sc., A. M., have been elected Associate Professors.

Dean Marston calls attention to the very significant increase in the enrollment of students in the Mining Engineering Course:

1894	0	1899-00	6
1895	2	1900-01	12
1896	3	1901-02	16
1897	4	1902-03	20
1898-99	2	1903-04	39
		1904-05	39

DEPARTMENT OF MECHANICAL ENGINEERING.

The Department of Mechanical Engineering not only provides in its shops and laboratories as well as in a number of its more fundamental lecture and instruction courses, for the students enrolled as mechanical

engineering students, but for all other students in the Engineering Division and for many in the Division of Science. So that, like the departments of general science, this department provides laboratory and instruction facilities for a very large enrollment.

ENGINEERING EXPERIMENT STATION.

The small appropriation made by the last legislature enabled the College authorities to establish an Engineering Experiment Station. The need for this kind of investigation work was so obvious as to constitute in itself convincing argument for such an appropriation to be made and for such work to be begun. Though the appropriation has been very small, the results are very gratifying and some of them quite conclusive. I would call particular attention to Dean Marston's report upon this subject. The support for this work should be made far more adequate than it now is and at least be placed at the initial figure of the first appropriation made for the Agricultural Experiment Station, namely: $15,000 annually.

Attention is called to the fact that already bulletins have been issued upon the following subjects by the Engineering Station:

Tests of Dry Press Brick.
Steam Generation with Iowa Coal.
Dredging by the Hydraulic Method.
Iowa Sewage Disposal System.
Good Roads Problems in Iowa.

DIVISION OF SCIENCE.

DEPARTMENT OF MATHEMATICS.

Mathematical science is fundamental to very much of the technical work of the College, particularly in all courses in engineering. Under Professor E. W. Stanton's able direction and personal instruction and oversight, the work in mathematics at the Iowa State College has become recognized throughout the State and country for its thoroughness and scientific character. In addition to the fundamental subjects in mathematics as usually taught, special attention is being given to the application of mathematics to engineering problems and the preparation of students for advanced work in engineering courses.

DEPARTMENT OF BOTANY.

With a scant appropriation for assistants, throwing almost the entire burden of the instruction work and especially of the supervision of that work, upon the Head Professor, the Department of Botany, has, nevertheless, made very satisfactory progress. This work is quite fundamental particularly to the courses of Animal Husbandry and Agronomy, as well as the course in General Science and in Domestic Science. With the increased facilities furnished in the new main hall for this department and with the equipment which it is hoped may be obtained in the near future, this important department of scientific instruction and research will be well provided for. There should be in the immediate future an addition of two competent instructors or assistants with the rank of assistant professors; there should also be provided a scholarship assistant or fellowship.

DEPARTMENT OF ZOOLOGY.

Fundamental to the work in Animal Husbandry and in Veterinary Science are the courses in Zoology, particularly in Embryology, Evolution of Animals, Comparative Anatomy, and Animal Parasites; fundamental to the work in Domestic Science are the courses in Neurology, Human Physiology, Vertebrate Zoology; and fundamental to the work in Horticulture are the courses in Entomology and Applied Entomology.

DEPARTMENT OF ECONOMIC SCIENCE.

In the Department of Economic Science, under Dr. Benjamin H. Hibbard, particular attention is given, first to the Outlines of Economics, and following, to the History of Political Economy, Economic Problems, Money and Banking, Finance, Industrial History of the United States, and American Labor. Some means should be afforded this Department at an early date for original investigation into the economic problems which particularly concern this state, and no man is more capable of conducting such investigations than Dr. Hibbard.

DEPARTMENT OF DOMESTIC SCIENCE.

Upon the resignation of Miss Sabin, as head of the Department of Domestic Science, Miss Georgetta Witter was elected to this position and assumed her duties with the opening of the school year of 1904-05. Miss Witter has been thoroughly prepared in the best schools of America and Europe for this work, which was taken up with enthusiasm and thoroughness from the first. As a result, the course in Domestic Science has been reorganized, placed upon a scientific basis and is carried through with the greatest thoroughness. The Normal

Course of two years in Domestic Science has been dropped, substituting in its place a thoroughly scientific course of four years, leading to the degree of Bachelor of Domestic Science (B. D. S.).

As heretofore a course in General and Domestic Science is offered to all young women who desire to pursue such a course, and also a course in General Science for women as well as men.

DEPARTMENT OF ENGLISH.

In the department of English with its very large number of students and classes, there have been several changes in instructors. Miss Elizabeth Moore, Ph. M. of the University of Chicago, Miss Dora Thompkins, A. M., Miss Rose Abel, A. B., and the return of Assistant Professor Bessie M. Larrabee, after a year's study in the University of Chicago, leave the Department distinctly stronger than ever before in its history.

DEPARTMENT OF HISTORY.

Mr. Paul S. Peirce, Ph. D., Assistant Professor of History of the University of Iowa, has been elected Assistant Professor of History in the Iowa State College, beginning his duties here September, 1904. Dr. Peirce brings to the institution excellent ideals, sound scholarship and a strong personality.

The courses in History are primarily outlined with reference to the needs of the large body of students taking technical courses in the institution. Such students cannot devote as much time to history as would be desirable in other courses, but they do need a comprehensive view of the development of modern institutions, political, industrial and social, and as intelligent citizens to understand something of the origin of the liberties which we enjoy. The work done in the Department of History is of a high standard of scholarship,

DEPARTMENT OF CIVICS.

In the year 1904 the Department of Civics was created and Professor Richard C. Barrett was elected to this chair. Inasmuch as no work was given in the institution distinctly in the field of civics, it seemed quite important that this addition should be made to the work of the College. Courses are offered in Elementary Civics, Principles of American Government, a course on the State and Federal Constitutions, Rural Law, Actual Government, and Comparative Government.

In addition to the work involved in giving the lectures and instruction in the Department, Professor Barrett has been assigned the duties of the Chairmanship of the Committee on Entrance Requirements and Secondary School Relations of the faculty, and gives as much of his time as he can spare for the purpose of organizing the relations of the College to the secondary schools of the State.

DEPARTMENT OF MUSIC.

The Department of Music in the year 1904-05, for the first time offered a four years course, upon the completion of which a certificate is granted.

PHYSICAL DIRECTORS.

With the assistance of the Athletic Association, an organization of the students and faculty, which guarantees and pays one-half of his salary, Mr. John P. Watson has been secured as Physical Director for men. His services are of the greatest value to the students, not alone in giving personal and expert attention to the physical health and wellbeing of the students who participate in the intercollegiate games, but far more widely in his personal attention to the physical health and wellbeing of hundreds of others who are constantly under his advice and direction in athletic exercises.

It is a commendable fact that there are almost never any serious physical injuries resulting to students who are thus conditioned and directed by so competent a man as Mr. Watson and it is also commendable that the average health of the student body has been markedly improved. In spite of the fact of the absence of a gymnasium and any gymnasium equipment, incalculable good has been done.

Miss Winifred R. Tilden has also been made instructor in physical culture for women. Her thorough and intelligent enthusiasm has been contagious. The young women are not only delighted but are greatly benefited by her work.

VARIETY AND EXTENT OF COURSES OFFERED.

It must appear to the casual observer that the most marked development of the educational work at the State College is in the variety and extent of the courses of study that are now offered. If the College were only offering the simple courses as once given, the mere increase in the number of students, though that should have come as it most certainly would not under this supposition, would have meant relatively

only a proportionate increase in the expense for instructors and laboratory work. The development, however, has found its most significant expression in the large and varied and extended courses offered and in the work done. A single department, or subdepartment like that of Soils, requires more extensive and expensive equipment and a larger corps of instructors than was given to the whole subject of agriculture but a few years ago.

COURSES IN AGRICULTURE.

Whereas, but a few years ago there was but one course in agriculture, there are now several distinct departments. The work is largely given in the form of lectures, more advanced and up-to-date than could be offered from any text books yet published, and in laboratory work, of the greatest value always to the students of science and applied science; much of it also in the form of literature found in special and current publications.

COURSES IN ENGINEERING.

In the School of Engineering, with an enrollment of nearly eight hundred students, courses are offered in Civil Engineering, Mechanical Engineering, Electrical Engineering, and Mining Engineering, not inferior in extent or in thoroughness to those of the best courses of engineering in the country. It is not generally appreciated, but is nevertheless a fact, that Iowa has at the State College, one of the great engineering schools of the United States and of the world. Its graduates have made most creditable records for themselves, reflecting honor and credit upon the school, wherever they have gone. In grateful recognition of the value of the education given him at the Iowa State College, one of the alumni, recently deceased, Mr. Geo. W. Catt, left a valuable engineering library and one-half of a large estate to the College by his will.

COURSES IN SCIENCE.

Indispensable to the work of an institution like the Iowa State College, are the Departments of Science, and closely related to these as fundamental studies are the courses offered in History, English, Mathematics, Public Speaking, Civics, Economic Science and Modern Languages. One large building has been entirely fitted up and given over to the Department of Chemistry, where nearly five hundred students can be accommodated in one semester in this one subject. So

fundamental is the science of chemistry that, in general, it may be said that no student can be graduated from the institution in any of its courses without having had at least a year of chemistry. Fundamental also is the work in Zoology and the work in Botany. The Department of Physics is coupled with that of Electrical Engineering, but is no less important as a fundamental science in many of the courses; the same may also be said of the Department of Geology, which is coupled with that of Mining Engineering.

The College, therefore, offers in this group of studies an excellent basis for a general course in science, leading to the degree of Bachelor of Science (B. S.). The science courses as given are quite as elastic in the matter of electives as is consistent with a uniform co-ordination of the studies that any student shall take. Such a course, however, may be quite liberal if the student so elects, putting the emphasis of his work upon any one of the main subjects offered.

GRADUATE COURSES AND WORK.

It is quite gratifying to the College to have coming to it graduate students of many other institutions, seeking here advanced work. Graduate students have been enrolled, particularly in the Division of Agriculture, taking major work in Agronomy, Animal Husbandry and Dairying; also in the Science Division in the Department of Botany. It is this strong advanced research work by graduate students, that is at once a test and a testimony as to the character and efficiency of the work of the College.

BUILDINGS.

AGRICULTURAL ENGINEERING HALL.

Agricultural Engineering Hall has been completed at a total cost of $57,243.00. This building, which is fire proof and three stories high with a balcony, practically making four stories, provides room for all lines of laboratory work and also drawing and lecture rooms for the Department of Agricultural Engineering. It is well equipped with apparatus and machinery, the latter being largely contributed by the manufacturers, who have loaned the College for laboratory use, the best types of modern agricultural machinery. The cost of this machinery, if the College had been obliged to purchase same at market value, would have been not less than $20,000.00.

NEW DAIRY BUILDING.

The new dairy building could not be begun nor completed so promptly as was desirable because of the restriction of the appropriation to quarterly payments. This building was practically completed within the biennial period and constitutes one of the most modern and will be one of the best equipped buildings for its purpose in the world. If the appropriation for the dairy building had been granted at the figure asked, it would have been possible to have constructed a building fifteen feet longer and to have made class rooms capable of seating 125 students instead of 75, as is now the case. The building, therefore, will scarcely be adequate for our class room needs and should have been built according to the original design. Aside from this limitation, which will sometimes require the division of classes that ought to meet together and so double our work, the building will meet the needs of the Dairy Department and the Dairy Section of the Station most admirably.

The installation of the Vilter Ice Machine and a large number of refrigerating rooms, will make it possible to carry out quite thoroughly extensive instructional and experimental work.

CENTRAL HEATING PLANT.

The amount appropriated for the central heating plant, $54,500.00, has proven inadequate for even a partial construction of such a plant. After submitting several propositions for competitive bids, the project had to be abandoned of attempting a central heating plant at present. Boilers, however, have been added to the heating plant already in operation for Engineering Hall and tunnels constructed to the new main hall and Morrill Hall, which can later be utilized in carrying the heat from the central plant to these buildings. The estimates of the probable cost for a central heating plant, as furnished by the Engineering Department at the College, have proven approximately correct, as shown by the competitive bids submitted.

HORTICULTURAL STORAGE HOUSE.

The new Horticultural building for the storing of seeds and nursery stock, and for housing the teams, wagons and implements belonging to the Department, has been erected, the funds being taken from the Repair and Improvement Fund, at a cost of $6,213.00. This together with the greenhouses, completed during the biennial period and costing $19,000.00, furnishes a very satisfactory equipment for the Horticultural Department and the Horticultural Section.

THE NEW MAIN HALL.

The new main hall was begun and carried almost to completion within the biennial period. To the original appropriation of $35,000.00 for the foundation was added a later appropriation for dome, attic story, east portico, four pilasters on the west side and the pediment over the same, $22,000.00; for the restoration of granite instead of Bedford stone for base and steps, $12,000.00; for heating, lighting, plumbing and fixtures, $29,000.00; furnishings, $32,000.00, amounting to $95,000.00, by the Thirtieth General Assembly.

This hall when completed will be one of the most substantial and noble educational buildings in the whole country. With granite base, fire proof construction, walls of Bedford stone and interior finish to correspond, it is built to stand for centuries, a worthy monument to the faith, hope, enterprise and high educational ideals of a great state. This hall will house the departments of English and Literature, Modern Languages, Mathematics, History, Civics, Economic Science, Public Speaking and Botany. All of these Departments, except that of Botany, have been temporarily and very uncomfortably accommodated in Emergency Hall. Here for many years since the burning of the old main building, these departments, with their hundreds of students, have been carrying on their work with the greatest inconvenience and under conditions that were a positive menace to health. The Department of Botany has occupied temporarily the large dining room in Margaret Hall.

Aside from the special appropriation already mentioned, the cost of the new main hall will be paid from the millage tax fund. The entire cost of the building and furnishings will approximate $401,297.00.

It is universally acknowledged by competent judges that the College has secured in these buildings, recently completed and in process of erection, very full value for all moneys expended. This is particularly true of the larger contracts, like those for the new dairy building and the new main hall. The method in vogue at the College of employing a competent architect to draw up the plans and specifications, and to make an estimate, and in conjunction with him, employing as College engineer, Dean Marston, and, where all questions of mechanical engineering are involved, Vice-Dean Bissell and Associate Professor Meeker, seems to produce most satisfactory results.

COURSE OF STUDY AND ATTENDANCE.

In June of 1905, the College graduated the largest class in its history, numbering 174; in addition to this eight young women received

certificates upon completion of the two years' course in Domestic Science.

The requirements for admission to Freshman standing have been steadily advanced until now this institution stands on a par with the best institutions of the country. The entrance requirements are such as to justify and prepare for the thorough and extensive work required in the four-year courses, for graduation. While the raising of the requirements for admission and the standards for graduation makes it necessary that students secure more adequate preparation before entering the College, they make so much stronger students after they do enter, as to amply justify the raising of the standards. We are glad to know that the attendance has not been even temporarily lessened by this raising of the standards although that might have been anticipated. But the attendance has steadily increased and the increase is more marked in the courses that are more thoroughly established and of the highest grade and character. Indeed, to enable the student to carry successfully the courses as now given, it is necessary that he should have the preparation which we require and which is in harmony with the requirements of other well established institutions in good standing. The demands made upon the professional and scientific men of the future will also most certainly be such as to make these qualifications essential to their success.

As a matter of interest a census of students was taken during the spring of 1905, showing the occupation of their parents, which is as follows:

Auctioneer	1	Baker	1
Brewer	1	Blacksmith	6
Bookkeeper	3	County Officer	1
Banker	23	Dentist	1
Contractor	9	Engineer	21
Day Laborer	10	Farmers	287
Editor	9	Wagon Maker	1
Boarding-house keeper	7	Harness Maker	3
Indian Agent	1	Insurance	6
Lawyers	19	Laundrymen	1
Mail Service	8	Mechanics	7
Ministers	21	Merchants	129
Masons	4	Lumbermen	16
Miners	3	Manufacturers	9
On occupations not given or parent not living	166	Nursery	4
Physician	25	Photographer	1
Oil Inspector	1	Traveling Salesmen	21
Railroad	18	Plumber	1
Stockman	26	Retired	135
Abstractor	2	Real Estate	29
		Teachers	12

The registration for the year 1904-05 shows that 263 students entered the College from high schools; 34 from common schools, 3

from business colleges, 24 from other colleges and 20 from academies. These statistics show that we have vital relations with the high schools and are dependent upon them for the preparation of our students for College work.

In order to gain the support of high schools and to make the way clear for students to enter the college and to encourage college attendance as well as stimulate the high schools to doing better preparatory work, the College needs to have its relation with the high schools more thoroughly organized. This we are endeavoring to accomplish though unable as yet to put a man into the field to give his time largely to this service. The secondary schools of Iowa are so numerous and should have such close inspection that until such a time as the state may provide for this inspection through the Superintendent of Public Instruction, it will require the utmost effort of all of the Colleges and the State University to even partially cover the ground and accomplish the desired results.

A comparison with other institutions, particularly with those in which the college of agriculture has been located upon the same campus as the college of liberal arts and professional schools, shows that we are enabled here to carry the undergraduate and the graduate work in science as related to agriculture, to a higher standard and to do more work of a thorough, scientific character and of college grade, than is done in any other institution in the country. The colleges of agriculture, so called, connected with state institutions in several of the states are doing only secondary school work of a high school character, quite elementary and altogether below the grade of scientific, college work. This is not said in disparagement of the work of these sister institutions. Much may be said to their credit. But it still remains true that the Iowa State College has been enabled, on account of its independent existence upon its own campus and with its own Board of Trustees, to develop a higher grade of work and thereby to gain prestige and standing in the educational world and to produce results which we modestly believe are not paralleled elsewhere. It is a matter worthy of serious consideration that an institution like this with upwards of one hundred laboratories and its twenty-nine departments is much more varied and complex in its curricula than any university or college of fifty years ago. The developments of science have been so wonderful and the results so varied and rich that it may well be questioned whether the old notion of a university that shall embrace all subjects and studies must not soon be abandoned for the more practical scheme of such a grouping of schools and subjects as are mutually and closely

related in separate organizations. The results upon the campus at Ames would seem to justify this conclusion.

I wish particularly to call attention to Dean Marston's argument concerning the close association of agricultural and engineering studies and research. There is a kindred purpose and spirit between these two great branches of research and instruction that make them as mutually helpful each to the other and dependent each upon the other, as are the two oars of a boat. It should also be added that these technical courses, both in agriculture and in engineering, need to rest back upon the fundamental sciences and the general studies which will enable technical work to be thoroughly based in the sciences and broadly educational. The Departments of Science, of Mathematics, of History, of English, or Modern Languages, of Political Science, and so forth, are, therefore, a very essential part of such technical courses and constitute in themselves an element of the general science course for such students as desire the more general studies. In other words, the work of the land-grant college is briefly expressed in the words of the Morrill law, "a liberal and practical education of the industrial classes."

AN INSTITUTE OF TECHNOLOGY.

The Iowa State College of Agriculture and Mechanic Arts, following out the fertile idea in the original land-grant act, "to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life," has developed into an institution of technology. This development or evolution has been organic and harmonious with the fundamental conception of its purpose. Evidently there has been no radical or ill-advised departure from this fundamental idea. The students who come to the Iowa State College come for the most part with a definite purpose. They know what they want. At the same time for the most of them, their college work at Ames will be the only college work they will ever do. While the studies in science and science as related to the industries are, therefore, placed prominently forward in all of the work done, yet it was never intended that this or any other sister, land-grant college should be merely a trades school. It is their broad purpose to give a thorough education, that shall fit men and women for citizenship and for life.

The land-grant colleges stand pre-eminently as exponents of the new idea in education, namely: That the courses in science and in applied science may constitute an important part of the college curriculum that shall be of as high a cultural and educational value as the classical courses in the liberal arts colleges and universities. There is a

fundamental and interesting harmony between this idea and the idea that is at the heart of democratic civilization, a harmony which finds expression in the conviction that men and women may be no less thoroughly and scientifically educated if an important part of their courses of study has had to do with the real interests of life. The State College, therefore, stands pre-eminently for industrial efficiency and thorough education and sends forth its foster children prepared to take at once useful and important places in the affairs of the world.

POST GRADUATE WORK.

It is a matter of great gratification to all concerned that graduate students from some of the leading universities and colleges of the country are seeking advanced work at Ames. Our laboratories, particularly in Soils, Botany and in Chemistry as related to the industries, are attracting to us a very strong body of students.

CONCERNING THE INCREASED GENERAL EXPENSES OF RUNNING THE COLLEGE.

The increased expense for the fires, lights and janitor service is indicated by the following statement taken from the Secretary's books. In 1900 practically no appropriation was necessary from the general support fund to meet this expense, the student's Janitor Fee, as it is called, provided sufficient to meet same. However, in 1901 the tax upon the support fund for this purpose was $4,016.05; in 1902, $3,389.69; in 1903, $8,345.49; in 1904, $12,572.21. This year it will be between $15,000.00 and $16,000.00. The estimated expense for next year will be $22,000.00 or $23,000.00; this provides for only one-half year of heating, lighting and caring for the Central Building. The probabilities are that for the year 1906-07, the draft upon the support fund for this purpose will not be less than $27,000.00 or $28,000.00. This eats alarmingly into our support fund and accounts largely for the diminished appropriations for the expenses and equipment of the departments.

The new buildings, furnishing us as they do, more adequate accommodations for our work, are nevertheless crippling us in the resources for that work unless more adequate provision can be made for meeting this heavy expense.

The expense for heat, light and janitor service for the biennial period has amounted to $50,890.20, and it deserves also to be said that the affairs of this department have been administered in a most business-

like and careful manner under the superintendency of Professor G. W. Bissell, Custodian Ben Edwards and Mr. W. H. Grover.

LABORATORIES AND FEES.

The Secretary's report shows the receipt of fees from all sources to amount to $26,072.70 for the year 1903-04 and $27,497.47 for 1904-05. It should be borne in mind that this does not constitute a source of income proper to the institution. There are over one hundred distinct laboratories in connection with the work of the State College and Experiment Stations. In so far as these laboratories are given over to instructional work and belong to the College proper, the student fees theoretically are intended to cover merely the cost of materials used by the student, and thus are no more a source of income to the College than would be the case in an institution, for convenience sake, furnishing the students with text books at cost. As a matter of fact, a somewhat careful inquiry made one year ago, showed that in some of the laboratories, particularly in mechanical engineering, the student fees did not cover the actual expenses and the College funds suffered somewhat of a net loss in running its laboratories so far as student materials are concerned.

That which is true of the laboratories proper is also true of our greatest laboratory in extent, namely: the laboratory in Farm Crops and Farm Management and Animal Husbandry. The farm itself constitutes a laboratory and in the nature of the case it must be run, not on a commercial basis for profit, but on an educational basis for the purpose of instruction. A great many varieties of stock are kept that the varieties or breeds may be illustrated in the stock judging classes and the animals are kept for this purpose primarily.

Commercially, it is always found to be unprofitable to keep a large number of breeds upon one place but for the purposes of instruction and education, which are primary in the College, it is highly important. As the result, over and above all receipts from sales of the farm, there has to be appropriated from the College funds each year, a considerable sum to meet what would otherwise be a deficit. This laboratory, therefore, as all others, including the dairy, has been thus far and perhaps always will be run at a net loss to the institution.

CONCERNING THE PROFESSIONAL AND SCIENTIFIC STANDING OF OUR FACULTY MEMBERS.

I believe it is a matter of congratulation to the State and to the College that the members of our faculty are recognized as professional

experts and scientific authorities in their various fields. Dean Marston has referred to the fact that members of our faculty are frequently called upon for expert counsel; Dean Marston modestly omits to mention his own name in this connection. But I believe nothing counts more for the influence and standing of the College than the fact of its having in its faculty men recognized as authorities in their special fields.

An educational institution is in part judged, and rightly so, by the original contributions which its faculty may furnish in their special fields of research. This is particularly true in this day of any educational institution presuming to give emphasis to scientific studies. While it is often apparently the case that scientific investigations and research have no particular money value or relationship to the various industries, yet it often happens that out of such research have come the most valuable practical results. Thus the patient work of Pasteur has saved to France the silk industry, threatened with extinction. It is from the laboratories of the experimental scientists that marvelous developments have come in the application of electricity and of the knowledge of bacteriology in its application to human welfare in modern scientific medicine. It has properly been said that "no knowledge of substance or force of life is so remote or minute, although apparently indefinitely distant from present practice, but that tomorrow it may become an indispensible need."

I have already made some reference to the value to the agricultural interests of the State of the research work done in the laboratories of the Station and of the College, but I wish here to particularly call attention to the scientific contributions from various members of the faculty as this constitutes a most creditable and valuable scientific output of the institution. Recently papers have appeared from the following men:

DIVISION OF AGRICULTURE.

C. F. Curtiss, Dean of the Division of Agriculture and Director of the Experiment Station.

"The Important Advances in the Science and Practice of Stock Feeding Due to Experiment Station Work."
For the United States Department of Agriculture.

"The Economic Functions of Live Stock."
Delivered before the American Association for the Advancement of Science, St. Louis, December, 1903, and published in "Science."

"The Work of the Agricultural Colleges and Experiment Stations in Animal Breeding."
Delivered before the Association of American Agricultural Colleges and Experiment Stations, October, 1904.

"Animal Breeding Experiments at the Agricultural College."
Delivered before the American Breeder's Association, December, 1903.

"The Work of the Agricultural Colleges and Experiment Stations."
Delivered before the American Cattle Growers' Association, May, 1905.

G. P. Holden, Vice-Dean of the Division of Agriculture, and Professor of Agronomy.

Series of Articles for Successful Farming on
"The Improvement of Corn:"
"What Constitutes a Good Ear of Corn."
"Harvesting and Storing Seed Corn."
"Combating the Corn Root Worm."

"County Co-operative Experiment Stations:—A Forward Move in Modern Agriculture."

"Enormous Losses to the Corn Crop from the Corn Root Worm."

"How to Increase the Yield of Corn."

"Maintaining the Fertility of the Soil."
Written for The Furrow.

"Corn as a Factor in Kentucky's Development."
Delivered before the Kentucky State Development Convention and incorporated in their Annual Report; also furnished to New York Financial World.

"Selecting and Preparing Seed Corn."
For Iowa Year Book.

"Iowa's Campaign for Better Corn."
In Review of Reviews.

W. J. Kennedy, Vice-Director of the Experiment Station, and Professor of Animal Husbandry.

"Hunter Horse Breeding in Ireland."
Published in the Bureau of Animal Industry Annual Report for the year 1905.

"Report on Cattle, Sheep and Swine Feeding in Europe."
Issued by the Bureau of Animal Industry of the United States Department of Agriculture.

W. H. Stevenson, Professor of Soils.

"The Corner Stone of Agricultural Prosperity."

"Treatment of Peaty Swamp Soils."

"Road Drainage."
Published in Wallaces' Farmer.

"Drainage of Farm Lands."

"Crop Rotation."
Published in The Furrow.

"The Railroads' Opportunity to Advance Iowa's Agricultural Interests."
Published in the Chicago Record-Herald.

"The Relation of the Soil to Underdrainage."

Paper read before the Second Annual Meeting of the Iowa State Drainage Association.

"Soil Physics Laboratory Guide."

Text-book published in September, 1905.

G. L. McKay, Professor of Dairying.

C. Larsen, Assistant Professor of Dairying.

"Milk and Its Products."

A new book by McKay and Larsen, now in the hands of the publishers, John Wiley & Sons, New York.

F. W. Bouska, Professor of Bacteriology.

"A Study of Antagonism between Lactic Acid Bacteria and Bacteria of the Bacillus Subtilis Group."

Published in Jahrbuch der Schweiz.

DIVISION OF ENGINEERING.

A. Marston, Dean of the Division of Engineering, and Professor of Civil Engineering.

"Filteration of Natural Waters."

Address before Annual Convention of Iowa Municipal League, Cedar Rapids; reprinted in Midland Municipalities, Vol. VIII, No. 4.

"Sewage Disposal in Iowa."

Proceedings of Western Society of Engineers, Vol. VIII, No. 6. Awarded Chanute medal of Western Society of Engineers as most meritorious paper in Civil Engineering, 1903. Also awarded Fuertes medal by Cornell University for original research.

"Sewage Disposal for Private Houses."

Farmers Tribune.

"Drainage Engineering."

Proceedings of First Annual Iowa State Drainage Convention.

"The Importance of Drainage in Good Roads Construction."

Proceedings of Second Iowa State Drainage Convention.

"Drainage Engineering Notes."

"Engineering Problems for Small Towns."

Address before Annual Convention of Iowa Municipal League, Waterloo, October, 1903. Reprinted in Midland Municipalities, Vol. VI, No. 5.

"Report of Chairman of Committee on Roads and Pavements, Iowa Engineering Society."

Abstract of same in Engineering News, Vol. 53, No. 6.

"Tests of Concrete Block and Sand Lime Brick."

Read before Iowa Brick and Tile Manufacturers' Association, Mason City, January, 1904. Reprinted in Engineering News, Vol. LI, No. 16; also in Brick, Vol. XX, No. 5.

"Tests of Strength of Hollow Building Blocks."

Iowa Geological Surety, Vol. XIV, pages 574-598.

"Tests of Iowa Paving Brick."

Iowa Geological Survey, Vol. XIV, pages 601-620.

"Tests of Iowa Common Brick."

Iowa Geological Survey, Vol. XIV, pages 574-798.

"Field Work in Civil Engineering at Iowa State College."

Read Before the Society for the Promotion of Engineering Education, St. Louis, September, 1904. Proceedings, Vol. XII, pages 131-158.

T. H. McDonald, Assistant Professor of Civil Engineering, in Charge of Good Roads Investigation.

"Concrete Culverts."

Read before Iowa Cement Users Convention. Published in Iowa Engineer, March, 1905, page 181.

"Permanent Bridges and Culverts."

Iowa Agriculturist, October, 1905.

"Concrete Culverts."

Proceedings of Iowa Good Roads Association, 1905.

Material for Good Roads Special Editions, including papers on "Earth Roads," "Culverts," etc.

For Villisca Letter, Oct. 25, 1905; Spirit Lake Beacon, Aug., 1905; Albia Republican, July 27, 1905; and Elkader Agrus, July 12, 1905.

"Maintenance of Earth Roads."

Farm Gazette, Sept., 1905.

"Proceedings of the Iowa Good Roads Association, June, 1905."

Published by the Association, Ames, Iowa.

A. Marston and T. H. McDonald.

"Manual for Iowa Highway Officers."

Iowa Highway Commission, 1905.

"Strength of Reinforced Concrete."

Discussion of paper by T. L. Condron. Journal of Western Society of Engineers, Vol. X, No. 3.

L. E. Ashbaugh, Associate Professor of Civil Engineering.

"Study of the Cost of Engineering Construction."

"Notes on Office Methods in Structural Iron Work."

Proceedings of Iowa Engineering Society, 1904, page 70.

"Methods of Topographical Surveys as used on Iowa Meandered Lakebed Investigations."

Proceedings of Iowa Engineering Society, 1905, page 124.

"The Stadia-Intersection Method for Topographical Surveys."

Journal of the Western Society of Engineers, Vol. X, page 204.

"The Preservation of Iowa's Lakes."

Proceedings of the Iowa Park and Forestry Association, 1904.

"Iowa's Meandered Lakes, their Maintenance or Drainage."

Proceedings of the Iowa State Drainage Convention, 1905, page 50.

F. C. French, Assistant Professor of Civil Engineering.

"Notes on Railway Construction from a Resident Engineer's Standpoint."

Proceedings of Iowa Engineering Society, Jan., 1904. Reprinted in Engineering News, Vol. LI, No. 5; also in Engineering Record, Vol. XLIX, Nos. 5 and 6.

"State Railway Taxation."

A thesis for professional degree of C. E. at the Iowa State College, June, 1905.

S. W. Beyer, Professor of Geology and Mining Engineering.

"Mineral Resources of Iowa."

Compiled and published annually, Iowa Geological Survey.

J. A. Williams, Assistant Professor of Mining, and **S. W. Beyer.**

"Iowa Clays and Clay Industries."

Iowa State Geological Survey, Vol. XIV.

"Geology of Jasper County."

Iowa Geological Survey, Vol. XV.

"Comparison of Methods for Determining the Mineral Composition of Igneous Rocks."

January number of the American Geologist.

I B. Spinney, Professor of Physics and Electrical Engineering.

"Lamp Testing."

Paper read before the Iowa Electrical Association, April 21, 1904, published in Iowa Engineer.

"The Rating of Incandescent Lamps."

Paper read before the Iowa Electrical Association, April 20, 1904, published in Western Electrician.

"Development of the Alternating Current System of Electric Traction."

Paper read before the Iowa Engineering Society, June 13, 1905, published in the proceedings of that body.

G. W. Bissell, Vice Dean of the Division of Engineering, and Professor of Mechanical Engineering.

"Combustion of Fuel for Steam Generation."

Paper read at Sioux City, before Association of Stationary Engineers.

"Mechanical Engineering in Iowa."

Iowa Engineer, Vol. IV.

"Hot Blast Heating and Ventilation."

Paper read at St. Louis, before American Association for Advancement of Science.

"Hot Blast Heating."

Paper read before Iowa Brick and Tile Makers Association, Ottumwa, Iowa.

"The Combustion of Iowa Coals."

Paper read before Iowa Electrical Association, Des Moines, Iowa.

"Mechanical Engineering in Clay Working."

Iowa Engineer, Vol. II.

"Should Manual Training be a College Entrance Requirement?"

Iowa Engineer, Vol. IV.

"Installation and Care of Power Plants for Clay Workers."

Iowa Geological Survey, Vol. XIV.

W. M. Wilson, Assistant Professor of Mechanical Engineering.

"Spurr-gear Anglemeter."

American Machinist, Vol XXVIII, page 479.

"Test of Rough Gray-iron Spurr-gears."

American Machinist, Vol. XXVIII, page 41.

H. W. Dow, Assistant Professor of Mechanical Engineering.

"Notes on Mechanical Drawing." (Second Edition.)

F. G. Allen, Instructor in Mechanical Engineering, **H. W. Dow.**

"The Methods of Isometric Projection and Linear Perspective."

DIVISION OF SCIENCE.

J. E. Guthrie, Assistant Professor of Zoology.

"The Collembola of Minnesota."

Geological and Natural History Survey of Minnesota Zoological, Series IV, page 103, plate 16.

"The Furcula in the Collembola."

Proceedings Iowa Academy of Science, Vol. XI, page 5 plate 3.

H. J. Quayle, Instructor in Zoology.

"Spraying for Scale Insects."

Bulletin 166, Cal. Ex. Sta., April, 1905.

"Notes on the Egg Laying Habits of Culex Curriei."

Entomological News, December, 1905. (In press.)

"Notes on Taeniorhynchus Squamiger."

Canadian Entomologist, December, 1905. (In press.)

"Mosquito Control Work in California."

Bulletin Cal. Ex. Sta. (In press.)

L. H. Pammel, Professor of Botany.

A Comparative Study of the Vegetation of Swamp, Clay and Sandstone Areas in Western Wisconsin, Southeastern Minnesota, Northeastern, Central and Southeastern Iowa."

Proceedings Davenport Academy of Science.

"Some Unusual Fungus Diseases in Iowa during the Summer of 1903."

Proceedings Society for Promotion of Agricultural Science.

"What the College has done for Park and Forestry during the last Thirty Years."

Proceedings Iowa Park and Forestry Association, 1904.

"Sheep Grazing in the Forest Reserves, from a Layman's Standpoint."

Proceedings American Forestry Congress, 1905.

"Notes on Some Plants of Northeastern Iowa."

Plant World, 1905.

"Some Fungus Diseases Common in Iowa During the Season of 1904."

Proceedings Society for Promotion of Agricultural Science, 1905.

"Notes on the Flora, Especially the Forest Flora of the Bitter Root Mountains."

Proceedings Iowa Academy of Science, 1905.

"Climbing Plants."

Transactions of Iowa Horticultural Society, 1904.

"Some of the more important fungus diseases of 1904." Transactions of Iowa Horticultural Society, 1904.

"Forestry Conditions in Western Wisconsin."

Forestry and Irrigation, 1904.

L. H. Pammel and J. B. Weems.

"An Investigation of Some Iowa Sewage Disposal Systems."

Centr. Bakt. Parasitienk. u. Infekt, 1904.

L. H. Pammel, C. R. Ball and I. L. Scribner.

"The Descriptive and Geographical Study of the Grasses of Iowa."

Iowa Geological Survey Supplementary Report, 1903.

L. H. Pammel, R. E. Buchanan, Assistant in Botany, and **Edna L. King.**

Some Bacteriological Examinations of Iowa Waters."

Proceedings Iowa Academy of Science, 1904.

L. H. Pammel and Estelle D. Fogel, Assistant in Botany.

"Some Railroad Water Supplies."

Proceedings Iowa Academy of Science, 1905.

R. E. Buchanan, Assistant in Botany.

"A Contribution to Our Knowledge of the Development of Prunus Americana."

Proceedings Iowa Academy of Science, 1904.

"Notes on a Thermophilic Bacillus."

Proceedings Iowa Academy of Science, 1905.

Charlotte M. King, Station Artist.

"Observation on the Phenology of Plants at Ames."

Transactions Iowa Horticultural Society, 1904.

Harriette S. Kellogg, Instructor in Botany.

"Folk Use of Medicinal Plants."

Transactions of Iowa Horticultural Society, 1904.

H. S. Fawcett.

"Variation in Ray Flowers of Anthemis Cotula and Other Composits."

Proceedings Iowa Academy of Science, 1905.

Grace Rood de Rueda.

"The Biology of the Bacillus Violacens Laurentins or Pseudomonas janthina."

Proceedings Iowa Academy of Science, 1905.

Harry F. Watt.

"Growth and Pigment Production of Pseudmonas janthina."

Proceedings Iowa Academy of Science, 1905.

B. H. Hibbard, Associate Professor of Economic Science.

"Indian Agriculture in Southern Wisconsin."

Proceedings of Wisconsin Historical Society, 1905.

"History of Agriculture in Dane County, Wisconsin."

Published by the University of Wisconsin, 1905.

SOME ADVANTAGES ACCRUING TO THE PEOPLE OF THE STATE.

The governor of the state one year ago made this statement: "I believe that this institution this year has added more to the value of the corn crop of Iowa than has been expended by the State for the upbuilding of the institution in the entire forty years of its existence.

I have asked Deans Curtiss and Marston and others to furnish me some definite data concerning the advantages to the wealth of the State from the investigations conducted in their special fields, and have from them the following information:

Dairy Section.

The records of the United States Department of Agriculture show that the average water content of American butter is 11½ per cent. The Danish government records show that the average water content of the Danish butter is 14.54 per cent., the difference being 3 per cent. in favor of the Danish butter. It is also a well established fact that the Danish butter commands the highest price and bears the best reputation in the leading butter markets of the world. American buttermakers, therefore, have a vital interest in understanding the methods by which 3 per cent. more moisture can be incorporated in butter without a detriment to its quality and commercial value. The investigations of the Dairy Section of the Experiment Station which have been published in Bulletin No. 76 show conclusively that this result can be attained, and the methods of accomplishing this have been demonstrated and published in the bulletin referred to. The application of these methods by the creameries of Iowa would amount to an increased value of about $840,000 per year on the butter products of the state. These methods are practical and that the results are easily within the reach of the buttermakers of the state is evidenced by the fact that many of the best creameries are already profiting by the results of these investigations.

The Dairy Section has also published two other bulletins that have proven of great practical value and of immediate benefit to the butter manufacturers of the state. Bulletin No. 71 deals with undesirable flavors transmitted to butter through wash water and methods of overcoming the same. Bulletin No. 80 gives the results of what has been termed "The Iowa Educational Butter Contest." In this last test fifty-two creameries of Iowa furnished tubs of butter once a month for critical scoring and chemical analyses at the Dairy Department of this institution. Following this the butter was forwarded to New York for further examination and criticism,

the results reported to the manufacturers, and the methods employed by these manufacturers were carefully considered and criticised. The result of this test has been to widely extend intelligent information as to the best methods of buttermaking in Iowa, and a consequent improvement of the product has resulted. Investigations of this kind are just now more timely and more important than at any previous time on account of the recent changes that have taken place in the dairy conditions prevailing in this state. These changes are primarily due to the introduction of the farm separator by which the milk is separated on the farm where it is produced and then delivered to large city plants or local factories. It is much more difficult to make butter of a uniform degree of excellence under this plan than under the former method of gathering the milk while fresh and sweet in each locality, separating it all under uniform conditions at the creamery, and returning the separated milk to the patrons. The economical advantage of the farm separator are such, however, that this system is destined to be permanent and it is incumbent upon the buttermakers of the state to overcome the adverse conditions.

Animal Husbandry Section.

The results of the stock feeding experiments conducted by the Animal Husbandry Section have been of immediate practical value to a large number of stock men of the state. Evidence that these results have been carefully studied is furnished by a large number of letters received commending the work and asking for further information about the principles of feeding. The extensive feeding experiments carried on at the Brookmont farms at Odebolt under practical farm conditions were of immediate practical value and help to settle some important questions relating to the principles of feeding under farm conditions in Iowa. The feeding investigations conducted at the Iowa Station have been particularly useful in establishing the value of various by-products used in supplementing corn rations. Some of these products were until recently considered practically worthless. It is not long since the by-products of corn, starch and glucose factories in Chicago were enjoined by the state authorities on account of the nuisance caused by throwing the waste products into the Chicago river. These products which were at that time thrown away now are used extensively throughout the agricultural states of America and largely exported to foreign feeders. The utilization of these products makes the corn crop of America more valuable and returns to the land where the by-products were used the richest and most valuable part of the grain which serves the double purpose of feeding live stock and enriching the soil.

The work of the Animal Husbandry Section of the Iowa Station has also been particularly valuable in demonstrating the feeding capacity, the utility and value of numerous different types for beef production. These investigations have not stopped with the feeding tests but have been carried to an ultimate conclusion by block demonstrations and the careful study of the carcasses. In one feeding experiment in which the Station had the co-operation of the United States Department of Agriculture several thousand chemical analyses were made of the carcasses of hogs. These and other investigations have clearly revealed the importance of the right type in animals to be finished for the highest excellence in meat production.

In addition to this the instruction and demonstration work of the Animal Husbandry Department during our winter short course and at the farmer's institutes have been the means of placing before the stock men of the state the best methods of breeding, selection and improvement of the live stock of the state. This work has proven to be very popular and has reached every county of the state. In addition we have had enrolled in the department students from over half the states in the Union.

Agronomy Section.

The investigations of the Agronomy Section in the selection and improvement of seed corn with a view to increasing the quality and yield of the corn crop of this state have been of incalculable value.

The investigations of the Soil Section though perhaps less extensive have been of immediate practical benefit. The study of soil has been much appreciated and is highly prized by the most intelligent farmers of the state who are interested in conserving the fertility and productive capacity of their farms. In many sections certain types of the soil, exceedingly rich in some of the constituents of fertility, have been unproductive on account of the lack of understanding of the proper method of treatment. By following the directions given by the Soil Section of the Station the peat and swamp land soils have been made productive and yielded immediate returns to the value of $25 to $40 per acre. The same improvement has been true to a lesser degree of other types of soil in the state.

We are informed that there are about five million acres in Iowa which are too wet to produce paying crops. This fact alone is sufficient to show the immense importance of scientific attention to the drainage laws. Professor Stevenson estimates that the work already done on behalf of improved drainage conditions has been at least worth one dollar per acre for the five million acres which are partially or wholly unproductive. Already the Soil Section has made a survey of the entire State, has mapped all of the principal soil areas, and has published in bulletin form, facts regarding the origin, formation and fertility requirements of these soil areas. Special attention is also being given, with excellent results, to the alkali and peat soils; also to the gumbo soils, which are difficult to cultivate and which demand special treatment.

Experimental soil stations are being established on the poorest

soils of the State. It is estimated that these soil investigations were worth in actual results to the State last year not less than $160,000, with an expenditure for this branch of the work of exactly $800.00.

Civil Engineering Section.

The Civil Engineering Section has taken up many tests of the materials of construction for cities, corporations, and citizens of Iowa. It is constantly carrying on important investigations of sewage disposal in Iowa, in the course of which annual examinations of all plants in the state are made. Its experimental work in this line includes small sewage plants for private houses, and the disposal of creamery wastes. The water works of the state are being studied and questions relating to paving. Railway problems in Iowa are also receiving attention. Bulletins already issued include seven on sewage disposal, two on tests of brick, one on dredging methods, and one on cement (now about ready for the press.)

Mechanical Engineering Section.

The Mechanical Engineering Section has been studying the coals of Iowa and the best methods of using them for fuel. One bulletin on this subject has been issued which has attracted much favorable attention, and another is about ready for the press. The section is also studying Iowa power plants and shop methods in our state.

Electrical Engineering Section.

The Electrical Engineering Section has been giving special attention to electric lamps as sold and used in Iowa, and has established a testing station to which many lamps are being sent for testing to see whether they meet the manufacturers claims.

Mining Engineering Section.

The Mining Engineering Section has been assisting in the investigations of Iowa coals, and has been giving especial attention to the clays, limes, and other mineral products and possibilities in Iowa.

COURSE IN ARCHITECTURE.

I desire most heartily to approve the suggestion received from Professor Marston, concerning a matter which has already been referred to in my reports to the Board, namely: the advisability of establishing a course in Architecture in connection with our Engineering School. Professor Marston is convinced that at present we would need, to inaugurate such a department, but one new associate professor. The foundation for a course in architecture already exists in our engineering courses. There is no school of architecture, so far as I am aware, west of the Mississippi. There is an increasing demand for this kind of

instruction and an increasing number of inquiries for such a course. More and more the services of architects are being appreciated and demanded by the public in connection with building operations. Such a course is directly in line with the purposes of this institution and within the scope of the law founding it, and should be undertaken as soon as it is possible to make provision for it.

COURSE IN CHEMICAL ENGINEERING.

The time has come when a course should be established in Chemical Engineering. If a technical chemist could be provided for the Engineering Experiment Station, he might also give part of his time to the development of a course in Chemical Engineering. Foreign visitors to this country and to this institution, particularly those from Germany, have been profoundly impressed with the yet undeveloped sources of wealth in our State. That very great advance should be made in utilizing the waste products, is very evident. A German scientist recently visiting us, called attention to the evident value of the fiber of the corn stalk.

STATE SUPPORT.

The generous recognition and support wnich the people of Iowa have given her educational work is distinctly appreciated by the State College and Stations. A double investment i here being made; on the one hand in the education of her future citizens for greater happiness, industrial efficiency, political capacity. and spiritual character; and on the other in results of scientific experimentation. While it is obvious that both forms of investment bring large returns in honorable credit to the State and in increased wealth and industrial interest as well as in a distinctly higher citizenship, it is no less creditable to the State's representatives that they have seen this by faith and have seriously, earnestly and generously supported the educational ideals for which the State College stands and have helped them thus far toward realization.

The future of this institution is absolutely dependent upon the wise and generous support of the people's representatives, and the foster-care of the State, we are assured, will never be withheld. In the honorable rivalry between enterprising western commonwealths in their educational work, Iowa holds a creditable place. President Angell of Michigan recently said in addressing a representative body of educators, "If this Middle West has any controlling passion it is the passion for education." In this noble passion, Iowa shares not unworthily with her sister commonwealths of the Middle West.

As substantial evidence of this, Iowa may point to the State supplementary support now given to the Agricultural Experiment Station and to the endowment income of the College, the establishment of the Engineering Experiment Station, and to the substantial and commodious buildings being erected for the educational and for the experimental work carried on by the College and the Experiment Stations, and, best of all, to the increasing number of her brightest and strongest young men and women whom she confides to the State College for their education. The most valuable return the College can make to the State will always be in the discipline for life, the endowment of power, the inspiration to high ideals, which she gives to the youths that throng her beautiful campus, not more beautiful, we trust, in landscape and architecture than in spiritual and cultural ideals.

NEEDS OF THE COLLEGE.

COLLEGE CAMPUS.

All visitors to the College campus comment upon its spacious extent and its pleasing landscape features. It should be remembered that before being touched by the hand of man, it lay a somewhat uninteresting and uninviting treeless, rolling prairie. It has been made one of the most beautiful of college campuses by the oversight and taste and earnest labors of its first President and his co-workers and their successors.

The time has come when further extensive improvements must be made or the campus will deteriorate and lose its beauty. There are now one hundred seventeen varieties of trees upon the campus. All of these were planted in an early day and many of them are dying each year. There should be annual plantings, carefully selected and cared for.

The many students thronging the campus and the large force of instructors now needed and other assistants, make it imperative that at the earliest possible moment sidewalks should be constructed where there are now only muddy paths. The College is lamentably deficient in this respect.

Quite extensive grading must also be undertaken, some of the smaller buildings removed to give proper setting to the large buildings erected, and adequate plans followed out for the future development of the campus.

The development of the College has been such as to necessitate the early removal of the athletic grounds from their present location

near Engineering Hall to the southwest corner of the campus. Quite extensive grading will be necessary to put the grounds in shape.

The College Cemetery, where rest the remains of President Welch, President Beardshear and other honored workers at the College in its past history, has been discreditably neglected. It should be fenced, an appropriate entrance constructed and provision made for its care. The driveway through the College park in which the cemetery lies, should also be completed.

At present owing to the fact that the College campus is not fenced, the College drives are made public highways for all kinds of traffic, often littering the campus with hay, straw and produce, and damaging the College drives by heavy teaming. There should be adequate fencing with gate entrances and gates that can be closed and the public traffic turned aside from the campus.

Extensive grading will be necessary to complete the improvements around the new Dairy Building and to fill an old pond, which now mars the landscape, at the east end of the campus. The plantings and grading should now soon be continued east of the present campus line to make possible the erection of more college buildings in that locality.

I have the following report and estimates from the Committee on Public Grounds:

Cement Walks.

At present the campus is very inadequately supplied with sidewalks. The distance is considerable between many of the buildings and there is a very serious need of accomodations of this kind. In fact, over the entire campus there is but one stretch of good cement walk, and that is between the Library and the Farm House Motor Station.

Walks are badly needed between Engineering Hall and the Chemistry Building; between Engineering Hall and the New Central Building, between the new Central Building and Chemistry Building, and from the main south entrance gate to the new Central Building. It will require about one and one quarter miles of cement walks to provide reasonable accomodations in this regard, and that will cost about $3,500.

Bridges.

The two bridges on the main drives over the college creek are in a bad state of repair and will have to be replaced at an early date. Professor Marston has designed a concrete bridge with accomodations for foot passengers and wagon traffic and estimates the cost of these two bridges at $3,000.

Grading.

At the present time, the grade to the northeast of Central Building falls toward the building and will have to be corrected to carry the water from the building and give it a proper setting. South of the Central Building, and also toward the Southeast corner, the grade is very abrupt and will require considerable filling in to give the building a satisfactory appearance.

In this connection, the Public Grounds Committee recommends the removal of the old Office Building and Emergency Hall. Definite steps should be taken to clear away both these buildings as it will not be possible to complete the grading satisfactorily with them standing where they are. The estimated cost of grading around the Central and Dairy Buildings is $1,500.

Removal of the Athletic Field.

At the present time the Athletic Field immediately joins Engineering Hall on the north and the proper grading and planting about Engineering Hall will necessitate the removal of the Athletic Field. The Public Grounds Committee would recommend removal of the Athletic Field from its present location and its re-location on the west half of the grounds occupied by the old Russian orchard and the field between this tract and the street on the west.

Landscape Work.

A large part of the trees on the campus consist of soft maple and Scotch pines. Both of these are quick growers but very short lived trees, and are now rapidly dying out. A definite appropriation should be made for replanting. The border plantation on the old west lines of the campus just back of the Library Building and west of the Faculty Club House is also rapidly dying out. In the erection of new Engineering Hall the boundary of the campus has been extended considerably beyond this, and a new border plantation should be established on the line west of Engineering Hall. The erection of these new buildings has also enlarged the area of the campus considerably and the maintenance funds should be increased proportionately.

In grading about the Central Building and the Dairy Building, the drives will have to be reconstructed, also the curbing and gutters provided.

For the general landscape work of the campus, including planting, care of the lawn and roads, the committee would recommend an appropriation of $2,500.

REPAIRS AND IMPROVEMENTS.

Two years ago the College authorities asked that the Repair and Improvement Fund be increased from $18,500 to $30,000 annually. An increase was made to $23,500. This, while affording some slight

relief, is quite inadequate. The estimated value of the College buildings, including the new Central Building, as they now stand is $1,115,375. Thirty thousand dollars would be a small estimate of the amount necessary for repairs and improvements annually. It must be borne in mind that the College has no building fund except that which is directly appropriated for this specific purpose and large building operations, leaving all of the minor buildings and improvements, together with repairs, to be provided for from the Repair and Improvement Fund. This fund has been so inadequate as to make it necessary to leave extremely important matters unattended to, such as the painting of the metal work and the wood work on Margaret Hall, which now looks very shabby. Similar repairs are needed on Morrill Hall and Agricultural Hall, practically leaving no fund whatever for the construction of sidewalks, drains, and the doing of necessary grading.

The College authorities respectfully ask of the Thirty-first General Assembly that the annual fund for repairs and improvements be made $30,000 instead of the present amount.

EQUIPMENT.

Owing to the fact that the expense of running, lighting and heating these buildings, has drawn so heavily upon the College Support Fund, the increase being as stated above, no tax at all upon this fund in 1900 to an estimated expense upon the Support Fund of $26,000 to $28,000 for the year 1906-7, there has been extremely meagre provision for the largely increased expenses and work of the institution in instructional lines. The laboratory equipment has suffered most. The departments have been getting along with equipment that has been scarcely adequate for an enrollment of students one-half the number we now have.

Anticipating the impossibility of eking out from the Support Fund a sufficient amount of money to furnish the equipment needed, it seems best to ask the legislature to make a definite appropriation for equipment during the next biennial period. The estimated amount, carefully made out in consultation with the heads of departments, for the equipment needed now, in addition to what we already have, is $100,000.

This would enable the College to furnish the needed equipment for the expanding work in the Divisions of Agriculture, of Engineering and of General Science and of Veterinary Medicine. Special provision for equipment is the more imperatively needed at this juncture for the reason that the new dairy farm must be put into operation and the poultry department entirely equipped, as the small appropriation of

$500 already made will scarcely build a respectable chicken house, and because the importance of this industry demands particular attention at this time. Moreover, the rapidly growing Engineering School has had no substantial addition to its equipment for a number of years, and, as stated in the body the report, is sadly in arrears. With a special appropriation of the amount named, $100,000, these needs could be met, the laboratories in all departments thoroughly well provided with apparatus for research and instruction work.

Detailed items of this equipment will be submitted to the proper committees of the legislature for their consideration.

Even with this relief in the matter of equipment the College would still be no better off in providing for the current expenses of the departments and for instructional force, than it now is. It will be imperative for us, if we are to continue our work, to have substantial assistance in our support fund for this purpose.

It is literally true in matter of salaries alone that almost every man we have, who is doing work of marked efficiency, is remaining at the College at a distinct, personal sacrifice, having been offered and in some instances again and again, an increase of salary elsewhere. Mr. Geo. W. Catt, recently said when visiting the College, your graduates in our employ, the Atlantic, Gulf & Pacific Company, are receiving salaries, some $5,000 and some $3,000, their salaries being graded according to their abilities. The inquiry at once arises as to what grade of men we should expect to keep in the instructional force of the institution adequately to teach and prepare these students for such positions and work. The graduates of the College thus far have had no difficulty in securing lucrative and responsible positions. But the time is coming when we must recognize the necessity of more generous compensation for thoroughly efficient professional instructors if we shall hope to maintain high standards of work at the College.

I have in my possession, definite information as to the substantial correctness of above statements concerning the personal sacrifice which our most efficient workers are making in remaining with the College. From Dean Curtiss, I have the following:

In compliance with your request for information concerning specific instances in which members of the faculty of the Division of Agriculture have remained with the college at a personal sacrifice, or accepted other positions at considerable advance in salary, I submit the following:

Horticultural Department.

In July of the present year, Mr. M. L. Merritt resigned his position in the Horticultural Department to accept a position with the United States Department of Agriculture at a salary of $1,400 per year. His salary here was $600.

In September of the present year Professor A. T. Erwin was tendered a position as Professor of Horticulture in the Oregon Agricultural College and Horticulturist in the Oregon Experiment Station at a salary of $1,800. His present salary here is $1,500.

Mr. Erdman, the gardner, has in hand a proposition from a commercial firm at an advance of $300 over his present salary, which is $700.

Dairy Department.

Mr. C. Larsen has recently been asked to consider a proposition from the Hazelwood Creamery Company, formerly of Sioux City, now of Portland, Oregon, at a salary of $1,800 per year. Mr. Larsen's present salary is $1,300.

Secretary Wilson has recently stated that he could pay Dr. Bouska $1,800 to $2,000 per year for his services in the United States Department of Agriculture.

About five years ago Professor McKay was asked to consider a position as head of the Dairy Department of the Missouri University at a salary of $2,500 per year with prospects of the salary going to $3,000. When Professor McKay declined to consider this position, his assistant, Professor Eckles, who was then a member of our faculty, was tendered the position and accepted. Professor McKay has since declined to consider propositions to go into commercial work in New York at a salary of $3,500 per year.

Animal Husbandry Department.

Three years ago Professor Kennedy was elected to the position as Director of the Experiment Station and Professor of Animal Husbandry in the South Dakota Agricultural College at a salary of $2,500, to be advanced to $3,000 the second year. Professor Kennedy has since declined to consider a proposition to take charge of the editorial work of the Northwestern Farmer on a five year contract at a salary commencing at $4,000 and to be advanced to $5,000 during the period. A proposition similar to this has recently come from the Twentieth Century Farmer of Omaha, Nebraska.

Professor Rutherford has, during the past summer declined the position of Professor of Animal Husbandry of the Colorado Agricultural College and also the position of Professor of Agriculture in the Manitoba Agricultural College at a salary of $2,000 to be advanced to $2,500 within three or four years. Professor Rutherford's salary is $1,800 per year.

Professor Dinsmore declined an offer a year and a half ago of $1,200 to take the position as Expert in Animal Husbandry in the United States Department of Agriculture when his salary here was $800, and within the past year he has declined to consider a position with a live stock commission firm of Chicago at a salary of $1,800 to

$2,000 per year, when his salary in this institution was only $1,000.

Mr. Robbins whose present salary here is $60 per month has recently declined two positions in other educational institutions at $1,000 and $1,200 per year.

Botanical Department

In January, 1904, Mr. Buchanan was offered a position in the Geneva, N. Y., Experiment Station at a salary of $800 the first year to be increased to $1,200 the second year. His present salary in this institution is $700. Mr. Buchanan has also recently received offers from the North Dakota Agricultural College and the Oklahoma, Ontario and Florida Agricultural Colleges, all of them carrying salaries considerably in advance of his present position.

Dean Marston reports:

I also recommend some material increases of salary in the cases of some of our present and approved members of our faculty, who are now staying with us at a sacrifice. Professor French, for example, was offered $1,800 elsewhere and receives only $1,400, while Professor Ashbaugh could doubtless take $1,800 at outside work and receives only $1,600 here, and both these men hold written assurances of probable increases which were not granted for lack of funds.

In fact, the outside opportunities for engineers are so numerous and so remunerative that I have no doubt the larger part of our Engineering Faculty could command larger salaries at outside work than we are paying them. They are staying with us because they prefer the work and are loyal to the college. We should do better by them.

As is well known to our Board of Trustees, Dean Marston at the earnest request of the college authorities refused a most flattering offer, made him by the University of Wisconsin, involving a compensation amounting to $3,500 per year to remain with us and to take charge as Dean of the School of Engineering at a salary considerably less.

A most excellent spirit prevails, a spirit of loyalty and optimism concerning the future of the institution and a great love for its work. A niggardly policy would be fatal; it would be easy for us to allow the work of the institution to fall to a grade of mediocrity and for the College, relatively, to lose its standing and prestige. To maintain both and to be worthy of both and to hold the leadership we now have, is easily possible, also, with fairly adequate provision from the State, but otherwise it cannot be done.

A brief reference to Dean Marston's report concerning the number of students in the engineering departments and the increase of students per instructor, makes it evident that some radical advance must soon be made in the number of instructors in these departments or

our work must be crippled and deteriorate. The number of students per instructor in 1894 was 18; in 1904-05 it was 30.

The College authorities unite in asking an increase in the annual Support Fund of $50,000. This would be placing the Support Fund at the exact figure asked two years ago.

BUILDINGS.

LIBRARY.

Attention was called in the last biennial report to the altogether inadequate accommodations furnished for students in our present library building, Morrill Hall, and also to the crowded condition of the stack rooms for books. The situation is becoming deplorable. The building is frail and liable to destruction by fire, endangering the valuable library kept there. It is very frequently the case that twenty-five to fifty students must stand at the windows for lack of chairs and tables for the use of books. In the developing work of the institution and its increasing scientific thoroughness, reference books are more and more in use. The book withdrawals in spite of the increased number being assigned to small reading rooms in the various buildings, has gone up within the last two years from 28,000 volumes per annum to 56,460.

A new library building is among our most imperative needs. It should be of the same substantial character as the more recent buildings erected, probably of Bedford stone, of a uniform type of architecture with the new main hall, Engineering Hall and the proposed Hall of Agriculture. It would be folly to make provision for a library of less size than from 100,000 to 150,000 volumes. In the growth of the institution and the character of its work, this capacity will ultimately be required. We should avoid the mistake that has been made in so many instances of providing too small a reading room. It should be made to accommodate at one time several hundred students.

The library building should also contain an art room where such gifts or acquisitions as the College may obtain, illustrating the history of art and architecture, may be preserved and used. There should also be provision for seminar rooms and a small assembly room.

WOMAN'S HALL.

Margaret Hall, admirably meeting its purpose as a woman's dormitory, furnishes only about one-half the accommodations needed. It is very difficult at this institution for young women to obtain suit-

able rooms and boarding places outside the campus. Very many who desire to come to the College do not do so when they find it impossible to obtain rooms in Margaret Hall. It is one of the duties the State owes to its young women to make provision for these young women at the earliest possible moment.

A woman's building should be erected with a dormitory capacity equal to that of Margaret Hall, and also sufficient to provide space for a woman's gymnasium and a woman's dining room, where the girls' clubs can be accommodated. There should also in connection with the woman's building, be a small assembly hall, seating from two to three hundred. There should also be in this building, or in some other, rooms for the women's literary societies.

GYMNASIUM.

A gymnasium and equipment are recognized by all educational institutions as not only extremely desirable but as essential to the well-being of the students. Very many young men and women, coming to the College, leave an active outdoor life for the study and recitation rooms, and the laboratories, and are likely to suffer seriously in health unless attractive quarters can be furnished for physical culture and reasonable requirements be made and competent oversight given.

The State College has no provision whatever aside from a small women's gymnasium, except a training shed which the students themselves built last year. A gymnasium suitable to our needs should be not less than 100x150 feet in dimension, two stories high, with balcony and main floor.

AUDITORIUM.

Our largest room is the chapel in Morrill Hall, seating less than six hundred. This accommodates less than one-half of our present student body. A large tent has to be erected on the campus for commencement and other exercises. At other season when this is impossible, no assembly of the study body, much less of a larger number, is possible. The unity and sympathetic co-operation of the different divisions of the institution aside from the moral ends to be served by bringing the college people together, makes it very desirable that an auditorium be erected as soon as it can be made possible to do so. Such an auditorium should be made to seat two thousand people.

VETERINARY BUILDING.

The Veterinary School has become thoroughly well established. Its work is of a high character and its graduates obtain immediate professional recognition. Many of them have gone direct from the

College to the employ of the Government, particularly in the inspection of meats and in other responsible positions.

The housing and equipment of this Department is extremely unsatisfactory. A new building furnishing hospital facilities, laboratories and lecture rooms, and office accommodations, together with very much fuller equipment is necessary. The plans and specifications for such a building have been drawn in outline with the assistance of Architects Proudfoot & Bird.

HOSPITAL.

The present College hospital, always more or less in demand, and particularly important here where no city hospital is accessible, was constructed for a summer building and has never been quite comfortable or safe in severe weather. It is also too small and often overcrowded. It is also often commented upon by visitors that the College has made better provision for its cattle and sheep than it has for its students that are ill,

ENGINEERING SHOPS.

Our most serious deficiencies in engineering equipment (though we need more class rooms and offices) are in our engineering laboratory and shop facilities. While we have been building and filling with students to overflowing our fine new Engineering Hall, our laboratory and shop space and equipment and instrumental equipment have almost stood still. Fortunately the cost of the kind of buildings needed is comparatively low.

We ask appropriations for laboratory and shop buildings as follows:

50-feet x 200-feet 2-story building north of carpenter shop, to contain machine shop, new Mining Laboratory, and six class rooms, probably	$30,000
To remodel Old Engineering Hall for Hydraulic and Materials of Construction Laboratory, probably	10,000
For new forge shop, probably	5,000
For new railway laboratory, probably	5,000

ABATTOIR.

Among our needs for additional buildings one of the most urgent is that of a building to be used as an Animal Husbandry laboratory. A building of this kind would serve a most useful purpose in connection with both the instruction and the research work of the College and Experiment Station. The slaughter and block tests are highly essential

to supplement the work of the breeding and feeding experiments and demonstrations and without the lessons of the slaughter and block tests the most instructive feature of the work is lost. The subject of feeding and breeding domestic animals could be much more intelligently taught if we were able to carry all of our investigations to their ultimate conclusion reached by a study of the finished product on the block. Some of the agricultural colleges in surrounding states are much better equipped in this respect than we are and there is a growing demand for this kind of work. The Iowa Corn Belt Meat Producers' Association passed resolutions during the last session of the legislature that an appropriation be made for the erection of a building of this character. This measure was not passed at that time as the movement on the part of the Corn Belt Meat Producers' Association did not take place until during the latter part of the session of the legislature. There is a strong feeling on the part of the live stock interests that the College ought to make provision for this work. A building to serve this purpose should be of brick or stone and of fire proof construction, with enameled brick finish for the interior of most of the rooms; and in addition to ample facilities for slaughter and block demonstrations it should contain ample refrigeration space and an ampitheater with a seating capacity of not less than five hundred for the accommodation of our short course classes and other large classes in making demonstration work. To erect and furnish a suitable building for this work would cost not less than $50,000, and the expense of equipment needed would be about $15,000, making a total of $65,000.

NEW HALL OF AGRICULTURE.

Plans and specifications are being prepared and bids will be advertised for before the meeting of the Assembly, for the proposed new Hall of Agriculture. The millage tax now running for a period of five years, it is estimated, will yield, after the completion of the new Mail Building, sufficient to partially construct the Hall of Agriculture. The growth of our work, particularly the extension of the laboratories, necessitates the erection of a new Hall of Agriculture at the earliest hour possible. The present old Agricultural Hall will soon be needed by the Department of Agricultural Engineering, its offices, drafting and lecture rooms. A thorough explanation of the needs for and uses to which the new Hall will be put will be found in Dean Curtiss' report.

I desire to emphasize here particularly the need of an assembly room for the Agricultural Division. It is proposed for this purpose to

construct in one wing of the building a hall with balcony with seating capacity of upwards to 800 or 900.

The Domestic Science Department is also in sore need of larger quarters and more convenient ones, and the present plan is to devote the upper story of the new Hall of Agriculture, to be made easily accessible by elevators, to this Department. At present the Domestic Science Department is scattered, having one laboratory in the attic of the old Hall of Agriculture and another in the rear of Margaret Hall in an old, cold, dilapidated, dark and inaccessible building. This extremely necessary and important work deserves and should have such accommodations as are proposed in the new building, as soon as they can be furnished.

CENTRAL HEATING PLANT.

As already indicated in another paragraph, the central heating plant appropriation has been found inadequate for any structure that could be built. The Board has, therefore, authorized the construction of tunnels, reaching from the present heating plant, adjacent to Engineering Hall, to connect with the new main building, Morrill Hall and East and West Cottages. These tunnels can be used later to convey heat from the central plant wherever it may be established.

The estimates of the cost of a central heating plant, as prepared by Professor Bissell and submitted in the last biennial report are herewith repeated and with the greater assurance of their substantial correctness as the bids submitted at two successive times were approximately in harmony with this estimate. It is quite clear that the construction of such a plant cannot be made possible with a less amount than therein estimated. The appropriation made by the last General Assembly can be deducted from this estimate with the exception that some loss will be incurred in moving the present boilers being installed, and in the partial loss of building temporary chimneys, and so forth.

The following is the estimate and recommendations made by Professor Bissell:

The heating appropriation of the last General Assembly for a central heating plant was $54,500 and was itemized as follows:

Power station and chimney	**$25,000**
Equipment and tunnels to Central Building and Morrill Hall.	**29,500**
	$54,500

After a careful consideration of the matter and taking into account the available appropriation, the writer recommended a site for the power station north and west of Margaret Hall, and directly

north of the Faculty Club House. An architect was engaged to prepare detailed plans and specifications of the power station according to ideas and sketch plans furnished by the writer. Bids were twice received and were rejected because the lowest, being in the sum of $37,200 was in excess of the appropriation. After further discussion of this fact and a further consideration of the entire project in all its bearings, it was thought best to defer the construction of the central heating plant until sufficient funds should be available to build it right. In the meantime an argument in favor of a location for the power house at the east side of the campus, gained strength, and in the writer's opinion such a site is now the only one which should be considered. The chief argument advanced for this location in my report on page 14 of the 20th Biennial Report was the possibility of gravity returns from the whole campus. Other arguments for this location are as follows:

2. Reasonable remoteness of the power station with its attendant noise and dirt from the vicinity of other important college buildings.

3. The desirability of dispensing with the handling of cars of coal across the campus.

4. The greater convenience with which sidings for coal can be provided without disfiguring the campus with the same.

Arguments 3 and 4 have peculiar force in the fact that the substitution of electric motor power for the locomotive power of the Ames & College Ry. is not a remote probability, a probability which is becoming more and more likely of being an accomplished fact. In which case the tracks, as to curves and grades across the campus, would not be adapted to handling coal cars of 80,000 to 90,000 pounds capacity. At the same time the approach of the said railway to the campus, and to the present location would be straight and of easy gradient to permit of handling the coal with locomotives as at present, and without occasioning the running of said locomotives on the campus proper, especially in proximity to the college barns which are now constantly menaced by fire from the sparks of the locomotives employed for both passenger and freight service.

It is highly probable that the use of steam locomotive for coal service would be continued even if electric traction were installed for passenger service, because the outlay for electric locomotives of sufficient capacity for heavy freight service would be too great for a road like the Ames & College Ry.

While thus abandoning the idea of trying to build the entire plant with the available appropriation, the necessity of providing heat and light and power for the main hall was a pressing one and it was decided to construct a portion of the tunnel system and to install temporarily the requisite boilers and other machinery for the purpose, having in mind their subsequent use as parts of a complete system. Accordingly a tunnel has been built and equipped from the Engineering Hall tunnel to the main hall and thence to Morrill Hall, and two boilers of aggregate capacity of 520 horse-power, with the necessary auxiliaries have been erected adjacent to the old power station. This tunnel and its equipments will constitute, without change or additional expense, one section of the complete tunnel system of a central heating plant with power house at the east side of the campus.

The boilers thus temporary installed will be removed to the new power house.

The total expense thus incurred and charged to the appropriation is to date, $21,200, divided as follows:

Tunnels, 850 feet	$ 6,000.00
Boilers, grates and special furnaces	5,030.00
Breeching and stack; setting boilers, including foundations; induced draft fan; erecting, stack, etc.; temporary boiler and coal shed; pipe and fittings	5,000.00
Pipe and fittings in tunnel and wiring in tunnel	4,950.00
Superintendence	220.00
	$21,200.00

Of this sum $5,000 is for temporary installation, leaving a balance of $16,200 expended for permanent improvements.

It should be noted that the tunnel installed, with its branches to Emergency Hall and Morrill Hall dispenses with the isolated heating plants at those points on the campus.

The tunnels, boilers and pipings will constitute a part of the final heating system. There will be some salvage on the other items but the loss resulting from the temporary construction will approximate $5,000. Taking this from the appropriation of $54,500, there remains $49,500, which can be considered as available for meeting the cost of a permanent plant.

The following gives the additional appropriation needed to complete the work:

Estimate of cost of plant, see last biennial report, page 14.	$125,000.00
Additional cost, caused by change of location	10,000.00
Total	$135,000.00
Deducting the amount of last appropriation available	49,500.00
Leaves an additional appropriation needed of	$ 85,500.00

The Public Grounds Committee of the Faculty heartily approves the location of the Central Heating Plant according to Professor Bissell's recommendation.

FACULTY CLUB HOUSE.

The long distance from the College buildings to rooming and boarding houses outside of the campus as well as their crowded condition, makes it almost imperative that some accommodations be furnished for the sub-faculty and assistants near the main buildings of the

campus. This is particularly the case with such as have class room work or laboratory work at the last hour of the forenoon and the first hour of the afternoon. The old Horticultural Cottage has been in use for the Faculty Club for a considerable time. It is, however, becoming dilapidated and will soon have to be abandoned, and will probably need to be moved, also, to make room for new buildings.

A Faculty Club house should furnish accommodations for a dining room and kitchen and also large parlors for social gatherings. It may also be made to accommodate a number of faculty people who have no homes, with rooms, and this, from the College standpoint, would be very desirable in increased efficiency if our people can be comfortably located with reference to their College work.

DIRECTOR'S HOUSE.

The proposed site for the new Hall of Agriculture will necessitate the removal of the present director's house, one of the oldest buildings on the campus. This will make it necessary to construct a new house for the director of the Experiment Station and the Dean of Agriculture. Such a house should become one of the permanent buildings of the institution and be appropriate in size and accommodation for that purpose and such residence.

NECESSITY FOR FAR-REACHING BUILDING PLANS.

It will readily be seen that to avoid the mistakes so frequently made in developing institutions like the State College, in having buildings improperly placed and various inharmonious types of architecture, we need to have some harmonious plan of placing the buildings, types of architecture and development of the grounds. This was the point sought by procuring the assistance of Mr. O. C. Simonds, landscape architect. The plans submitted, however, are somewhat incomplete and it will be highly expedient to re-employ Mr. Simonds for further service, or to employ someone else to avoid making serious mistakes in the future. It is also highly expedient to follow some systematic plan in regard to the types of architecture. This has been done and under the supervision and direction of Proudfoot & Bird very satisfactory results are being obtained. This would have been impossible under the old method of being provided for meagerly from one session of the legislature to another. The millage tax, running for a period of years has made possible the results already obtained and in immediate prospect, and some such adequate provision should be continued into the future, that the Board of Trustees may know what their resources are to be and plan accordingly.

The College authorities unite in asking an extension of the one-fifth of a mill tax for a period of five years beyond the time of its expiration under the present act and for the building projects as outlined above.

STATE HIGHWAY COMMISSION.

The policy of making the College a State Highway Commission for the investigation of the general subject of good roads, has, we believe, proven a wise measure. The problem, being essentially one of engineering and agriculture, it would seem eminently appropriate that the men having charge of this division of the work at the College should constitute such a commission. Considering the meager appropriation made for this work, we believe the results are very creditable indeed. For the most part, of course, they are tentative and preliminary. While such an appropriation and such a commission is of no financial advantage, or otherwise to the College, except indirectly, the College authorities are nevertheless, very glad to be able to render this service to the State. Ultimately the State must be prepared to adopt some comprehensive and adequate plan and to make adequate provision for the construction of substantial roadways throughout the State. Unless civilization itself is stayed, this feature of progress must soon receive serious attention and support.

Respectfully submitted,

ALBERT B. STORMS,
President.

Summary of Bulletins of the Experiment Station,

July 1, 1903, to June 30, 1905.

SUMMARY OF BULLETINS OF THE EXPERIMENT STATION.

ISSUED FROM JUNE 30, 1903, TO JUNE 30, 1905.

During the last two years a number of valuable and instructive bulletins have been issued by the Agricultural Experiment Station, bulletins thoroughly representative of the work of the different sections.

In December, 1903, there was issued by the Botanical Section a bulletin written by Professor Pammel, and entitled "Some Weeds of Iowa." A large edition of this bulletin was published, and it has been in constant demand.

In this bulletin all the better known weeds of Iowa are identified and illustrated. Their description and general distribution are given, and in most cases the means by which they may be exterminated.

These weeds are arranged in groups, according to the fields they affect—cornfields, grainfields, clover-meadows, pastures and gardens.

The clear cuts of the weeds and grasses make every species readily identified by the reader.

A popular edition of this bulletin has been published, emphasizing the salient points of the full edition, without its preciseness of detail.

In July, 1903, a bulletin—No. 71—was published by the Dairy Section of the Experiment Section, the subject being "The Keeping Quality of Butter."

The sources of deterioration in butter are given, the two chief causes of such deterioration being shown to be (1) the effect of light and air and other unfavorable environmental conditions, and (2) the effects of micro-organisms present in the butter under favorable conditions.

Different investigators are quoted as to the causes of rancidity in butter, and the general faults and defects of its manufacture are noted and explained.

A number of valuable tables, showing different phases of the questions of moisture in butter and the keeping quality of butter are given in this bulletin; an interesting chart at the end of it shows

the comparatively greater keeping quality—in 14 weeks—of butter made from Pasteurized Wash Water and Cream over that made from un-Pasteurized.

In August, 1903, the Horticultural Section issued a bulletin dealing with "Cherries and Cherry Growing in Iowa"—No. 73.

In its beginning is a map showing the approximate number of cherry trees in each different county of the State in the year 1890, and again in the year 1900.

The bulletin deals under clearly defined headings with the general problems and cultural problems associated with this fruit, and lists a large number of the different kinds of cherries which are grown in Iowa.

Bulletin 74—issued in January, 1904, by the Chemical Section—deals with the important subject of breakfast foods. This bulletin, compiled by Dr. Weems and Mr. C. E. Ellis, classifies and analyzes a number of the more common and popular foods prepared for the breakfast table.

The proportion of water, fat, protein, fiber, ash and carbohydrates in the more prominent foods is clearly demonstrated in tabular form, and the comparative cost of certain breakfast foods is given. A popular edition of this bulletin was published.

In March, 1904, the Animal Husbandry Section issued a bulletin —No. 75—on the "Feeding of Soft Corn for Beef Production." The work presented in this bulletin was conducted in co-operation with the Agronomy and Chemical Sections.

A practical feeding test was undertaken, extending over a period of six months.

In addition to this feed test samples of corn from various sections of the State, and representing varying degrees of maturity were analyzed.

The results are given in comprehensive tables. This bulletin, the writers are careful to explain, was not published with the idea of championing soft corn as a food, as mature corn would always be preferred for such purpose. But under certain conditions it is necessary that soft corn be used. It must be either fed to stock or allowed to rot in the fields. To deal with its feeding value in such cases this work was undertaken.

In March, 1904, the Dairy Section brought out a bulletin—No. 76—on "The Moisture Content of Butter and Methods of Controlling It." This has proved a very useful and successful pamphlet and is greatly in demand among the dairymen of the State. Its chief

headings are Calculation of Over-Run, Over-Run Viewed from Two Standpoints, Leaky Butter, and Conditions Influencing Moisture Content of Butter. Some good cuts of samples of butter, calling attention particularly to the size of granules, are included.

In March, 1904, Professor Holden's notable bulletin—No. 77—on "Selecting and Preparing Seed Corn" was issued by the Agronomy Section of the Station.

Perhaps no bulletin of any experiment station has attracted such wide attention, or has been so enthusiastically received by the farmers as this almost indispensable publication. The demand on all sides, both in the State and beyond it, has been steady and continuous, and last spring, when a new edition was issued, over 31,000 copies were distributed, principally through the advertising agency of the famous seed corn specials.

In this bulletin every phase of the selection and preparation of seed corn is carefully dealt with and explained, and the pages are fully illustrated with cuts appropriate to the matter.

In May, 1904, appeared No. 78, a bulletin on "Drainage Conditions in Iowa, and Notes and Tables on Drainage Engineering," written by Professor Stevenson and Mr. G. I. Christie, and issued from the Department of Soils.

Information as to soil conditions in the State was gathered from letters of inquiry addressed to 4,000 well-informed and successful farmers, and a table compiled from their answers shows the conditions of much of Iowa's farm land, with a statement of attendant profit and loss.

In September, 1904, the Animal Husbandry Section brought out bulletin No. 79, on "Experiments in Beef Production," dealing with (1) Light, Medium and Heavy Grain Rations, (2) Acclimation Test (Southern vs. Western Cattle), (3) Supplementary Feed Stuffs. Of this bulletin a popular edition was prepared, stressing the main points and results of the experiments without going into the severe detail of the full edition.

In both forms the pamphlet has proved very acceptable to the farmers of the State.

The Dairy Section followed in December, 1904, with bulletin No. 80, devoted mainly to the Report of the Iowa Educational Butter Contest. A large part of this bulletin is taken up with tables showing the double marking—in New York and at Ames—of the butter of the contestants, and giving the remarks of the judges.

It concludes with short papers on the "Methods of Calculating the Percentage of Salt in the Water of Butter," and on "Gritty Butter," with general conclusions drawn from the foregoing.

Bulletin No. 81, from the Animal Husbandry Section, contains the details of another experiment in beef production, under headings (1) Feeding Beef vs. Dairy Type. (2) The Slaughter Test. (3) The Meat Demonstration. This is one of the fullest and most comprehensive of the recent publications of the Station, and is profusely illustrated with a number of excellent cuts.

It is of particular value as containing the expert criticism of Mr. Gosling, the noted butcher of Kansas City, on the carcasses of the cattle used in this feeding experiment. It is educative and comprehensive, and is in strong demand among the cattle feeders of the State.

Bulletin No. 82, issued by the Soil Section, and dealing with "The Principal Soil Areas of Iowa," is one of the most successful bulletins ever issued by the Station, filling a very evident want in the soil literature of the State. It contains a map of Iowa showing the divisions of the various glacial drifts and deposits, and some cuts of typical Iowa topography. This bulletin stands for something more than a mere record of Experiment Station research—it is an authority and a classic in this department of the State's agricultural work.

Report of the
Dean of the Division of Agriculture.

AMES, IOWA, November 25, 1905.

DR. A. B. STORMS, *President,*
Iowa State College.

DEAR DR. STORMS: The biennial period closing June 30, 1905, has been one of marked advancement in all lines of agricultural work in this institution. The February number of the Experiment Station Record gives the total number of agricultural students enrolled in the forty-four land grant colleges as 2904, taking the collegiate courses, and the total number enrolled in the short courses as 6,000. The Iowa State College is credited with an enrollment of 357 in the collegiate courses and nearly 700 in the short courses. This enrollment exceeded that of any other institution in the United States in both long and short courses notwithstanding the fact that the short course fell off about 100, owing to the fact that the new dairy building was not completed in time for offering the usual short course in Dairying. Our last graduating class of forty-nine, including five who received advanced degrees, was the largest class that has ever been graduated in agricultural collegiate work in any institution. It is probable, however, that this institution may lose its rank as having the largest number of agricultural students by reason of the fact that similar institutions in other states have received much more liberal support in recent years. This is particularly true of Illinois and Cornell Universities. In Illinois the last legislature appropriated $145,000 annually, specifically for agricultural investigation and instruction, and it is reported that the number of students enrolled this year is very much in advance of that of any previous year and will probably exceed 500.

Reports of the heads of the several departments in the Division of Agriculture, presenting the condition of their work, indicate clearly the urgent need of greatly increased instruction force and equipment in all lines of agricultural work. In this connection I desire to call attention to the necessity of organizing the work of the Division of Agriculture in such a way as to more clearly distinguish between the different fields covered. We have in the Division of Agriculture four distinct departments, viz: Agronomy, Animal Husbandry, Horticulture, and Dairying, and four-year collegiate courses are offered in each. In

addition to this we have a four-year course in Science and Agriculture, designed especially to meet the wants of those who may wish to prepare for teaching agriculture in the public schools and academies. The work of each of these departments includes three general divisions. First, collegiate instruction; second, agricultural investigation and research; third, agricultural extension. The first of these divisions relates to the instruction of our college students; the second to the Experiment Station work, which is supported by the State and national appropriations; and the third to farmers' institutes, teachers' institutes, agricultural conventions, county fairs, and short course work, which we are called upon to do away from the college. While these lines are necessarily closely related, it is becoming more apparent each year, as our work expands, that the best interests of the work of the Division of Agriculture require an organization by which some of the staff shall devote their time exclusively to collegiate instruction, others exclusively to research work and others exclusively to college extension work. The heads of departments should continue to have general direction of the work in each of these lines. It has been clearly shown, however, that members of the faculty cannot do the best work or even satisfactory work in any one of these lines when their energies are largely diverted to a field which is distinct and separate. Our class instruction work has suffered severely at times by reason of the institute and outside work and the investigation work which is necessarily carried on at the same time. Likewise our Experiment Station work has suffered by reason of the encroachments of the instruction work and the college extension work. The calls for outside help have been so large that we have been utterly unable to meet them and have been obliged to decline over three hundred and fifty calls for help of this kind during the past year. Research work of a high grade of excellence necessarily requires the undivided time and attention and all of the energies and ability of the man who has it in charge. Class room instruction that is frequently interrupted by calls for work which takes the instructor away from the College is necessarily disconnected and unsatisfactory. It is impossible under our present condition to prevent the serious overlapping of these three lines of work much to the detriment of each. Some dissatisfaction has arisen by reason of our inability to meet the calls made upon our staff for outside help, and on the other hand, complaint has been made on account of the absence of instructors from their college duties in the class room and laboratory; and likewise there comes a strong demand for more extensive and thorough research work on the part of the agricultural interests of the State.

This condition can only be remedied by making adequate provision for each line of work on practically separate basis. To this end we should have an increased fund for instruction work and an increased support for Experiment Station work, and provision distinct from each for the College extension work. We can then organize our staff in such a way that the duties of the larger part of our force will not overlap, and the men working in these several lines will be able to work to better advantage and render much better service to the interests which they are serving. In order to accomplish this, we should have, in addition to the amounts needed for instruction and investigation work, an allowance of $25,000 a year to enable us to meet the demands for outside help and to organize a College extension department.

FARM LIVE STOCK EQUIPMENT AND MAINTENANCE.

The College farm with its equipment of live stock constitutes the Animal Husbandry laboratory, and it is highly essential that this equipment be maintained upon the best possible basis in order to insure suitable instruction. The importance of strengthening the facilities for practical work in agricultural instruction has received marked emphasis within recent years, and the institutions that are doing the best work today are those that have the strongest and most complete equipment for practical and scientific laboratory work. The value of suitable demonstration material is recognized in all lines of educational work, and in no line is it more essential than in agriculture. The Michigan legislature at its last session appropriated $20,000 for the purchase of live stock for the Michigan Agricultural College. The Illinois legislature at its last session appropriated $25,000 annually for 1905 and 1906, for investigations in live stock to be conducted at its College of Agriculture, and in addition appropriated $50,000 annually for instruction in agriculture, a part of which is devoted to live stock. We have a fairly good equipment of live stock on the College farm, but it is impossible to maintain it and improve its standard with the present inadequate support. I earnestly recommend that $5,000 annually be appropriated for the purchase and maintenance of live stock on the College farm to be used for educational work. We now have about 1,000 students enrolled annually taking Animal Husbandry instruction, including those that take the short course work in January, and it is exceedingly important that our equipment in this field be maintained at a high standard. It is absolutely essential that men who are engaged in the live stock industry should have correct conceptions of the best types of domestic animals in order that they may produce them successfully, and it is essential in teaching that we have large numbers of animals of the various breeds and types to draw upon for demonstration purposes.

EQUIPMENT OF THE DAIRY FARM.

The Thirtieth General Assembly appropriated $32,000 for the purchase of a Dairy Farm and $7,000 for live stock and equipment. The Board of Trustees purchased a 200-acre tract of land lying a mile south of the college. The tract is conveniently located and well suited for the purpose for which it was purchased. The land, however, was in a badly neglected condition and will necessitate considerable outlay to render it available for educational and experimental work. The farm has been tiled and fenced during the past season. The money appropriated for improvements was not available until the second year of the biennial period and it was then payable in quarterly installments, making it impossible to make all the improvements contemplated with the funds available during the present season. There are no buildings of any consequence on the farm and it will be necessary to erect buildings early next spring as soon as the season opens. The amount appropriated for equiping and stocking the farm was scaled down by the last legislature more than one-half, and an additional appropriation of $10,000 will be needed for the completion of this work. This appropriation should be made available immediately in order that the work may be under way as early during the summer as possible.

The investigations which will be taken up on the Dairy Farm in connection with butter and cheese making experiments to be conducted in the new Dairy Building will be of great service to the agricultural and dairy interests of the State. There is at the present time an unusual interest in this subject, and it is a field that has received less attention than its importance demands.

THE COMPLETION OF THE NEW DAIRY BUILDING.

At the last session of the legislature an appropriation of $45,000 was made for the erection of a Dairy Building and $10,000 for equipment. The original amount asked for this purpose was $75,000. It was found necessary to reduce the size of the building about one-fourth in order to erect it for the money available, and two rooms and the attic have been left unfinished. The building erected is one of the best of its kind in the United States. It is constructed throughout of fireproof material with hydraulic pressed brick and Bedford stone walls,

and the interior is finished with tile and cement floors, with enamel brick wainscoting, giving it excellent sanitary conditions and durability. The building is three stories in height with basement and attic, the latter being unfinished. The class rooms and laboratories are so arranged as to afford excellent facilities for educational and research work. The Dairy Division of the United States Department of Agriculture has entered into a co-operative experiment to extend over a period of five years, which will be the most extensive investigation of the kind that has yet been undertaken in this country. By this arrangement the Department of Agriculture bears one-half the expense of the investigation and assigns two dairy experts to the work, whose salaries are paid by the Department of Agriculture. The building will be taxed to its utmost capacity to accommodate the short course class which will be in attendance during the coming winter, and it is probable that our lecture and laboratory rooms will be found inadequate.

POULTRY DEPARTMENT.

Poultry raising and egg production in Iowa may be considered as comparatively unimportant, but it ranks among the leading industries of the State. The poultry and poultry products of the State, according to the last census, amounted to $19,508,526 in 1899. Iowa leads all the states of the Union in egg production, with 99,000,000 dozen worth over $10,000,000. The poultry and egg production of the United States in 1899 amounted to over $281,000,000. The value of the poultry and egg products of the United States in 1899 was greater than the combined gold and silver output of the United States during any year since 1850, with one exception. The poultry and egg products of 1899 exceeded in value the wheat crop of twenty-eight states of the Union, and even the boasted wheat crop of Kansas in 1899, the year of the last census enumeration, could have been purchased by the poultry and egg products of Iowa with a balance of over $300,000 left for nest eggs. The possibilities of improvement in the economy of poultry production and excellence of product are not yet realized. There is one firm in this State conducting an extensive business in fattening poultry, feeding from 50,000 to 60,000 chickens per month the year round. Within the past few years the process of utilizing buttermilk and other by-products of creameries for fattening chickens has received considerable attention. As high as fifty cents a hundred for buttermilk has been realized when the product has been utilized in this way by the most approved methods, and the chickens fattened by this process produce a quality of meat that cannot be

surpassed, a product that commands the highest price on the market. This work is yet in its experimental stage, only a few having succeeded, and the approved methods are not generally known. Some of the largest creameries in the United States are running their buttermilk out through the sewer. The utilization of the by-products of the creameries of the State for poultry feeding would result in the saving of millions of dollars. The last legislature appropriated $500 for poultry work at Ames. An industry of this magnitude, which directly concerns every family living on a farm in Iowa and a large part of those living in the cities, should receive adequate attention at the Iowa State College. To properly establish and equip a poultry department at Ames, we should have an appropriation of $10,000 annually for the next biennial period. This would be equivalent to less than one egg per thousand of the annual product of the State.

ADDITIONAL LAND NEEDED.

As the work of the Division of Agriculture develops and expands we find an increasing need for more land. This has been the experience of all educational institutions having departments of agriculture. Some institutions in other states have been forced to buy land as high as $500 per acre within the past few years. This same land could have been bought earlier in the history of the college at a nominal price. We are in need of additional land here at this time for the extension of our Animal Husbandry and Agronomy work and for Horticulture and Forestry. The original College farm comprises 840 acres, including public grounds, orchard and park, amounting to about 160 acres. The balance is cut by the main line of the Northwestern Road and the Ames & College Railway, and Squaw Creek flows through it diagonally from one corner to the other, and considerable of the land adjoining this stream is rough and woody and suited only for pasture.

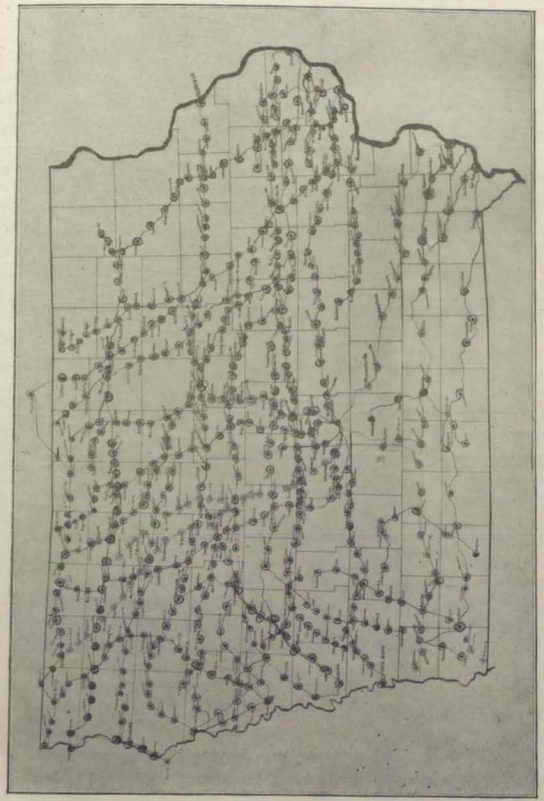
There is an eighty-acre tract of land for sale, lying north and east of the College farm and adjoining the College land on two sides. We have an option on this land until May, 1906, at $75 per acre. The College owns forty acres of land in Polk County between Highland Park and the village of Saylor. This land was obtained, I believe, by foreclosure of a mortgage. It has given but very small returns and the prospect for increase in value does not seem to be greater than that of the land adjoining the College farm. The forty-acre tract of land could probably be sold for $125 per acre, or $5,000. The forty acre tract of land is a part of the original land grant and the proceeds from the sale of this land would of necessity be added to the enowment

fund and could not be invested in other land. I believe it highly desirable, however, that this eighty acre tract of land adjoining the college farm be purchased in order to extend and strengthen our educational experiment work. This land is of such a character and so located that it will be of immediate and permanent service in extending the grazing land on the college farm and we are very much in need of land for this purpose in order to maintain our equipment of live stock for educational work and also to afford facilities for conducting experimental work in Animal Husbandry.

We are also in need of lands north and west of the college for Forestry and Horticultural work. The west line of the college land jogs where it is divided by the Chicago & Northwestern Railroad right of way. In this jog and adjoining the college farm on two sides is a tract of land, somewhat broken and rolling, but admirably suited for Forestry and Horticultural work. This piece of land contains 57½ acres and is owned by three different parties. The owner of the south 27½ acres has declined to put a price on this property. We have an option on 20 acres north belonging to one man at $65 per acre and on 10 acres belonging to another man at $50 per acre. We also have an option on 38 acres west of the 27½ acre tract at $85 per acre. The 27½ acre tract could be condemned in acordance with an act passed by the 30th General Assembly and it is not likely that the valuation would exceed $100 per acre. It ought to be les than that amount. At an allowance of $100 per acre, however, the entire 57½ acres can be purchased for $4,550. This land lies immediately adjoining our present Horticultural and Forestry grounds and furnishes spenddid opportunity for the extension of our work in that direction. The United States Department of Agriculture has offered to enter into co-operative experimental work in Forestry planting and the maintenance and care of Forestry lands, and bear one-half of the expense of conducting these investigations. It is highly desirable that this additional land be secured at the present time while it is available and in order that this work in co-operation with the Bureau of Forestry may be carried out. The total amount necesary to purchase these two tracts of land will not exceed $11,000 and I recommend that the legislature be asked for an appropriation for this purpose and that any unexpended balance not needed for the purchase of the land may be applied on permanent improvements on said land.

Respectfully submitted,

(Signed) C. F. CURTISS.



MAP SHOWING THE ITINERARY OF THE CORN SPECIAL TRAINS.

Report of the Dean of the Division of Veterinary Medicine

November 28, 1905.

MY DEAR PRESIDENT STORMS: I am pleased to report that the past year has been one of greath growth, progress and development for the Division of Veterinary Medicine. It has fully demonstrated the wisdom of the adoption of a four-year course of study.

The trinity of reading, writing and spelling can no longer be accepted as evidence sufficient for admission to the Division of Veterinary Medicine. I sincerely hope that the last barrier to the maintenance of a high standard has been swept away forever and that the candidate for admission will be measured by the same rule that governs the admission to the other divisions of the College. The adoption of this rule will insure sufficient training and ability to deal with abstruse subjects and therefore fitness to grasp and work out the different problems met with by the student in the work leading to his professional degree.

In the revision and extension of the course of study to four years, the valuable and practical work of Stock Judging and Animal Nutrition has been added. This enables the student to gain a thorough knowledge of live stock as they appear in health, and be brought into closer touch with the workings of the great live stock industry.

The study of Physiology and Pathology shows no fundamental difference between that of man and the domestic animals, as most of the knowledge acquired has been attained through experiments upon the lower animals.

The Veterinarian, as a Sanitarian, guards the greatest income producing property of the United States; the most profitable branch of agriculture. "It feeds more people; it furnishes more homes than any other branch of manufacturing, commerce or trade. The success of our agricultural population depends upon their horses, cattle, sheep, swine and poultry. Moreover, the butchers, milk dealers and numberless other industries and interests depend upon animals and animal products for their support."

Certain of the infectious animal diseases are a menace to the live stock industry. Tuberculosis, one of the most prevalent, has fastened itself upon the herds of cattle and droves of hogs, causing annually,

losses amounting to millions of dollars, to say nothing of the dangers attendant to mankind upon the use of the flesh or milk of animals so diseased.

An intelligent consideration of this subject requires a knowledge of the number and value of our live stock, the essential character of this industry to the growth and prosperity of other industries and the necessity of preserving the health of our domestic animals, because of their money value and especially, lest through disease, they become a menace to human health.

As reported by the United States Department of Agriculture, January 1, 1905, the number, average price and total value of farm animals in the United States are as follows: The number of horses in the United States is 17,057,702, valued at $1,200,310,020 ($70.37 per head). The number of mules, 2,888,710, value $251,840,378 ($87.18 per head); milch cows, 17, 572,464, value, $482,272,203 ($27.44 per head); other cattle, 43,669,443, value $661,571,308 ($15.15 per head); sheep 45,170,423, value $127,331,850 ($2.82 per head); swine 47,320,511, value $285,254,978 ($5.99 per head). Grand total number of live stock 173,679,253, value $3,006,580,737.

Iowa stands first in the total valuation of live stock, amounting to $244,980,801 or nearly one-eighth of the total valuation for the United States. The total number of hogs is about 7,500,000, value about $50,000,000 and with an estimated annual loss of 6 per cent, makes practically a $3,000,000 loss to the hog raisers of Iowa, which could in a great measure be prevented, as the mortality is chiefly due to hog cholera, swine plague and tuberculosis.

The Veterinary Hospital, managed in connection with the Division of Veterinary Medicine, furnishes a large amount of clinical material for practical instruction and demonstration. The patients are not alone supplied by local clients, but many of them are brought quite a distance for treatment. During the school year of 1904-05, there were treated at the free clinic, for various ailments, over 1,000 cases. These patients are cared for by the Senior and Junior students under the immediate direction of the hospital staff, composed of the members of the Veterinary faculty. A nominal fee is charged for all cases remaining in the hospital. The patients adimitted for treatment have gradually increased in numbers during the past three years and the services rendered have been quite satisfactory to the owners. The income from this source makes the hospital more than self-sustaining.

I submit the following list of students taking work in the Division of Veterinary Medicine for the past three years and the number matriculated in the first semester of the present year:

For 1902 and 1903—			
Veterinary Course,			
Freshman	36		
Juniors	8		
Seniors	4	48	
Agricultural Course,			
Agricultural students taking Veterinary work	38	38	
Total			86
For 1903 and 1904—			
Veterinary Course,			
Freshman	30		
Sophomores	3		
Juniors	15		
Seniors	4		
Post Graduates	1	53	
Agricultural Course,			
Agricultural students taking Veterinary work	64	64	
Total			117
For 1904 and 1905 —			
Veterinary Course,			
Freshman	35		
Sophomores	14		
Juniors	5		
Seniors	12	66	
Agriculture Course,			
Agricultural students taking Veterinary work	71	71	
Total			137
For first Semester 1905 and 1906—			
Veterinary Course,			
Freshman	26		
Sophomores	14		
Juniors	10		
Seniors	4	54	
Agriculture Course,			
Agricultural students taking Veterinary work	37	37	
Total			91

The Division of Veterinary Medicine has reached a period in its development and growth where it can no longer advance and expand unless something material is added in the way of buildings and equipment. The proper location of a Veterinary Building costing not less than $150,000, easy of access, containing offices, laboratories, lecture, clinic and dissecting rooms, would materially add in the up-

building and strengthening of this very important division of the College and would serve to attract a better qualified class of young men and more thoroughly equip them to render service to the great live stock interests of this and other states.

Provisions for the protection of such vast interests as these is worthy of the most earnest consideration in dealing with the present needs of the Division of Veterinary Medicine.

Respectfully submitted,

(Signed) J. H. McNEIL,

Report of the Dean of the Division of Engineering.

AMES, IOWA, November 8, 1905.

President A. B. Storms,
Iowa State College,
Ames, Iowa.

DEAR DR. STORMS: In presenting the *first* Dean's annual report of the Division of Engineering of the Iowa State College it may not be inappropriate to give some review of the recent history of the Division, which may show some of the steps by which it has attained its present standing among the engineering schools of the country. In Table No. 1, below, the statistics of attendance for the last ten years are given.

TABLE NO. 1.

ATTENDANCE OF ENGINEERING STUDENTS AT IOWA STATE COLLEGE.

Year	M. E.	C. E.	E. E.	Mn. E.	Total
1894	44	35	68	0	147
1895	38	38	66	2	144
1896	23	32	77	3	135
1897	30	27	76	4	137
1898-99	65	52	135	2	254
1899-00	86	77	167	6	336
1900-01	117	119	180	12	428
1901-02	144	163	220	16	543
1902-03	165	176	216	20	577
1903-04	174	231	233	39	677
1904-05	155	263	249	39	706

The above table shows a marvelous growth, all the more marvelous when it is further stated that the statistics of nearly all the principal engineering schools of the country during the same time show very similar results. Taken in connection with the fact that the demand for engineering graduates continues greater than the supply, the astounding increase of engineering students indicates the recent remarkable scientific development of the industries and civilization of our country.

Incidentally, also, the great increase of engineering students accompanies, and to some extent is causing, a revolution in higher education in America. More and more the so-called classical, general and liberal arts courses in our colleges and universities are being filled with women students, while the men are swarming into the technical and professional schools. Eeven in our high schools, manual training and other work of semi-technical nature are demanded to hold the boys, and the schools are yielding to the demand. In our own school this tendency is shown by Table No. 2, following:

TABLE NO. 2.

PERCENTAGE OF ENGINEERING STUDENTS AT IOWA STATE COLLEGE.

Year	Total Long Course Students. Men	Women	Total	Engineering Students	Per Cent Engineering Students to Men	Total
1894	422	118	540	147	34.8	27.2 %
1895	383	128	511	144	37.5	28.1
1896	373	119	492	135	36.1	27.4
1897	367	113	480	137	37.3	28.5
1898-99	622	157	779	254	40.8	32.6
1899-00	666	162	828	336	50.4	40.5
1900-01	794	182	976	428	53.9	43.8
1901-02	1,029	184	1,213	543	52.7	44.7
1902-03	1,001	157	1,158	577	57.6	49.8
1903-04	1,137	155	1,292	677	59.5	52.3
1904-05	1,152	174	1,326	706	61.2	53.2

It will be see from the above that not only the total number but also the percentage of our engineering students has greatly increased during the last decade. This increase in the percentage of technical students would be still more worthy of note should we add the equally remarkable increase in the numbers of our agricultural students during the same time. Agricultural education being now truly technical work, the engineers and the agriculturists should be considered together in studying the tendency of the times. Nor is our school alone in the increase of the percentage of technical students. We find a similar state of affairs throughout the country.

In spite of the present tendency of students into technical courses, I hazard the statement that the graduates of our institutions of higher learning are broader and better educated men today in the true sense than ever before. Not only is this true of our own school, where in the decade we are considering our entrance requirements have been raised from a level scarcely above the grammar school grade to graduation from a first-class high school, but it is also true of our colleges and universities generally.

The fact is that the truly broad-minded and well educated man of today is not the scholar, meditating in the selfish seclusion of some library, but the man who takes an active part in the work of our modern highly developed civilization, and who labors with the head, heart and hand to advance truth and to make the world better, materially and spiritually. No education can better fit one for service to the public in this day of applied science than a technical education.

ENGINEERING AND AGRICULTURE SHOULD BE ASSOCIATED IN IOWA.

One of the prominent engineering educators of the country has recently said, in a thoughtful paper on engineering education, that the supply of young engineers in this country comes mainly from the farms, and that "it is a good thing for the engineering profession that its recruits are largely drawn from the farming population. There is no better blood in the country, whether considered from the standpoint of ancestry or of present personal character." In Iowa these conditions are especially characteristic, and it has been a fortunate thing that the largest engineering school in the state is located at the College of Agriculture and Mechanic Arts, which the farming population regard as peculilarly their own school.

Moreover, in Iowa all the branches of engineering and engineering industries depend quite directly upon agriculture. Our manufactures, for example, are almost wholly either of the raw products of our farms or of finished articles destined to be used by our farmers. Untold wealth remains to be developed by scientific investigations of possible manufactures of the waste products of the Iowa farms. Again, our transportation problems refer mainly to the products and needs of the farms. Our cities are directly supported by tributary agricultural areas. The products of our mines and quarries are either consumed upon the farms or by industries or communities depending on the farms.

The different branches of engineering work can be taught properly only by men engaged in original study and research in their special subjects, since only by such men can engineering work be kept fully up with the times and the necessary inspiration given students. In Iowa such original study and investigation require the co-operation of those in charge of scientific agricultural investigation and the opportunities afforded by their facilities for investigation work.

For example, drainage in Iowa must be studied jointly by engineers and agriculturists, as we are doing in our college work. The engineer alone cannot properly study the effect of drainage on soils and crops

any more than the agriculturist alone can properly study the design, construction and maintenance of drainage systems.

The good roads question is another instance in which our Engineering and Agricultural Divisions are co-operating with the very best results, in work which neither division could properly carry on alone.

So, too, in Iowa the sanitary engineer should study sewage disposal not only for our cities but also for our private home, and the same is true of water supply. The railway engineer in Iowa needs to study light electric railways for rural districts and to investigate railway management and rates, especially affecting farm products and their use in manufactories. The mechanical engineer needs to study the application of power and machinery on the farm and in manufactories of raw materials from our farms and of implements and fabrics for our farmers.

From every point of view then it seems certain that in Iowa engineering and agricultural research and education should go hand in

STATE HIGHWAY COMMISSION.

In recognition of the facilities for good roads work afforded by this co-operation of engineering and agriculture in our college, the last legislature passed a law making the college the State Highway Commission, and this work was assigned by the trustees jointly to the Divisions of Engineering and Agriculture. The details of the work will be given in an elaborate separate report to the Governor, as required by law, but it may be said here that as the work devlops it proves of the utmost importance to Iowa, and the possibilities of our doing service to the public in this line seem unlimited if the work is given proper financial support by the state. We cannot doubt that such support will be given. The financial support to carry out careful and conservative plans already prepared should be made $10,000 per annum.

ENGINEERING EXPERIMENT STATION.

In further recognition of the great possibilities for good service to our state by engineering investigations at our college, the last legisature made an appropriation for such work which enabled the college trustees to organize an Engineering Experiment Station. The station staff consists of President A. B. Storms, ex-officio, Director A. Marston, and Professors G. W. Bissell, L. B. Spinney, S. W. Beyer and W. H. Meeker. Although the time which has elapsed since the organization of the station is short, important work has been taken up and valuable results secured, part of which have been published in bulletin form.

The Civil Engineering Section has taken up many tests of the materials of construction for cities, corporations and citizens of Iowa. It is constantly carrying on important investigations of sewage disposal

in Iowa, in the course of which annual examinations of all plants in the state are made. Its experimental work in this line includes small sewage plants for private houses, and the disposal of creamery wastes. The water works of the state are being studied, and questions relating to paving. Railway problems in Iowa are also receiving attention. Bulletins already issued include seven on sewage disposal, two on tests of brick, one on dredging methods, and one on cement (now about ready for the press).

The Mechanical Engineering Section has been studying the coals of Iowa and the best methods of using them for fuel. One bulletin on this subject has been issued which has attracted much favorable attention, and another is about ready for the press. The Section is also studying Iowa power plants and shop methods in our state.

The Electrical Engineering Section has been giving special attention to electric lamps as sold and used in Iowa, and has established a testing station to which many lamps are being sent for testing to see whether they meet the manufacturer's claims.

The Mining Engineering Section has been assisting in the investigations of Iowa Coals, and has been giving especial attention to the clays, limes, and other mineral products and possibilities in Iowa.

This Engineering Experiment Station work also seems to have limitless possibilities for good, and it should receive adequate support, as our Agricultural Experiment work does. We ask that an annual appropriation of $15,000 be granted by the state for this work. The sum named is the one first granted by the national government for the Agricultural Experiment Station of each state, and which has done so much good.

COURSE IN CHEMICAL ENGINEERING.

.. The necessary chemical work of the Engineering Experiment Station calls for the employment of a competent technical chemist especially qualified for research work. Under such a man a course in Chemical Engineering might well be developed. In Iowa the possibilities of developing new wealth for the state in untold amounts by utilizing what are now waste products fully justify our inaugurating such work in such hands. In the corn stalks which now rot on every farm, for example, we may yet find the basis for manufacturing developments of greatest value. We already have some call from various existing manufactories for chemical engineers.

COURSE IN ARCHITECTURE.

I believe that we should also establish in the near future a course in Architecture. At present no such school exists in Iowa, and although we frequently have inquiries for such work, Iowa students must go outside the state to become architects. Our engineering facilities and the many subjects in common in Engineering and Architectural courses make it a matter of comparatively small expense for us to establish such a course. One professor at first, two after a couple of years, and an outlay of several thousand dollars for equipment would be required, together with suitable quarters.

ADVANCE IN ENTRANCE REQUIREMENTS AND REVISION OF ENGINEERING COURSES.

We are constantly endeavoring to improve and strengthen our engineering work and have recently made a material increase in our entrance requirements. They now include solid geometry and two years of modern language. Our entrance requirements for engineering courses are now the highest in Iowa and are the same as those of the best engineering schools.

We are also carefully revising our engineering courses. The new courses will still correspond closely to the general practice of the best engineering schools, but we will lose no opportunity to improve upon that practice where our own experience suggests improvement and where our own local conditions render it possible.

For example, our location is favorable to giving instruction in field surveying and we are giving special attention to this subject. Again, it seems agreed that the business side of engineering should receive more attention in the engineering schools, and we have recently introduced a course in Specifications and Contracts, given by Vice-Dean Bissell. To help make our engineering students broad and well informed men we have also introduced a course in the History of Engineering, given by the Dean.

NEEDS OF THE ENGINEERING DIVISION.

While the numbers of our engineering students have been growing at the remarkable rate already indicated, and while in many ways we have also had a remarkable growth in equipment and in the Engineering Faculty, yet in some particulars our increase in equipment and facilities has not kept up with the growth in numbers.

TABLE NO. 3.

INCREASE IN FACULTY.

NUMBER IN ENGINEERING FACULTY AT IOWA STATE COLLEGE AS COMPARED WITH NUMBER OF ENGINEERING STUDENTS.

	No. Engineering Division Instructors.		No. Engineering Division Students.	
Year	Total	Purely Engineering*	Total	Per Instructor
1894	10	8	147	18
1895	10	8	144	18
1896	10	8	135	17
1897	10	8	137	17
1898-99	11	9	254	28
1899-00	13	11	336	30
1900-01	15	13	428	41
1901-02	15	13	543	42
1902-03	21	19	577	30
1903-04	24½	22	677	31
1904-05	27½	24	706	30

*Note—The other instructors are counted in the general Physics, Geology, and Good Roads work.

Table No. 3 shows, for example, that we have 67 per cent more engineering students per engineering instructor than in 1894, although on account of the higher grade of technical work we now give (necessitating increased outside research) we should have fewer students per instructor.

I recommend one new instructor in Mechanical Engineering, one new assistant professor in Civil Engineering, and one new instructor in Electrical Engineering as a moderate increase strongly needed.

I also recommend some material increases in salary in the cases of some of our present tried and approved members of our faculty who are now staying with us at a sacrifice. Professor French, for example, was offered $1,800 elsewhere and receives only $1,400 . In fact the outside opportunities for engineers are so many and so remunerative that I have no doubt the larger part of our Engineering Faculty could command larger salaries at outside work than we are paying them. They are staying with us because they prefer the work and are loyal to the college. We should do better by them.

INCREASE IN LABORATORIES AND SHOPS.

Our most serious deficiencies in engineering equipment (though we need more class rooms and offices) are in our engineering laboratory and shop facilities. I deeply regret being compelled to report that our

engineering laboratories especially are hardly worthy the name. While we have been building and filling with students to overflowing our fine new Engineering Hall, our laboratory and shop space and equipment and instrumental equipment have almost stood still. Fortunately the cost of the kind of buildings needed is comparatively low.

We ask appropriations for laboratory and shop buildings as follows:

50-feet x 200-feet x 2-story building north of carpenter shop, to contain machine shop, new Mining Laboratory, and six class rooms, probably	$30,000
To remodel Old Engineering Hall for Hydraulic and Materials of Construction Laboratory, probably	10,000
For new Forge shop, probably	5,000
For new Railway Laboratory, probably	5,000
Total	$50,000

The exact distribution of this sum might differ slightly from that outlined above.

INCREASE IN EQUIPMENT.

We urgently need a large special appropriation for new equipment. A careful preliminary estimate shows that the amount needed is at least $40,000, which amount we request.

Our sister institution, the College of Engineering of the University of Illinois, recently had an appropriation of $150,000 for this purpose.

INCREASE IN SUPPORT.

The Engineering Departments also need material increases in the sums appropriated for their ordinary running expenses.

In conclusion I would say, in behalf of the Engineering Departments, that as rapidly growing children of the state their needs are great but that their purposes are high and they hope amply to repay the parental generosity which they look with confidence to receive.

Very respectfully submitted,

(Signed) A. MARSTON,
Dean of Division of Engineering.

Changes in the Faculty.

July 1, 1903, to June 30, 1905.

CHANGES IN THE FACULTY.

During the Biennial Period, July 1, 1903, to June 30, 1905.

VACANCIES.

Professors.

1903-1904.

E. W. Stanton, M. Sc., L. L. D., Acting President, term expired.
H. C. Price, M. S. A., Professor of Horticulture, resigned.
Mary A. Sabin, B. A., Professor of Domestic Economy, resigned.
J. J. Repp, V. M. D., Asst. Professor of Therapeutics and Pathology, and Asst. Station Veterinarian, resigned.
L. E. Young, Mn. Eng., Assistant Professor of Mining Engineering, resigned.
W. H. Olin, M. Sc., Assistant Professor of Farm Crops, resigned.
R. H. Hadfield, B. S. in M. E., Instructor in Mechanical Drawing, resigned.

1904-1905.

J. B. Weems, Ph. D., Chemist of the Experiment Station, resigned.
C. J. Zintheo, B. S., Professor of Farm Mechanics, resigned.
M. Jacobs, V. M. D., Professor of Veterinary Medicine and Sanitary Science, resigned.
O. W. Willcox, B. S., Ph. D., Assistant Professor of Soils, resigned.
B. S. Lanphear, M. M. E., Assistant Professor of Electrical Engineering, deceased.
L. S. Klinck, B. S. A., M. S. A., Assistant Professor of Farm Crops, in charge of Department, resigned.
Elmina T. Wilson, C. E., Assistant Professor of Civil Engineering. resigned.

Instructors and Assistants.

1903-1904.

Chester M. Perrin, B. Sc., Instructor in History, term expired.
Ada J. Miller, Ph. B., Instructor in English, term expired.
H. R. Watkins, B. S. A., Instructor in Chemistry, term expired.
John S. Coye, B. Sc., Instructor in Chemistry, term expired.
Harva R. Otis, Assistant in Machine Work, term expired.

1904-1905.

Sarah C. Hook, B. L., Instructor in Public Speaking and Physical Culture for Women, resigned.
Fannie O. Edgett, B. Sc., Instructor in Chemistry, term expired.
Ezra C. Potter, Instructor in Pattern Shop, term expired.
Beryl A. Hoyt, B. A., Instructor in English, term expired.
Alice M. Parks, B. Sc., Instructor in Domestic Science, in charge of Department, term expired.
Harry M. Parks, B. Sc. in M n E., Instructor in Mining Engineering, term expired.
Mathew L. King, Assistant in Pattern Shop, term expired.
Mary L. Van Zile, Assistant in Domestic Science, term expired.
Ernest C. Gasser, Assistant in Farm Mechanics, resigned.

APPOINTMENTS.

Professors.

1903-1904.

Name.	Title.
A. B. Storms, A. M., D. D., LL. D.,	President.
W. H. Stevenson, A. B., M. S. A.,	Professor of Soils.
C. J. Zintheo, B. S.,	Professor of Farm Mechanics.
W. J. Rutherford. B. S. A.,	Assistant Professor of Animal Husbandry.
W. H. Olin, M. Sc.,	Assistant Professor of Farm Crops.
L. E. Ashbaugh, B. S., Ph. B.,	Associate Professor of Civil Engineering.
Edward E. Bugbee, E. M.,	Assistant Professor of Mining Engineering.
M. Jacob, V. M. D.,	Professor of Veterinary Medicine and Sanitary Science.
Frank French, M. E. in C. E.,	Associate Professor of Civil Engineering.

1904-1905.

Georgetta Witter, B. L., Professor of Domestic Science.
Richard C. Barrett, M. A., Professor of Civics.
Louis G. Michael, B. Sc., Chemist of Experiment Station.
Spencer A. Beach, M. S., Professor of Horticulture.
Leonard S. Klinck, B. S. A., M. S. A., Assistant Professor of Farm Crops, in Charge of Department.
W. M. Wilson, M. M. E., Assistant Professor of Mechanical Engineering.
W. F. Coover, A. M., Assistant Professor of Chemistry.
C. W. Gay, D. V. M., Assistant Professor of Animal Husbandry.
H. P. Baker, B. S., M. F., Assistant Professor of Forestry.
O. W. Willcox, B. S., Ph. D. Assistant Professor of Soils.

Adolph Shane, B. S. in E. E., Assistant Professor in Electrical Engineering.

I. O. Shaub, B. S., Assistant Professor of Soils.

Engineering.

F. A. Fish, M. E. in E. E., Associate Professor in Electrical

Paul S. Pierce, Ph. D., Assistant Professor of History.

F. P. Ahlers, D. V. M., Assistant Professor of Anatomy and Obstetrics.

L. M. Hurt, D. V. M., Assistant Professor of Physical and Sanitary Science.

Ira A. Williams, B. Sc., A. M., Assistant Professor of Mining Engineering.

INSTRUCTORS AND ASSISTANTS.

1903-1904.

H. M. Parks, B. Sc. in Mn. E, Instructor in Mining Engineering.
R. H. Hadfield, B. S. in M. E., Instructor in Mechanical Drawing.
Wayne Dinsmore, B. S. A., Instructor in Animal Husbandry.
Jesse G. Hummell, B. M. E., Instructor in Machine Shop Practice.
John S. Coye, B. Sc., Instructor in Chemistry.
Harriett Kellogg, A. M., Instructor in Botany.
Florence A. Lucas, Instructor in French.
Rose Abel, A. B., Instructor in English.
Ruth Morrison, A. B., Instructor in Domestic Economy.
Effie J. White, Instructor in English.
W. W. Smith, B. S. A., Assistant in Animal Husbandry.
George I. Christie, B. S. A., Assistant in Soils.
M. L. King, Assistant in Pattern Shop.
M. L. Merritt, Assistant in Horticulture.
John H. Lawton, Assistant in Mechanical Drawing.
D. M. Curl, Assistant in Forge and Foundry.
Mary L. Van Zile, Assistant in Domestic Economy.

1904-1905.

Lisle McCollom, B. A., Instructor in German.

T. H. McDonald, B. C. E., Instructor in Civil Engineering and Assistant in Good Roads Investigations.

Elizabeth Moore, Ph. M., Instructor in English.
John F. Travis, A. M., Instructor in Mathematics.
Winifred Tilden, B. A., Instructor in Physical Culture for Women.
Sybil M. Lentner, B. S., Instructor in Public Speaking.
Dora G. Tompkins, A. M., Instructor in English.

Harry M. Bainer, M. S. A., M. Sc., Instructor in Field Engineering, Department of Farm Mechanics.

Frank G. Allen, B. S., Instructor in Mechanical Engineering.
Blanche I. Thoburn, A. B., Instructor in English.
J. W. Jones, Assistant in Farm Crops.
H. F. Bishop, Assistant in Carpenter Shop.

Cortes Johnson, Jr., B. S. in C. E., Assistant in Civil Engineering.
Bird Slater, B. S., Assistant in Chemistry.
Edward M. Spangler, Assistant in Pattern Shop.
Margaret B. Stanton, B. Sc., Assistant in Mathematics.
Ethyl Cessna, B. Sc., Assistant in History.
C. E. Bartholomew, Assistant in Zoology.
Robert E. Buchanan, B. Sc., Assistant in Botany.
Estelle D. Fogel, B. A., B. Sc., Assistant in Botany.
Effie M. McKim, B. Sc., Assistant in Chemistry.
Wm. A. Bevan, B. Sc., Assistant in Chemistry.
E. C. Gasser, Assistant in Farm Mechanics.
C. W. Rubel, B. S. A., Graduate Assistant in Animal Husbandry.

MISCELLANEOUS.

1903-1904.

David M. Fyffe, Farm Superintendent.
Julius Erdmann, Gardner.

1904-1905.

E. S. Gardner, Station Photographer.
John P. Watson, Physical Director.
W. H. Ogilvie, Bulletin Editor.
Ben Edwards, Custodian.
W. H. Grover, Superintendent Heating, Lighting, Power and Water.
M. L. Bowman, Farm Foreman.

MISCELLANEOUS VACANCIES.

1904-1905.

David M. Fyffe, Farm Superintendent, term expired.
J. F. Cavell, Custodian, resigned.

PROMOTIONS.

Professors.

1903-1904.

E. W. Stanton, M. Sc., made Dean of the Junior College.

A. Marston, C. E., made Dean of Division of Engineering.

L. A. Placeway, B. Sc., from Instructor to Assistant Professor of Chemistry.

Alice M. Parks, B. Sc., placed in charge of the Department of Domestic Economy.

Bessie Larrabee, A. B., from Instructor to Assistant Professor of English.

Elizabeth MacLean, M. Di., from Instructor to Assistant Professor of English.

1904-1905.

G. W. Bissell, M. E., made Vice-Dean of Division of Engineering.

W. J. Rutherford, B. S. A., from Assistant to Associate Professor of Animal Husbandry.

F. W. Bouska, M. S. A., from Assistant in Dairying to Assistant Professor in Dairy Bacteriology.

Frank French, M. E. in E. E., from Acting Assistant to Assistant Professor in Civil Engineering.

L. E. Ashbaugh, B. S., Ph. B., from Assistant to Associate Professor of Civil Engineering.

M. M. Roberts, B. L., from Assistant to Associate Professor of Mathematics.

W. A. Stuhr, D. V. M., from Assistant to Associate Professor of Histology, Pathology and Therapeutics.

A. T. Erwin, M. S. A., from Assistant to Associate Professor of Horticulture.

B. H. Hibbard, B. Ag., Ph. D., from Instructor to Associate Professor in charge of the Department of Economic Science.

Instructors and Assistants.

I. A. Williams, B. Sc., from Instructor to Assistant Professor in Mechanical Engineering.

J. E. Guthrie, M. Sc., from Instructor to Assistant Professor in Zoology.

M. P. Cleghorn, B. Sc. in E. E., from Instructor to Assistant Professor in Mechanical Engineering.

C. Larson, B. S. A., from Assistant in Dairying to Assistant Professor in Dairying.

John A. Conover, B. S. A., from Graduate Assistant to Assistant in Animal Husbandry.

Report of the Director of the Agricultural Experiment Station.

REPORT OF THE DIRECTOR OF THE AGRICULTURAL EXPERIMENT STATION.

The various lines of research work in agriculture carried on by the Experiment Station have been of incalculable value to the agricultural interests of the state. There are single lines of investigation, some of which are referred to in another place, which have resulted in direct benefits amounting to more than has been expended by the Experiment Station since its organization. The United States Department of Agriculture estimates as follows the minimum annual damage done by our fourteen most destructive insects:

Grasshopper	$50,000,000
Chinch-bug	60,000,000
Hession fly	40,000,000
Corn-root worm	20,000,000
Corn-ear worm	20,000,000
Cotton-boll weevil	20,000,000
Cotton-boll worm	12,000,000
Cotton-leaf worm	8,000,000
Codling moth of apple	20,000,000
Potato-bug	8,000,000
Grain weevil	10,000,000
Army worm	15,000,000
Cabbage worm	5,000,000
San Jose scale	10,000,000
Total	$298,000,000

The Experiment Stations of this and other states have already done much to minimize this damage and even greater results may yet be accomplished in that direction. There are many important lines of investigation left practically untouched on account of lack of funds and adequate facilities for carrying on comprehensive experimental work.

The farms of this state yield annually over $400,000,000 worth of products. This is equivalent to five per cent income on the valuation of $8,000,000,000. It is only recently that we have come to appreciate this priceless heritage. Comparatively no soil investigations have been conducted by any of the Experiment Stations aside from the study of

commercial fertilizers until in the past five or six years. Fortunately this state has not yet become converted to commercial fertilizers. Some of the southern and eastern states are annually expending from two to five million dollars for commercial fertilizers for which no adequate return is secured, and notwithstanding this enormous outlay the agricultural lands of these regions are constantly depreciating in value. It is confidently believed that by right methods of tillage and intelligent farm management the use of fertilizers to any considerable extent will never be necessary in Iowa. It is also hoped and believed that the same methods will lead to an increase in the productive capacity of our farming lands instead of the depletion of soil fertility. There is imminent danger, however, of reduced returns from large sections of the farming lands of this state and a consequent depreciation of value similar to that which has occurred in all agricultural lands east of the Mississippi Valley and which has in some places already set in, even in the rich lands of the Central West. The state of Illinois, recognizing the importance of this problem, has for the past three years appropriated $20,000 annually for soil investigations in that state, and it is commonly conceded that the investigations resulting from this appropriation have produced returns more than a hundred fold in direct benefits resulting to owners and tillers of the soil in that state. We have barely made a good beginning in the soil study of Iowa. We have now a well organized department with good laboratory equipment and facilities for conducting investigations along that line. We need, however, additional means to extend the work systematically and thoroughly and to carry it on for a series of years in an intelligent manner. Some results already attained have been of immediate practical value. In many sections certain types of soil, exceedingly rich in some of the constituents of fertility, have been unproductive on account of the lack of understanding of the proper methods of treatment. These soils have been made to yield abundantly by the introduction of proper methods. This is particularly true of the peat soils in many sections.

In Horticulture and Forestry there is urgent need of extensive experimental work. The showing of fruit made by this state at St. Louis clearly demonstrated that in quality and excellence and number of varieties the fruit products of the state will compare favorably with the best when our resources in that line are properly developed. Our Department of Horticulture and Forestry is now well organized and in better condition for conducting systematic and useful work than ever before. Forestry offers a most useful line of investigation. The scarcity of material for fence posts, wood lots, and building purposes

is becoming more marked each year. In some sections of the state timber land that is unfit for anything except timber culture has been devastated and left in an unproductive condition. The work of restoring forestry growth to land of this character and to other lands suited to tree production in the state is a most important problem which has already been too long delayed.

The investigations conducted by the Experiment Station in studying the vitality of seed corn and the consequent influence upon the yield and value of the corn crop of the state have yielded abundantly. It is believed that these investigations alone have more than repaid the appropriations made by the state for its experimental work. The corn special trains have directly and indirectly reached a larger majority of the people engaged in agriculture in this state, and the influence of this work has extended throughout the corn belt of the United States. These trains have traversed ninety-six out of the ninety-nine counties of Iowa, have covered a distance of 7,855 miles, during which 670 stops were made and 1,085 talks and addresses delivered on the improvement of Iowa's greatest wealth producer, the corn crop. The total attendance at these meetings was 127,763. There is need of extending this work along the line of improvement of our corn by breeding and selection, and similar improvement may be made with equal advantage in other grain crops. This is particularly true of our grass crop. The grazing and meadow lands of the state yield annually almost as much as our corn lands, yet they are the most neglected part of our farms and susceptible to the greatest improvement with the smallest outlay.

The Dairy industry of this state has temporarily declined during the period of high prices for beef . The industry is rapidly regaining its former position and there is every reason to believe that this state will in the near future again take rank as the foremost dairy state in the union and continue to hold that place. The industry in this state is undergoing vital changes and there has never been greater need of the practice of the most intelligent methods than today. The waste that occurred in many of our creameries, even ten years ago, would drive the strongest firms out of business at the present time. The great central plants have sprung into existence primarily because of the better methods and the more capable and intelligent management that they have been able to introduce in central plants over those prevailing throughout the country generally in smaller plants. It is being clearly demonstrated, however, that these large central plants have no marked advantages, but on the contrary some serious disadvantages over smaller plants that are managed with the same degree of skill and ability. The

investigations conducted by the Dairy Section of the Iowa Experiment Station are regarded throughout the United States and in foreign countries as the most practical and helpful of all scientific work that has been carried on along this line. We are greatly in need of additional help and facilities for extending this work. In this, as in all lines of research and educational work, it is highly important that the results of experimental work and the benefits to be derived from the best methods be placed clearly before the people in such a way as to command their attention and accomplish the greatest good. It has come to be quite generally recognized that the field or sphere of an educational institution is not confined to its own immediate surroundings or to those who come within the walls of its college buildings, but that its instruction must be carried throughout the commonwealth that it serves.

In Agricultural Engineering we have a most important field that has only recently commanded the attention of educational institutions of this country, though it has been quite extensively developed in foreign countries, particularly in Germany. The investments in agricultural implements in this state amount to $55,000,000, which is much the largest of any state in the union. The reclamation and drainage of our farm lands, the designing and construction of farm buildings, and the study of the economy and efficiency of various motive powers applied to farm work, the construction of roads and bridges and various other agricultural engineering problems demand men specially trained for this important work. It is generally conceded that the expenditure for agricultural machinery and other mechanical appliances on the farm is much larger than it need be if better mechanical skill were employed in its management and operation.

In the field of Animal Husbandry the state has most extensive and important interests. Iowa is pre-eminently the formost live stock state of the union and must remain so if the state is to continue to hold its foremost rank in agriculture. There is no surer road to decline of Iowa's agricultural prosperity than by the abandonment of stock raising as the important feature of our agriculture. There is just now a marked tendency manifest to curtail the stock interests on account of the relative high price that has prevailed for grain and somewhat unsatisfactory returns for live stock. This condition is alarming to some of the most careful students of agricultural and economic conditions. There are many problems relating to live stock raising in this state that need to be carefully investigated for the benefit of those who are engaged in this important industry. Within the past decade and a half the agricultural lands of this state have advanced in value nearly one

hundred per cent, and the conditions confronting the stock farmers of the state today are radically different from those of ten years ago.

In the matter of live stock diseases there are constantly increasing dangers. Some rather startling developments have occurred during the past season in relation to the extent in which tuberculosis prevails among domestic animals of the state, particularly among hogs and dairy cattle. The records of the packing houses in the large market centers indicate that the percentage of hogs affected by tuberculosis is increasing at an alarming rate. We are preparing to conduct extensive investigations along this line, and additional funds for extending the work are very much needed.

For extending our experimental work in such a manner as to make it of greater service to the agricultural interests in the lines indicated we should have the following additional appropriations:

For Soils	$ 7,000	annually
For Agr'l Engineering	3,000	"
For Farm Crops	7,000	"
For Dairying	5,000	"
For Live Stock	10,000	"
For Veterinary	5,000	"
For Horticulture and Forestry	3,000	"
Total	$40,000	"

The agricultural experiment station in this state was established in 1888 in accordance with the terms of the Hatch Act passed by Congress in 1887. This act appropriated $15,000 to each state and territory in the Union. Since that time about three-fourths of the states have supplemented the original appropriation by additional appropriations, which in most cases exceeded the original grant. In two states, namely Illinois and New York, over $100,000 is appropriated annually for agricultural investigations in addition to the original fund granted by the Hatch Act. In this state no appropriation was made for the experimental work until 1902 when the 29th General Assembly appropriated $15,000 to supplement the Hatch fund. In 1904 the 30th General Assembly appropriated $10,000 additional. These appropriations have very materially strengthened our work, and one of the gratifying results that has come from it is the general interest in and appreciation of the work on the part of the agricultural interests of the state, and accompanying this a correspondingly increased demand for extending the work along practical lines that may be of immediate benefit. The demands made upon us in all lines of educational and experimental work

were never so much in excess of our resources as they are at the present time.

The liberal appropriations that have been granted for agricultural experimental work in other states are the direct results of the active influence of the agricultural organizations of those states. We have in this state similar agricultural organizations which have repeatedly endorsed and urgently requested liberal appropriations for agricultural investigations in this state. The amounts herein mentioned may seem rather large at first thought, yet they are exceedingly conservative considering the vast interests represented, and in this connection I desire to repeat the words of Secretary Wilson, spoken recently in addressing a national convention at Washington, D. C., namely, "The government can make no better investment than to provide liberally for agricultural education and investigation." The progress that has been made in the development of agricultural resources of Iowa is a matter of public pride to every loyal citizen of the state.

Very respectfully submitted,

(Signed) C. F. CURTISS.

FINANCIAL REPORTS.

TREASURER'S REPORT.

The following is a complete statement of the transactions of the accounts for the fiscal year ending June 30, 1904.

Account	Balance July 1, 1903		Fiscal year		Total		Support Fund		Balance June 30, 1904	
	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit
Support funds, balance July 1, 1903		$2,418.60				$ 2,418.60		$ 2,418.60		
Interest on lands belonging to Cong'l grant				$ 281.60		281.60		281.60		
Interest on investment of endowment fund				35,929.13		35,929.13		35,929.13		
Interest on investment of endowment fund				85.00		85.00		85.00		
Interest on lands obtained by foreclosure				80,000.00		80,000.00		80,000.00		
State additional support funds		230.00	$ 687.46	905.00	$ 687.46	1,135.00				$ 447.54
Agricultural fellowship		200.00		200.00		200.00				421.57
Iowa state fair scholarship		301.97		495.40	495.40	916.97				223.83
Diploma		191.83		32.00		223.83				88.00
Donation fund		88.00				88.00				679.61
Railroad damages		.78	1,238.85	1,917.18	1,238.85	1,917.96				
Room rent			25,000.00	25,000.00	25,000.00	25,000.00	$ 25,000.00	25,000.00		
Morrill support			33,858.32		33,858.32		33,858.32			
Salaries			926.10	268.21	926.10	268.21	657.89			
Agricultural chemistry			2,662.15	1,161.78	2,662.15	1,161.78	1,500.37			
Agronomy			2,688.70	1,497.60	2,688.70	1,497.60	1,196.70			
Animal husbandry			2,845.67	1,130.01	2,845.67	1,130.01	1,715.66			
Botany			6,468.79	4,197.13	6,468.79	4,197.13	2,271.66			
Chemistry			4,157.59	547.11	4,157.59	547.11	3,610.48			
Civil engineering			9,138.70		9,138.70		9,138.70			
Contingent expense			11,300.63	7,995.85	11,300.63	7,995.85	3,304.78			
Creamery			2,524.28	1,021.20	2,524.28	1,021.20	1,503.08			
Dairy			2,998.86	542.23	2,998.86	542.23	2,456.63			
Domestic economy			3,086.73	765.50	3,086.73	765.50	2,321.23			
English			15,338.30	11,141.28	15,338.30	11,141.28	4,197.02			
Farm			2,989.09	599.89	2,989.09	599.89	2,389.20			
Farm mechanics			1,450.00		1,450.00		1,450.00			
French and German			325.63	45.53	325.63	45.53	280.10			
Geology			1,485.00		1,485.00		1,485.00			
History and philosophy			3,486.35	1,055.24	3,486.35	1,055.24	2,431.11			
Horticulture			3,709.54	83.82	3,709.54	83.82	3,625.72			
Library			3,586.97		3,586.97		3,586.97			
Mathematics			11,468.22	5,809.72	11,468.22	5,809.72	5,658.50			
Mechanical engineering			181.21		181.21		181.21			
Military			1,776.13	109.30	1,776.13	109.30	1,666.83			
Mining engineering			611.28	16.00	611.28	16.00	595.28			
Music										
Physical and electrical engineering			4,292.18	999.32	4,292.18	999.32	3,292.86			
Political economy			16.74		16.74		16.74			
Public grounds			2,784.45	653.52	2,784.45	653.52	2,130.93			
Public rooms			12,572.21		12,572.21		12,572.21			
Public speaking			687.73	218.00	687.73	218.00	469.73			
Sabbath services			454.96	5.00	454.96	5.00	449.96			
Soils			2,514.67	365.50	2,514.67	365.50	2,149.17			
Veterinary			2,059.80	1,539.80	2,059.80	1,539.80	520.00			
Zoology			2,535.59	825.60	2,535.59	825.60	1,709.99			
Tuition		900.00	2,037.64	1,392.00	2,037.64	2,292.00				254.36
State appropriations		749.92	141,079.66	141,080.01	141,079.66	141,829.93				750.27
Total		$4,881.10	$327,691.08	$329,525.46	$327,691.08	$334,406.56	$139,864.03	$143,714.33		$2,885.18
Balance support funds							3,850.30			3,850.30
Cash to balance as follows										
Support funds	2,418.60		1,431.70		3,850.30				3,850.30	
State appropriations	749.92		.35		750.27				750.27	
Miscellaneous accounts	1,712.58		402.33		2,114.91				2,114.91	
Total	$4,881.10	$4,881.10	$329,525.46	$329,525.46	$334,406.56	$334,406.56	$143,714.33	$143,714.33	$6,715.48	$6,715.48

STATE APPROPRIATIONS.

Account.	Balance July 1, 1903	Expended During Year	Drawn from State Treasurer	Total		Balance June 30, 1904
New Central building		$ 23,346.85	$ 23,346.85	$ 23,346.85	$ 23,346.85	
Pure bred stock		1,681.70	1,681.70	1,681.70	1,681.70	
Special building tax	$ 749.92	97,551.11	97,551.46	97,551.11	98,301.38	$ 750.27
Improvements and current expenses		18,500.00	18,500.00	18,500.00	18,500.00	
Total	$ 749.92	$141,079.66	$141,080.01	$141,079.66	$141,829.93	$ 750.27

TREASURER'S REPORT—EXPERIMENT STATION.

Account.	Balance July 1, 1903.		Fiscal Year.		Total.		Support Fund.		Balance June 30, 1904.	
	Debit.	Credit.	Debit.	Credit.	Debit.	Credit.	Debit.	Credit.	Debit.	Credit.
Government appropriations				$ 15,000.00		$ 15,000.00		$ 15,000.00		
State support fund				10,000.00		10,000.00		10,000.00		
Salaries			$ 7,641.65	400.00	$ 7,641.65	400.00	$ 7,241.65			
Artist			690.00		690.00		690.00			
Director's fund		$1,951.80	2,721.31	.80	2,721.31	1,951.60	769.71			
Bulletin fund			2,230.72	13.80	2,230.72	13.80	2,216.92			
General expenses			1,076.37		1,076.37		1,076.37			
Agronomy section		68.90	2,595.13	461.14	2,595.13	550.04	2,045.09			
Soils sections			827.17		827.17		827.17			
Farm mechanics section			439.18		439.18		439.18			
Animal husbandry section			4,637.38	1,756.57	4,637.38	1,756.57	2,880.81			
Botanical section			814.23		814.23		814.23			
Chemical section			1,500.06		1,500.06		1,500.06			
Dairy section			1,188.40	242.13	1,188.40	242.13	946.27			
Entomology section			818.83		818.83		818.83			
Horticultural section		123.72	2,600.29	10.00	2,600.29	133.72	2,466.57			
Veterinary section			133.53		133.53		133.53			
Total		$2,143.92	$ 27,914.25	$ 27,903.94	$ 29,914.25	$ 30,047.86	$ 24,866.39	$ 25,000.00		
Balance	$2,143.92			2,010.31	133.61		133.61		$ 133.61	$ 133.61
Cash to balance										
Total	$2,143.92	$2,143.92	$ 29,914.25	$ 29,914.25	$ 30,047.86	$ 30,047.86	$ 25,000.00	$ 25,000.00	$ 133.61	$ 133.61

TREASURER'S REPORT—STEWARDS DIVISION.

Account.	Balance July 1, 1904.		Fiscal Year.		Total.		Balance June 30, 1904.	
	Debit.	Credit.	Debit.	Credit.	Debit.	Credit.	Debit.	Credit.
Boarding department			$ 302.95	$ 302.95	$ 302.95	$ 302.95		
Damages		$ 1.81		28.50		30.31		$ 30.31
Hospital		136.21	3,777.44	3,591.23	3,777.44	3,727.44		
Fires, lights and incidentals			32,525.50	32,525.50	32,525.50	32,525.50		
Piano rent			113.00	113.00	113.00	113.00		
A. M. Newens		6.00	6.00		6.00	6.00		
Balance	$ 194.02			163.71	30.31		$ 30.31	
Total	$ 194.02	$ 194.02	$ 36,724.89	$ 36,724.89	$ 36,755.20	$ 36,755.20	$ 30.31	$ 30.31

TREASURER'S REPORT.

The following is a complete statement of the transactions of the accounts for the fiscal year ending June 30, 1905.

Account.	Balance July 1, 1904.		Fiscal Year.		Total.		Support Fund.		Balance June 30, 1905.	
	Debit.	Credit.	Debit.	Credit.	Debit.	Credit.	Debit.	Credit.	Debit.	Credit.
Support funds, balance July 1, 1904		$3,850.30				$ 3,850.30		$ 3,850.30		
Interest on lands belonging to Cong'l grant				$ 157.46		157.46				
Interest on investment of endowment fund				35,107.57		35,107.57		35,107.57		
State addition support fund				100,416.66		100,416.66		100,416.66		
Iowa State fair scholarship			$ 125.00	200.00	$ 125.00	200.00				$ 75.00
Agricultural fellowship		447.54	530.83	475.00	530.83	922.54				391.71
Donation fund		223.83		36.00		259.83				259.83
Diploma fund		421.57	616.40	880.00	616.40	1,301.57				685.17
Room rent		679.61	2,326.56	1,909.90	2,326.56	2,589.51				262.95
Sale and wreckage			884.81	884.81	884.81	884.81				
Tuition		254.36	1,370.36	1,116.00	1,370.36	1,370.36				
Railroad damages		88.00				88.00				88.00
Agricultural journalism			458.33	458.33	458.33	458.33				
Good roads school			78.00	78.00	78.00	78.00				
Morrill support fund			25,000.00	25,000.00	25,000.00	25,000.00	25,000.00	25,000.00		
Salaries			48,491.01		48,491.01		48,491.01			
Agricultural chemistry			81.40		81.40		81.40			
Agronomy			2,025.63	897.49	2,025.63	897.49	1,128.14			
Animal husbandry			3,998.46	2,135.73	3,998.46	2,135.73	1,862.73			
Botany			3,055.84	981.03	3,055.84	981.03	2,074.81			
Chemistry			7,380.34	4,047.94	7,380.34	4,047.94	3,332.40			
Civil engineering			4,430.74	1,397.74	4,430.74	1,397.74	3,033.00			
Contingent expense			12,088.83		12,088.83		12,088.83			
Creamery			2,770.04	1,808.90	2,770.04	1,808.90	961.14			
Dairy			870.63	153.78	870.63	153.78	716.85			
Domestic economy			2,530.93	793.50	2,530.93	793.50	1,737.43			
English			4,006.35	543.20	4,006.35	543.20	3,463.15			
Farm			15,542.51	11,451.26	15,542.51	11,451.26	4,091.25			
Farm mechanics			2,327.23	1,292.79	2,327.23	1,292.79	1,034.44			
Farm crops			1,405.69	627.00	1,405.69	627.00	778.69			
French and German			2,322.93	.49	2,322.93	.49	2,322.44			
Geology			222.27	30.40	222.27	30.40	191.87			
History and philosophy			966.79		966.79		966.79			
Horticulture			4,913.60	1,362.20	4,913.60	1,362.20	3,551.40			
Library			5,730.45	159.75	5,730.45	159.75	5,570.70			
Mathematics			4,515.60		4,515.60		4,515.60			
Mechanical engineering			11,396.49	4,262.04	11,396.49	4,262.04	7,064.45			
Military			491.24		491.24		491.24			
Mining engineering			1,118.58	80.25	1,118.58	80.25	1,038.33			
Music			599.60		599.60		599.60			
Physics			4,478.37	954.77	4,478.37	954.77	3,523.60			
Political economy			48.87		48.87		48.87			
Public grounds			1,596.74	91.08	1,596.74	91.08	1,505.66			
Public rooms			15,000.00		15,000.00		15,000.00			
Public speaking			1,055.06	169.00	1,055.06	169.00	886.06			
Sabbath services			429.86	.50	429.86	.50	429.36			
Soils			1,224.03	303.00	1,224.03	303.00	921.03			
Zoology			2,290.40	751.93	2,290.40	751.93	1,538.47			
Veterinary			2,394.27	1,787.85	2,394.27	1,787.85	606.42			
Civics			44.88		44.88		44.88			
Engineering dean's office			247.05	2.85	247.05	2.85	244.20			
State appropriations		750.27	242,491.07	242,630.64	242,491.07	243,380.91				889.84
Total		$6,715.48	$443,804.07	$445,436.84	$443,804.07	$452,152.32	$158,83[illegible]	$144,531.99		$2,652.50
Balance support funds							5,695.75			5,695.75
Cash to balance as follows:										
Support funds	3,850.30		1,845.45		5,695.75				5,695.75	
State appropriations	750.27		139.57		889.84				889.84	
Miscellaneous accounts	2,114.91			352.25	1,762.66				1,762.66	
Total	$6,715.48	$6,715.48	$445,789.09	$445,789.09	$452,152.32	$452,152.32	$164,531.99	$164,531.99	$8,348.25	$8,348.25

STATE APPROPRIATIONS.

	Balance July 1, 1904.	Drawn from State Treas.	Expended During Year.	Balance June 30, 1905.
New Central building		$11,653.15	$11,653.15	
Pure bred stock				
Special building tax	$750.27	143,821.72	144,571.99	
Improvements and current expenses		23,937.50	23,937.50	
Central building additional		6,715.19	6,715.19	
Central heating plant		76.42	76.42	
Dairy building, farm and equipment		49,926.66	49,918.31	$8.35
Engineering experiment station		3,000.00	2,125.64	874.36
Good roads experimentation		3,500.00	3,492.87	7.13
Total	$750.27	$242,630.64	$242,491.07	$889.84

TREASURER'S REPORT—EXPERIMENT STATION.

Account.	Balance July 1, 1904.		Fiscal Year.		Total.		Support Fund		Balance June 30, 1905.	
	Debit.	Credit.	Debit.	Credit.	Debit.	Credit.	Debit.	Credit.	Debit.	Credit.
Government appropriations				$ 15,000.00		$ 15,000.00		$ 15,000.00		
State support fund				28,125.00		28,125.00		28,125.00		
Salaries			$ 12,020.26	400.00	$ 12,020.26	400.00	$ 11,620.26			
Director's fund and artist		$ 133.61	1,510.41	13.35	1,510.41	146.96	1,363.45			
General expenses			1,060.70		1,060.70		1,060.70			
Bulletins			4,660.35	2.25	4,660.35	2.25	4,658.10			
Animal husbandry section			11,437.98	4,840.01	11,437.98	4,840.01	6,597.97			
Agronomy section			4,796.58	1,599.24	4,796.58	1,599.24	3,197.34			
Soils section			1,179.32		1,179.32		1,179.32			
Botanical section			1,306.94		1,306.94		1,306.94			
Chemical section			3,134.87	303.31	3,134.87	303.31	2,831.56			
Dairy section			198.52	15.37	198.52	15.37	183.15			
Entomological section			519.09	.20	119.09	.20	518.89			
Farm mechanics section			1,611.33	583.45	1,611.33	583.45	1,027.88			
Horticulture section			3,012.12	288.87	3,012.12	288.87	2,723.25			
Photography section			710.33	400.77	710.33	400.77	309.56			
Veterinary section			10.10		10.10		10.10			
Emergency and building section			110.50		110.50		110.50			
Total			$ 47,279.40	$ 51,571.82	$ 47,279.40	$ 51,705.43	$ 38,698.97	$ 43,125.00		
Balance	$ 133.61		4,292.42		4,426.03		4,426.03			$4,426.03
Cash to balance									$4,426.03	
Total	$ 133.61	$ 133.61	$ 51,571.82	$ 51,571.82	$ 51,705.43	$ 51,705.43	$ 43,125.00	$ 43,125.00	$4,426.03	$4,426.03

TREASURER'S REPORT.—STEWARD'S DIVISION.

Account.	Balance July 1, 1904.		Fiscal Year.		Total.		Balance June 30, 1905.	
	Debit.	Credit.	Debit.	Credit.	Debit.	Credit.	Debit.	Credit.
Damages		$ 30.31				$ 30.31		$ 30.31
Hospital			$ 3,472.20	$ 3,804.78	$ 3,472.20	3,804.78		332.58
Fires, lights and incidentals			35,605.19	35,617.00	35,605.19	35,617.00		11.81
Piano rent			121.50	121.50	121.50	121.50		
Balance	$ 30.31		344.39				$ 374.70	
Total	$ 30.31	$ 30.31	$ 39,543.28	$ 39,543.28	$ 39,198.89	$ 39,573.59	$ 374.70	$ 374.70

REPORT OF THE SECRETARY.

1904-1905.

It is the purpose of this report:

1. To explain the method adopted by the Board of Trustees in handling the finances of the college.
2. To give a brief history of the fiscal operations of the past two years.
3. To show as clearly as may be the present financial condition of the college.

The subject-matter of the report is classified under the following heads:

1. Membership of Board of Trustees and list of committees.
2. Powers of Board and duties of committees.
3. The College Plant.
4. The College Endowment fund.
5. New buildings, improvements and repairs.
6. Other special appropriations by the state.
7. Support funds.
8. Total receipts and disbursements for the biennial period.
9. Available resources for 1905-1906 and how same are to be used.
10. Graduates and degrees.

BOARD OF TRUSTEES

Ex-Officio—Hon. Albert B. Cummins Governor of Iowa.
Ex-Officio—Hon. John F. Riggs, Superintendent of Public Instruction.

	Term Expires.
First District—Hon. H. M. Letts, Columbus Junction	1910
Second District—Hon. Vincent Zmunt, Iowa City	1910
Third District—Hon. E. A. Alexander, Clarion	1908
Fourth District—Hon. Ellison J. Orr, Waukon	1910
Fifth District—Hon. W. R. Moninger, Marshalltown	1906
Sixth District—Hon. W. O. McElroy, Newton	1908
Seventh District—Hon. W. K. Boardman, Nevada	1906
Eighth District—Hon. Geo. S. Allyn, Mt. Ayr	1910
Ninth District—Hon. James H. Wilson, Adair	1908
Tenth District—Hon. J. B. Hungerford, Carroll	1906
Eleventh District—Hon. W. J. Dixon, Sac City	1906

OFFICERS OF THE BOARD.

Hon. J. B. Hungerford, Carroll	Chairman
E. W. Stanton, Ames	Secretary
Herman Knapp, Ames	Treasurer
W. A. Helsell, Odebolt	Financial-Agent
Ben Edwards, Ames	Custodian

STANDING COMMITTEES.

(a). General Committees.

Committee on Faculty and Courses of Study—Trustee McElroy, Supt. Riggs, Trustees Hungerford, Dixon, Alexander, and Zmunt.
Finance Committee—Gov. Cummins, Trustees McElroy, Hungerford, Alexander, Allyn, and Dixon.
Building Committee—Trustees Dixon, Hungerford, Letts, Moninger, and Wilson
Committee on Rules—Trustees Orr, Zmunt, and McElroy.
Committee on Bonds and Contracts—Trustees Moninger, and Wilson.
Committee on Endowments—Trustee Allyn, Governor Cummins, and Trustee Moninger.
Purchasing Committee—E. W. Stanton, Herman Knapp, W. H. Meeker, and Trustees McElroy and Orr.

(b). Department Committees.

Committee on Agriculture—Trustees Letts, Boardman, Moninger, Allyn, Orr, and Governor Cummins.
Committee on Engineering Departments—Trustee Zmunt, Supt Riggs, Trustees Orr, McElroy, and Dixon.
Committee on Scientific Departments—Trustees Alexander, Riggs, Allyn, Orr, and Boardman.
Committee on Literary Departments and Library—Trustees Wilson, Zmunt, Supt. Riggs. Trustees Boardman, and Alexander.
Committee on Public Grounds and Assignment of Rooms—Trustees Hungerford, Zmunt, and Letts.
Committee on College Hospital and Sanitary Arrangements—Supt. Riggs, Trustees Zmunt, and Wilson.

POWERS OF BOARD AND DUTIES OF COMMITTEES.

The powers of the Board in the financial management of the College are stated succinctly in the Code as follows:

The Board shall have power—

1. To manage and control the property of the college and farm, whether real or personal.
2. To direct the expenditure of all the appropriations the General Assembly shall from time to time make to said College and farm, and the income arising from the congressional grants and all other sources.

The President of the College submits to the Board at its annual meeting a written report upon the needs of the different departments, together with his recommendation as to how the funds available for the year shall be apportioned. The department committees of the Board consider and report upon those matters which relate especially to the

departments of which they have charge. Their recommendations when they involve the expenditure of money, are referred to what are known as the general committees of the Board whose membership represents all sides of college work. These committees also consider the recommendations which come to them directly from the president's report. The following is a list of such general committees with their duties:

1. Committee on Faculty and courses of study, which considers and makes recommendations concerning all matters relating to the teaching force of the college, or to its courses of study.
2. Finance Committee, which investigates and reports upon all appropriations from college support funds recommended by department committees and upon such other matters relating to college finances as the Board may see fit to place in its hands. It is the special duty of this committee to see that the appropriations from the support fund do not exceed the income of the college.
3. Building Committee, to which are referred all matters pertaining to the erection, repair or improvement of buildings, including appropriations from the annual repair and improvement fund. This committee has general charge, under the direction of the Board, of the disbursement of all building and repair funds.
4. Committee on Rules, which considers and reports upon all propositions for the amendment, repeal or adoption of standing rules for the government of the Board, or the College, in its several departments.
5. Committee on Bond and Contracts, which has charge of the prompt filing of all bonds ordered by the Board, examines all bonds and contracts and reports upon the efficiency of the same. This committee examines all bonds of officers at each annual meeting of the Board and reports all their acts, findings and recommendations to the Board.
6. Committee on Endowments, to which are referred all questions concerning the investment, management or control of endowment funds, or the sale, management or disposition of lands constituting part of the endowment fund of the college.
7. Purchasing Committee consisting of the Secretary of the Board, the Treasurer of the College, a member of the faculty elected by the Board of Trustees, and two members of the Board appointed by its chairman. It is the duty of this committee to obtain, whenever practicable, competitive bids on all supplies to be purchased by the college. This committee has full authority and it is its duty to purchase or direct the purchase of all supplies, apparatus and equipment necessary for the maintenance of the college and it has full authority as to how, of whom, and by whom these purchases shall be made, and to formulate such methods of handling the business as it shall find to the best interests of the college, subject to such rules as the Board shall enact. No purchase is made by any department, except upon the written consent of this committee.

The trustees are authorized to elect such officers as are required for the transaction of the business of the college, fix their salaries, and prescribe their duties. Much of the detail work is naturally done by such officers. The duties of these officers as well as the character and scope of the work of the standing committees will be further explained in connection with the presentation of the particular part of the business affairs of the college of which they have charge.

The property of the college which the Board of Trustees is empowered to manage and control consists of the College Plant and the College Endowment Fund.

THE COLLEGE PLANT.

The Thirtieth General Assembly appropriated to the college the sum of $22,000 with which to purchase additional land as a dairy farm. Contracts have been made by the Board under which the college will obtain 190 acres advantageously situated for $19,260. Certain improvements to be made by the present owner are to be paid for by the college, which will slightly increase this amount. The Executive Council has begun condemnation proceedings under which an additional ten acres greatly needed because of its location, will probably be secured at a cost of $2,100. The foregoing items, together with the cost of condemning the latter tract will exhaust the appropriation. Since the 190 acres is contracted for and the appropriation for its purchase will be available in the near future, it is listed as a part of the college domain. The figures used in the exhibit which follows represent present value rather than original cost. They convey a fairly correct idea of what the college plant is worth.

SUMMARY OF COLLEGE INVENTORIES.

Farm property, 58,138 acres at $100	$ 58,138.00	
Dairy farm, 190 acres,	19,260.00	
Experiment Station grounds, 60 acres at $100	6,000.00	
Plots for Horticultural Experiments, 13 acres at $85	1,105.00	
Orchard and Arboretum, 25 acres at $100	2,500.00	
College Campus, 125 acres at $100	12,500.00	
College Park, 37 acres at $60	2,220.00	
Total for 1,031.38 acres		101,723.00
Buildings—		
Central Building when completed, including furnishings	407,000.00	
Margaret Hall	60,000.00	
Morrill Hall	40,000.00	
Chemical and Physical Building	35,000.00	
Music Hall	5,000.00	
Chime and Clock Tower	7,000.00	
College Hospital	5,500.00	
Office Building	7,000.00	
Book Department Building	1,800.00	
Boarding Cottages	10,000.00	
Engineering Hall (not including furnishings)	195,000.00	
Engineering Laboratory	12,000.00	
Carpenter Shop	5,000.00	
Forge Shop	5,000.00	
Power Station	7,000.00	
Old Pumping Station Plant	500.00	
Fire Department Building	400.00	
Foundry Store House	75.00	
Greenhouses	19,000.00	
Horticultural Laboratory	8,000.00	
Veterinary Hospital	8,000.00	
Agricultural Hall	110,000.00	
Dairy Building	55,000.00	
Horticultural Barn	5,500.00	
Cattle Barn	15,000.00	
Feeding Sheds	2,500.00	
Experiment Station Barn	18,000.00	
Horse Barn and Stock Judging Pavilion	15,000.00	
Corn and Stock Judging Pavilion	13,000.00	
Hog House	1,500.00	
Movable Hog Houses (fifteen)	500.00	
Sheep Barn	1,500.00	
North Hall	2,500.00	

Residences occupied by—		
President Storms	13,000.00	
Professor Curtiss	5,000.00	
Professor McKay	2,500.00	
Professor Bissell	2,500.00	
Professor Summers	2,500.00	
Professor Noble	3,000.00	
Professor Stanton	5,000.00	
Professor Marston	4,500.00	
Professor Holden	1,500.00	
Horticultural Foreman	1,000.00	
Experiment Station Foreman	1,000.00	
Farm Laborer	800.00	
Boarding Club	800.00	
Total buildings		1,121,375.00
General Equipment—		
Waterworks, including water tower, deep well, pumping machinery and piping system	36,500.00	
Power Plant, including three boilers, four high-speed engines, piping, boiler and engine room appliances, etc	15,000.00	
Electric Light, including switch board appliances, pole line and transformers	7,000.00	
Sewage System	5,500.00	
Sewage Disposal System	3,000.00	
Office Building Furniture	1,044.50	
Furniture of Public Rooms	4,405.00	
College Hospital Furniture	1,035.25	
Boarding Department	228.30	
Fire Department	1,525.00	
Total General Equipment		75,238.05

DEPARTMENT EQUIPMENT.

Experiment Station—		
Bulletin Rooms	374.15	
Agronomy Section	2,180.80	
Animal Husbandry Section	7,182.00	
Horticultural Section	961.30	
Chemical Section	4,689.43	
Botanical Section	778.60	
Dairy Section, including Bacteriology	856.99	
Entomological Section	1,567.05	
Veterinary Section	848.33	
Photograghic Section	651.53	
Total Station Equipment		20,090.18

Farm Department	32,568.73	
Agronomy Department	712.74	
Farm Mechanics Department	12,775.63	
Farm Crops Department	922.47	
Soils Department	4,547.49	
Animal Husbandry Department	1,165.92	
Dairy	327.79	
Creamery	535.75	
Horticultural Department	1,098.80	
Veterinary Department	2,944.93	
General Chemistry	15,583.56	
Zoology	16,440.89	
Botany	20,326.10	
Physics and Electrical Engineering, including Equipment and Furniture	26,289.21	
Civil Engineering, including Equipment and Furniture	15,415.42	
Mechanical Engineering, including Equipment and Furniture	31,914.65	
Mining Engineering and Geology, including Equipment and Furniture	12,107.47	
Domestic Economy	1,730.15	
Military Department	275.50	
Public Grounds	156.05	
Library	55,000.00	
Music Department	2,049.00	
Pipe Organ and Piano	1,750.00	
Chimes and Clock	9,000.00	
Total Department Equipment...		265,638.27
Total value of College Property, exclusive of Endowment Fund.....		$1,584,064.50

THE COLLEGE ENDOWMENT FUND.

The endowment fund amounts to $683,708.53. It is accounted for as follows:

Invested in land	$ 4,162.63	
Invested in farm mortgages	676,800.00	
Cash awaiting investment	2,745.89	
Total		$683,708.52

Land to the amount of 680 acres has been patented during the biennial period. This land was leased in the early days of the institution upon ten year leases which gave to the lessee the right of purchase at the expiration of his lease at the original low valuation. The leases

bore 8 per cent interest, payable in advance. Since it was considered a good investment of college funds many leases, as they expired, were renewed; but of course at the old appraisement, as any attempt to increase the valuation would naturally have led the lessee to exercise his right of purchase. The leases now in existence have been renewed a number of times and the college investment in each is very small as compared with the market value of the land. The payments on account of the land patented during the two years amount to $2,990, which sum has been remitted by Agent Knapp to the State Treasurer and credited by him to the financial agency. The following is the unpatented land:

1. A tract of 40 acres in Polk county obtained under foreclosure and costing the college		$2,418.55
2. Three tracts containing 336.02 acres, belonging to the original grant, leased in the early days of the college, with privilege of purchase. College interest in same..		1,744.08
Total investment in land		$4,162.63

The Polk county tract is managed directly by the Board and is at present leased on short time at $85.00 per annum. The other tracts are under the management of Agent Knapp and yield 8 per cent each year, on the college investment in the land. The balance of the endowment fund, amounting to $679,545.89, is under the charge of the financial agent, W. A. Helsell of Odebolt.

The following exhibit shows the operations of the agency during the biennial period:

Uninvested balance at the beginning of the period		$ 105.89
Loans paid during the two years		163,150.00
Lands patented and proceeds credited to the Agency		2,990.00
Total to be loaned		$166,245.89
The agent has loaned during the two years:		
On 6% mortgages	$23,800.00	
On 5½% mortgages	23,300.00	
On 5% mortgages	163,500.00	
Leaving balance uninvested—		
In hands of State Treasurer	3,245.89	
Substracting amount temporarily advanced by Agent Helsell	500.00	2,745.89
Total		$166,245.89

Loans amounting to $38,850 were renewed during the year, making a total of new and renewed loans of $202,350.

The following shows the present condition of the endowment fund as a whole:

Land under lease at 8%	$ 1,744.08
Polk county tract at $85 per annum	2,418.55
Farm mortgages bearing 7% interest	11,100.00
Farm mortgages bearing 6% interest	105,950.00
Farm mortgages bearing 5½% interest	23,300.00
Farm mortgages bearing 5% interest	536,450.00
Total yielding income	$680,962.63
Balance uninvested	2,745.89
Total Fund	$683,708.52

For some reason the borrower under loan No. 749 is delinquent in both principal and interest. The loan has been ordered foreclosed. The principal of the loan is $2400. The security is a farm of 160 acres in Clay county valued at $5600, with buildings excluded. Two installments of interest are due. Aside from this there are only two other loans No. 662 and No. 672 on which the interest, which amounts to $258, is delinquent. This is a pretty fair showing considering the amount of the fund.

Prior to 1882 the endowment fund could be invested only in stocks of the United States, or of the states, or some other safe stocks. In that year congress passed an act permitting Iowa to loan the fund on real estate security. The state being responsible to the national government for any loss of the principal of the fund the general Assembly hesitated to avail itself of the privilege thus granted. After most careful consideration the present law, with its many safeguards was enacted. Under its provisions the fund itself is deposited with the state treasurer who is also custodian of the bonds, mortgages and other papers connected with the loans. The loans are negotiated by a financial agent, appointed by the trustees who gives a bond of $50,000. He is allowed an annual salary of $1200 and a limited sum to cover his office expenses, both of which amounts are paid by the state, out of its treasury, as provided in the national law. The agents drafts are countersigned by the Secretary of the Board and the papers connected with each loan pass through the secretary's office. The state treasurer makes monthly report to the secretary of all principal and interest collected. The secretary is thus enabled to keep an account with each officer, having to do with the fund, and his books show at all times the condition of each loan. During the life of the agency a total of $1,765,575. 80 has been loaned. Only two mortgages have been foreclosed, both of which have resulted in increasing the amount of the endowment. The wise and conservative management of the fund is a credit to the college and the state. Its safety under the present law seems assured.

The loans and renewals during the biennial period, as already shown, amount to $202,350. The cost of the agency including salary of agent and office expenses, amounts to $3,047.27 for the two years.

NEW BUILDINGS, IMPROVEMENTS AND REPAIRS.

1903—1905

The expenditures for buildings, improvements and repairs during the biennial period were as follows:

Completion of Engineering Hall		$ 3,965.86
Addition to Agricultural Hall, the Stock Judging Pavilion, and the greenhouses, including fixtures and equipment		89,243.44
Central Building		190,628.99
Dairy Building and Fixtures		49,918.31
Central Heating Plant		76.42
Remodeling Chemistry Laboratory	12,973.36	
Horticultural Barn and Implement shed	6,213.89	
Agricultural Hall, Improvements and repairs	2,923.63	
Improving and repairing heating, lighting and water supply system	4,885.73	
Other repairs and improvements specified hereafter	18,776.89	45,773.50
Total		$379,606.52

The funds to meet these expenditures were derived from the following sources:

From the State	$376,270.52
From tuition paid by students living outside the State	3,336.00
Total	$379,606.52

The particular legislative appropriations involved, and an account of their expenditure, are given under the special headings which follow:

ENGINEERING HALL.

Special Building tax $3,965.86

This building was very near completion at the beginning of the biennial period. The elevator remained to be installed and a little additional work upon the heating, lighting and plumbing system needed to be done. The following is a summary of the expenditures coming within the time covered by this report:

Elevator and installing same	2,808.29
Wiring	203.03

Drawing boards	185.85
Heating, plumbing and blackboards	153.07
Architect's fee, balance in full	563.57
Tinting front hallway	50.00
Freight and express	2.05
Total	$3,965.86

The completed building including the heating, lighting and plumbing system and all fixtures, fittings and furnishings cost $218,647.61.

NEW AGRICULTURAL BUILDINGS.

Special Building Tax $89,243.44

These improvements include a fire proof addition to Agricultural Hall, a two-story stock and grain judging pavilion, additional feeding sheds for the departments of Horticulture, Agronomy and Soils, and an insectary for the Entomological Section of the Experiment Station. While most of the expenditures for these improvements come within the biennial period ending June 30th, nearly all the contracts relating thereto were made in the period just preceding. A full statement regarding them will be found on pages 92 to 95 of the last biennial report also an itemized account of the expenditures included in that biennial period. The following exhibit shows the expenditures for the past two years:

Balance on C. E. Atkinson's contract for the erection of addition to Agricultural Hall, the Stock Judging pavilion and the greenhouses		
Amount of contract	$53,752.00	
Less amount paid	5,265.00	$48,487.00
Extras covering items omitted from original contract		2,527.16
Atkinson's contract for erection of insectary	1,982.00	
Less amount charged Station Fund	750.00	1,232.00
Atkinson's contract for erection of feeding sheds	1,565.00	
Less amount paid	630.00	935.00
Iowa Manufacturing Company's contract for heating and plumbing	13,972.00	
Extras by contractor	268.83	14,240.83
Additional by College		24.03
Phoenix Furniture Company's contract for special furniture	7,225.00	
Extras	22.50	7,247.50

Des Moines Manufacturing & Supply Company contract for shop equipment	6,335.00	
Extra equipment purchased	465.53	6,800.53
Martin-Culbertson Company's contract for chairs and stools		1,714.00
Baker-Trisler Company's contract for filing cases		315.95
Campbell Heating Company's contract for judging pavilion furnace		
Amount of contract	535.00	
Deduction	15.79	
		$ 519.21
Kimball Bros. Company's contract for elevator	735.00	
Extras—foundations, etc	34.30	
Work and material furnished by college	58.12	827.42
L. Harbach's contract, curtains		177.85
Moving and installing heating plant—brick mason at 50cts per hour, carpenters at 30cts per hour, students labor at 12½ to 15cts per hour		1,192.79
Moving buildings at 25cts per hour		439.33
Inspection at 20cts per hour		112.90
Architect, 3 per cent for plans, specifications and general superintendence		2,150.75
Surveying and cement testing at 20cts per hour		21.25
Drainage		49.89
Flooring and shelving in south-east basement floor		86.00
Moving potting house		12.15
Fire doors		48.35
Advertising in trade journals at 5cts per line per insertion; testing cement at 20cts per hour; telephone, telegrams, express		36.13
Traveling expenses as follows:		
Expenses of Prof. Holden, two trips to Des Moines to consult architect regarding plans for stock judging pavilion	8.54	
Expenses Trustee Dixon, chairman building committee, trip to Des Moines and Chicago to confer with architect and contractor	36.88	45.42
Total		$89,243.44

The expenditures on account of these improvements prior to the last biennial period as shown in the secretary's report amounted to	$ 6,574.42
Adding the expenditures during the last biennial period	89,243.44
We have as the cost to the State of the completed buildings	$95,817.86

THE CENTRAL BUILDING.

Funds	Amount Expended
Appropriation of 29th General Assembly for beginning building	$35,000.00
Special building tax	148,913.80
Appropriations of 30th General Assembly for completion of building	6,715.19
Total	$190,628.99

A history of the initial steps in the erection of this building is given in the last biennial report, pages 89 to 92. At the time that report was written a contract had been entered into with Mr. H. W. Schlueter of Chicago, to erect the building for $262,000. In order to bring the cost down to these figures a number of important features had been omitted from the architect's original designs. The trustees appealed to the last legislature for an appropriation to restore the most important of these items and to provide for the heating, lighting and plumbing and the necessary fixtures and furnishings. The general assembly appropriated the following sums:

For restoring dome (dome, attic story, east portico, four pilasters on the west side and the pediment over the same)	$22,000.00
For restoration of granite instead of Bedford stone for base and steps	12,000.00
For heating, lighting, plumbing and fixtures	29,000.00
Furnishings	32,000.00

In the matter of the dome the Board availed itself of an option in the Schlueter contract in which he agreed to build the same for $22,500. The $500 in excess of the appropriation was ordered charged to the Special Building Tax fund. An agreement was entered into with Mr. Schlueter in which he consented to substitute granite for Bedford stone in the base and steps, for the amount of the appropriation, $12,000. Plans and specifications were prepared by the architect for the heating, ventilating and plumbing systems, and bids secured. These bids which were opened by the Board at its meeting in July, 1904 were all in excess of the funds available. The plans were modified, and new bids secured which were opened at the Board meeting in September. The bids for heating and ventilating ranged from $19,400 to $23,400 and those for plumbing from $13,400 to $14,800. L. H. Kurtz & Company offered to install the heating and ventilating systems and do the plumbing for actual cost plus 10 per cent for superintendence. All bids were rejected and the Chairman of the Building

Committee was directed to consult with the Kurtz Company. The Company submitted a new proposition in which they agreed to furnish all the necessary material and labor mentioned in the specifications and shown in the drawings of the architect at net cost plus 10 per cent of such net cost for superintendence and use of tools; the college to have the advantage of all trade and cash discounts. The Company also agreed to guarantee that the cost to the college would not exceed $26,800, the amount of the lowest bids on the work after deducting $6000 for omitting certain marble work in the toilet rooms. A contract was made with the company upon this basis. Professor Bissell reports that considerable plumbing in addition to that included in the contract has been found necessary but that the cost of the entire work, extras included will probably not exceed the $26,800 originally specified. This will leave $2200 of the special legislative appropriation of $29,000, which amount will be applied on wiring the building.

The Board at its meeting in May, 1905 authorized the architect to prepare plans and specifications for the furnishings for Central Building provided for by the legislative appropriation of $32,000. The plans were prepared and adopted. Strict orders were given that the total cost should not exceed the amount of the appropriation.

The following exhibit shows the amounts expended on account of the Central Building during the biennial period:

Charged Special Appropriation of 29th General Assembly for commencing building:		
Payments on Schlueter's contract		35,000.00
Charged Special Building Tax.		
H. W. Schlueter's contract for erection of building		140,203.76
Proudfoot & Bird, architects' fee		4,500.00
Extra excavation and water pipes, excavation at 17½cts per hour		113.72
Expenses of professors inspecting other institutions for the purpose of planing laboratories—		
Prof. L. H. Pammel, trip to Washington, Chicago, Philadelphia, New York, New Haven, Boston, Geneva and Ithaca, investigating laboratories	75.87	
R. E. Buchanan, trip to Minneapolis, Madison, Chicago, Lansing and Ann Arbor for the same purpose	25.16	101.03
Expenses of Trustees in connection with building—		
Chairman Dixon, one day in Chicago, consulting about stone	3.00	
Chairman Dixon, trip to Chicago and Milwaukee		

to confer with Contractor Schlueter about material and change of contract	31.80	
W. O. McElroy, trip to Chicago to confer with Contractor Schlueter regarding material and changes in contract	28.52	63.32
Superintendent's stenographer and clerk	731.24	
Making estimates and inspecting at mills and upon building, local inspector paid 20cts per hour	1,120.17	
Testing cement at 20c per hour	170.43	
Moving boilers from present site of central building, mason at 50cts per hour, cleaning brick at 10 to 15cts per hour, plumbers at 25cts per hour, wiring at 20cts per hour	943.22	
Central Building drain	856.04	
Advertising, telephone, telegraph, freight, express and drayage	104.82	
Surveying a site at 20 cts per hour	6.05	3,931.97
Charged special appropriation of the 30th General Assembly for completion of building:		
L. H. Kurtz Company on contract of $26,800 for installation of heating and ventilating plant	5,251.75	
Heating, lighting, wiring and plumbing (exclusive of above named contract)	1,325.73	
Helping electrician at 15 to 20cts per hour, electricians 25cts per hour, plumbers 25cts per hour; telegrams, telephone, freight, express, drayage, stationery	98.51	
Advertising for bids	39.20	6,715.19
Total for biennial period		$190,628.99

The following exhibit shows the probable cost of the completed building. It includes the heating, lighting and plumbing systems and all fixtures and furnishings necessary to equip the building for use.

H. W. Schlueter's original contract for the erection of the building	262,000.00
Extra for restoring dome, attic story, east portico, four pilasters on the west side and the pediment over the same	22,500.00
Substitution of granite for Bedford stone in base and steps	12,000.00
Substitution of tile for composition roofing (including tile for dome)	3,100.00
Substitution of marble stair treads for slate treads	750.00

Substitution of scagliola for Keene's cement columns and pilasters	5,000.00	
Substitution of terrazzo for cement floors in corridors of ground floor and first and second stories	4,200.00	
Miscellaneous extras on building contract (estimated)	3,000.00	312,050.00
L. H. Kurtz Company's contract for installing heating, ventilating and plumbing systems.		26,800.00
Motors for running ventilator fans to be furnished by the college		800.00
Holbrook Mantle and Tile Co.'s contract for marble work in the four boiler rooms on the ground floor and in room 113 first floor		4,050.00
S. A. Berkemeyer's contract for blackboards		1,692.00
Wiring the building for electric lights, including conduits; work done by the Mechanical Engineering department (estimated)		5,700.00
Contract with the Mitchell Vance Company for electric light fixtures		3,000.00
Art Metal Construction Company's contract for putting in steel balcony and steel filing cases in treasurer's vault		1,742.30
Younker Bros. contract for window shades		358.00
Architect's fee on building (including heating, lighting, and plumbing systems and extras) 3 per cent of cost		10,340.00
Expenses of Botanical professors in inspecting other institutions for the purpose of planning laboratories		101.03
Expenses of trustees in connection with building		171.85
Superintendent's office expenses, including stenographer and clerk		975.00
Making estimates and inspecting at mills and upon building		1,480.00
Moving old heating plant from present site of building		1,072.91
Drain for building		856.04
Testing cement, and extra excavation in basement		283.72
Surveying site, advertising for bids, telephone, telegraph, freight, express and drayage, estimated		200.00
Book shelves and fixtures for president's room and History and English Depts.		662.00
Tinting walls		1,600.00
Furnishings, estimated at amount of state appropriation		32,000.00
Miscellaneous extras on heating, lighting, plumb-		

ing and fixtures	500.00
Total cost of building completed and furnished	**$406,934.85**

The amounts will be charged to the several funds as follows:

Special appropriations for beginning building...	35,000.00
Special building tax	276,934.85
Special fund for completing and finishing building	95,000.00
Total	$406,934.85

DAIRY BUILDING, FARM AND EQUIPMENT.

The 30th General Assembly appropriated to the college the sum of $84, 500.00 to be used as follows:

For Dairy Building	$45,000.00
For equipment of Dairy Building	10,000.00
For land	22,000.00
For herd, equipment of Dairy Farm	7,000.00
For poultry and equipment of Dairy Farm	500.00

It was provided in the Appropriation Act that not more than $550,000 of the amount appropriated should be paid before July 1st, 1905. This was evidently intended to cover the erection and equipment of the Dairy Building. The Board at its meeting in April, 1904 employed architects Proudfoot & Bird of Des Moines to prepare plans and specifications upon the basis of 3 per cent of cost for all service rendered, including general oversight of construction. Plans for the building were drawn and approved, and bids secured. These bids were opened by the Board at its meeting in June, 1904. They ran as follows:

Henry W. Schlueter	$47,800.00
Marcus M. Hall	59.000.00
John R. Geir	55,841.00
E. W. Nichols & Company	59,787.45

Mr. Schlueter offered to erect the building with concrete system of fire-proofing inste ad of Columbian, the same to accord with the architects' specifications, to be subject to satisfactory test by the Board, and to be approved by the college engineer, Professor Marston, for the sum of $45,800.00. The bidders submitted figures upon deductions they would make provided certain changes were made in the plans and specifications. Mr. Schlueter's deductions amounted to $2,608.00, the others ran in order as follows:--$1,280.00, $2,520.00 and $2,200.00. Subtracting Mr. Schueter's proposed deductions from his proposition

based on the concrete fire-proof construction, and his bid amounted to $43,192.00. This bid was accepted and contract made in accordance therewith. The amount of the contractor's bond was fixed at $11,000.00 and was furnished by the U. S. Fidelity and Guaranty Company of Baltimore, Maryland. Dean C. F. Curtiss was appointed local superintendent of construction.

In the matter of heating and plumbing for this building, plans and specifications were prepared by the architects and bids submitted to the Building Committee. Those first submitted exceeded the amount available and new bids were secured based on modified plans. These were opened by the Committee on November 10, 1904 and found to run as follows:

	Plumbing	Heating
Sanitary Heating & Plumbing Co.	$4,300.00	$2,830.00
L. H. Kurtz Company	3,837.00	2,487.00
Wallace & Linnane	4,153.00	2,358.00

Contracts were let to the lowest bidders as follows:

L. H. Kurtz Company, plumbing	$3,837.00
Wallace & Linnane, heating	2,358.00

Bonds of approved surety companies in the sum of $1000 and $600 were furnished. An agreement was entered into with the Powers Regulator Company to install their pipe system of automatic regulation of temperature for the sum of $350.00. The Mechanical Engineering Department of the college was authorized to wire the building for electric lights and procure drop cords at a cost not to exceed $500.00. It being necessary to install, in advance of other fixtures, certain laboratory tables in order that the plumbers might go ahead with their contract, bids were secured on fourteen pieces of such special furniture. These bids were opened by the Building Committee April 5, 1905 and ranged as follows:

Martin-Culbertson Company	$1,500.00
National Wood works	1,620.00
Northwestern Furniture Company	1,631.90
Toledo Desk & Fixture Company	1,344.00

The contract was let to the last named firm at their bid of $1,344.00.

Bids on the remainder of the special laboratory furniture and on most of the other fixtures and furnishings were received and opened by the Board May 11, 1905.

The following are the bids:

	Filing Cases	Chairs Stools and Desks	Special Laboratory Furniture	Window Shades
Martin-Culbertson Co			$2,937.80	
Toledo Desk & Fixture Co			2,963.35	
Northwestern Furniture Co	$775.00	$780.00	4,277.00	
Harris-Emery Co				$274.00
Baker-Trisler Company	760.75	687.54		

Contracts were awarded as follows:

Martin-Culbertson Company, special laboratory furniture	$2,937.80
Harris-Emery Company, window shades	274.00
Baker-Trisler Company, filing cases, stools, chairs and desks	1,448.29

Martin-Culbertson Company refused to sign the contract awarded them because they wocld be obliged to wait for payment until May 1, 1906, when funds would become available. The offer of the Toledo Desk and Fixture Company to take the contract for $2,937.00 was accepted. With this change the contracts were signed up.

The Board received a number of propositions for installing a refrigerating machine in the Dairy Building. It being very difficult to make an intelligent comparison of these propositions because of the difference in the plan and construction of the various machines, a special committee consisting of Professors Meeker and McKay and Wilson was appointed to purchase such machine as they considered best, after a full investigation. The committee awarded contract to the Vilter Manufacturing Company of Milwaukee, Wisconsin, on their bid of $3,220.00. Kimball Brothers Company of Council Bluffs were given the elevator contract at $1,100.00. Only a portion of the work covered by these contracts is included in the expenditures of the last biennial period. The following exhibit shows the total payments made during that time:

Advertising		$ 31.53
Freight, express and telephone		10.11
Testing cement		39.55
Grading		6.80
Inspection and surveying		154.50
Schlueter's Contract—		
Amount of contract	$43,192.00	
Reserved	3,050.00	
Amount paid		40,142.00
Extras on Schlueter's Contract—		
Amount of extras allowed	2,182.46	
Deduction because of change in roof tile	700.00	1,482.46

Wallace & Linnane, Heating Contract—		
Amount of contract	2,358.00	
Deduction under agreement	50.00	2,308.00
Other bills against the heating system		31.63
Powers Regulator Co.—		
Pipe system for automatic regulation of temperature		350.00
L. H. Kurtz Plumbing Contract—		
Amount of contract	3,837.00	
Unpaid	487.00	3,350.00
Other plumbing bills		2.62
Electric lighting		477.86
Architects' fee (estimated)	2,000.00	
Unpaid	519.00	481.00
Steel bars for floors and other extras		50.25
Total		$19,918.31

The following exhibit shows the probable cost of the completed building:

H. W. Schlueter's contract		$ 43,192.00
Extras on Schlueter's contract, due largely to change and modification of building	2,686.45	
Less deduction because of change in tile	700.00	1,986.45
Wallace & Linnane, heating contract, less $50.00 deduction		2,308.00
Powers Regulator Company, system for regulation of temperature		350.00
L. H. Kurtz Company, plumbing contract		3,837.00
Electric wiring and drop cords		557.31
Toledo Desk & Furniture Company's contracts for special laboratory furniture		4,281.00
Harris-Emery Company's contract, shades		274.00
Baker-Trisler Company's contract for filing cases, stools, chairs and desks		1,448.29
Vilter Manufacturing Co.'s contract for refrigerating plant		3,220.00
Foundations and connections for ice machine		477.80
Belting, hangers and shafting (estimated)		285.00
Creamery vats, tin conductors and pump		310.00
Covering refrigerator pipe and additional plumbing needed		600.00
Kimball Bros. Company's contract for elevator		1,100.00
Gates for elevator		200.00
Electric Motors, generators and cables (estimated)		3,500.00
Electric light fixtures, switchboard and meters		350.00
Robbins Mfg. Company's contract for screens		267.00

Grand Rapids School Furniture Works Co.'s contract for recitation room chairs	510.00
Architects' fees (estimated)	2,000.00
Advertising for bids	31.53
Inspection and surveying	154.50
Freight, express and telephone	11.15
Testing cement, grading, extras on heating system, extras on plumbing, steel bars for floors, door checks, and other minor extras	251.53
Total cost of completed building	$ 71,502.56

Payable from the following funds:

Special appropriation of 30th General Assembly (building and fixtures)	$ 55,000.00
Special building tax	16,152.56
Total	$ 71,152.56

As already explained under the head of the "College Plant" contracts have been made under which the college will secure with the state appropriation of $22,000.00 a Dairy Farm of 200 acres. No portion of this appropriation nor any part of the amount appropriated for a dairy herd or the equipment of the farm were paid out during the biennial period.

CENTRAL HEATING PLANT.

The last legislature appropriated for this purpose the sum of $54,500.00 to be used as follows:

For central heating plant and chimney	$25,000.00
For equipment for central heating plant, tunnel to central building and Morrill Hall, and for wreckage of old building and transferring boilers to new building	29,500.00

The Trustees employed Architects Proudfoot & Bird to draw plans and specifications for the heating station and chimney. Professor Bissell was authorized to prepare plans and specifications for the station equipment, the tunnel and all pipe connections. Bids upon the station, chimney and tunnel were opened by the Board at its meeting in January, 1905, The following were the bids:

	Heating Plant.	Tunnel.
H. W. Schlueter	$37,200.00	$10,549.00
E. W. Nichols	53,576.00	

The bids, being in excess of the amount available, were rejected and the Building Committee was directed to secure new bids. These

were opened at the March meeting of the Board and were as follows:

	Heating Plant.	Tunnel.
H. Eilenberger & Company	$42,658.00	$ 9,225.00
C. E. Atkinson	45,519.00	13,987.00
W. J. Zitterell	43,088.00	
Wm. Hamilton	43,523.00	
Schillinger Brothers		20,000.00
Wm. Horrabin		10,910.40
Cedar Rapids Paving & Construction Co.		11,500.00

A letter was recieved from H. W. Schlueter renewing his bid submitted at the January meeting.

All bids were rejected for want of funds. It will be noticed that the following were the lowest:

H.W. Schlueter, on heating plant	$37,200.00
H. Eilenberger & Company, on tunnel	9,225.00
Total	$46,425.00

If these bids had been accepted the balance of the appropriation available for the remainder of the work would have been $8,075.00 This would have been utterly insufficient for the purchase and setting of boilers, the installing of the pipe system, coal conveying machinery engines, dynamos and the other necessary equipment. Another difficulty arose, out of the location of the plant. The appropriation was made upon the supposition that the plant would be located near the present power station, or north of Margaret Hall. Further consideration convinced the trustees that neither of these sites would be desirable. The one now favored lies east of the Experiment Station Barn, on low land where gravity returns can be secured from all the buildings on the campus. The Board, after careful investigation, decided to give up the idea of trying to erect the plant with the means at its command and to make such temporary provision for the heating of the new Central Building as the circumstances seemed to require. The following plan was adopted:

1. To build a tunnel from the present power station to the Central Building and Morrill Hall.

2. To purchase two boilers to be temporarily installed at the present power station and to erect a temporary shed for their protection and for the protection of coal to be used at the plant.

3. To install the necessary pipe system and purchase such additional power station equipment as may be needed to carry out the purpose of the temporary use of the plant.

The expenditures during the last biennial period amount to only

$76.42 and cover advertising for bids, surveying and draughting, telegrams, telephone, stationery and express.

To carry out this plan of the Board will involve an expenditure of some $21,200.00, divided as follows:

Cost of tunnel	$ 6,000.00
Boilers in connection	5,030.00
Piping	4,950.00
Setting boilers, smoke-stack, boiler and coal shed and power station equipment	5,000.00
Inspection	220.00
Total	$21,200.00

The tunnel, boilers and piping will constitute a part of the final heating system. There will be some salvage on the other items, but the loss resulting from the temporary construction will approximate $5,000.00. Deducting this from the appropriation of $54,500.00 there remains $49,500.00 which can be considered as available to apply on the cost of the permanent plant.

The following shows the amount needed to complete the work:

Building and chimney	$ 40,000.00
Boilers	10,000.00
Stokers	5,000.00
Conveyers	8,000.00
Economizers	5,000.00
Auxiliaries and piping	5,000.00
Engines and dynamos	15,000.00
Tunnels, mains and branches	30,000.00
Contingent	7,000.00
Additional cost because of change in location	10,000.00
Total	$135,000.00
Deduct amount of last appropriation available	49,500.00
Additional appropriation needed	$ 85,500.00

ANNUAL REPAIR AND IMPROVEMENT FUND.

The last General Assembly increased the annual appropriation for repairs and improvements from $18,500.00 to $23,000.00. The pro-rata portion of the new fund from the date of the passage of the act to July 1, 1905 amounted to $937.50 The Board transferred from the Tuition account to this fund the amount of $3,336.00. The receipts for the two years therefore aggregated $45,773.50. The expenditures were the same in amount. The following exhibit shows the receipts and expenditures somewhat in detail:

RECEIPTS.

From state appropriations	$ 42,437.50
From tuition fund	3,336.00
Total	$ 45,773.50

DISBURSEMENTS.

Remodeling chemistry laboratory	$ 12,973.36
New horticultural barn	5,689.86
Implement shed	524.03
Insurance on boilers	288.00
Repairs on heating, lighting and water supply system	4,885.73
Professors' houses, repairing and remodeling	4,562.92
President's house, repair and furniture	2,067.28
Fire extinguishers	156,00
Furniture for public rooms	2,080.36
Agricultural Hall repairs	2,923.63
Morrill Hall repairs	370.76
Engineering building repairs	349.02
Veterinary building repairs	396.08
Margaret Hall repairs	429.41
Horticultural building repairs	153.94
Power station improvements	530.03
Other department buildings	2,980.58
Surveying grounds and preparing campus map	304.55
Farm improvements, fencing, tiling, etc	740.66
Farm buildings, repairs	526.45
Sewage disposal maintenance	363.35
Part of custodian's salary at $1,200 per annum	537.50
Part of carpenter's salary at $50 and $60 per month	890.00
Part of engineer's salary	166.60
Part of treasurer's salary	70.64
Part of salary of superintendent of heating, lighting and plumbing repairs	133.28
Salary of secretary of building committee	91.66
Repairing campus bridge	40.35
Postoffice boxes	125.00
Miscellaneous repairs	422.47
Total	$45,773.50

The fund available for the coming year is $23,000.00. The unpaid bills from last year amount to $3,269.91. A portion of the balance must, of course, be used to meet what might be called fixed charges. The remainder of the fund is at the disposal of the Board to be used in making such repairs and improvements as seem to them most urgent, Including the fixed charges the following sums have been appropriated for the coming year:

Unpaid bills from last year		$ 3,269.91
Fixed charges—		
One-fourth salary of custodian	300.00	
Two-thirds salary of carpenter	520.00	
Two-thirds salary of second carpenter	200.00	
Part of salary of treasurer for handling funds	100.00	
Part of salary of college engineer	200.00	
Part of salary of superintendent of heating, lighting and plumbing plant	200.00	
Salary of secretary of building committee and accountant	350.00	
Fires and lights repairs	2,000.00	
Boiler Insurance	144.00	
Maintenance of sewage disposal systems	350.00	
Sewer maintenance	50.00	
Ordinary minor repairs of buildings	600.00	5,014.00
Other Repairs and Improvements—		
Electric motors for Agricultural Hall	175.00	
Agronomy greenhouse fixtures	70.00	
Heating and lighting horticultural barn	15.00	
Repairing straight-line engine	25.00	
Fence on west line of campus	150.00	
Creamery gas plant	30.00	
Campus lights	37.00	
Chapel chairs	500.00	
Defective electric wiring	100.00	
Domestic Economy rooms in Agricultural Hall	100.00	
Change in pipe at Dairy building	200.00	
Engine "Iowa," freight, unloading and housing	182.00	
Remodeling and repairing cottages	3,500.00	
Drain from Dairy building to hoghouse cistern	200.00	
Pointing up walls, repairing, plastering and finishing walls in Domestic Economy rooms in Margaret Hall	100.00	
Cleaning and repairing rooms in Margaret Hall	510.00	
Cleaning and repairing walls in college chapel	200.00	
Repairing and painting gutters and conductors in various public buildings	105.00	
Repairing entrance to greenhouse, drip gutters around dome, roof and gutters	82.20	
Addition to College Bookstore	50.00	
Loose leaf ledger for keeping account of repair fund	35.16	
Contract book	24.77	
Room in Agricultural Hall for Domestic Economy department (additional)	135.00	
Miscellaneous minor repairs in Chemistry building	75.00	

Office desk and chair, revolving bookcase and linoleum for agricultural office	135.00	
New water main to lower pumping station	1,300.00	
Repairing two pianos belonging to Music department	270.00	
Repairing stairs in old Engineering Hall, and plastering where needed	35.00	
Stalls in Veterinary Hospital, reflooring	30.00	
Fitting up store room in basement of Morrill Hall	65.00	
Furniture and fixtures for Agronomy greenhouses, pavilion, and corn laboratory	1,500.00	
Table, desks and stoves for Domestic Economy department	44.00	
Rugs for Margaret Hall	100.00	
Grading around Dairy building, and cleaning away rubbish	388.00	
Moving and repairing old Horticultural cottage	1,000.00	
Ornamental electric light poles	100.00	
Extension to Dairy boiler-room, smoke-stack	158.49	
Wrecking old Creamery building	156.06	
Cases for department of Zoology	110.00	
Repairs on Farm Cottage	25.00	
Music Hall heating system	275.00	
Professors' houses	175.00	
Plumbing, North Hall	100.00	
Plumbing, Agricultural Hall	100.00	
Chapel floors	500.00	
Water pipe to residence occupied by Professor Stanton	100.00	
Campus map	105.00	$18,372.68
Total		$21,656.59

This leaves a balance of $1,343.41 to meet the demands for the remainder of the fiscal year. The following askings are already filed with the Building Committee:

Repairing Horse Barn floor	$ 85.00
Painting Cattle Barn and tight board fence	250.00
Painting open fences	100.00
Extending water pipes to fields north of railroad	175.00
Repairing and building fences	150.00
Tiling	150.00
Slate roof for Agricultural Hall	1,200.00
Wiring Professor Noble's residence	100.00
Fitting up additional room for library	200.00
Steam Heating Plant for Music Hall	650.00
Rug for Music Studio	25.00

Painting and papering Music Hall	40.00
Repairing Music Hall porches	50.00
Repairing chimney and door, Music Hall	10.00
Reparing windows and doors of Morrill Hall	60.00
Painting walls and repairing woodwork, Margaret Hall	500.00
Repairing Margaret Hall furniture	125.00
Repairs on Agricultural Hall	350.00
Fire hose for various college buildings	400.00
Repairing Margaret Hall fire room	37.00
Fire proof building for lower pumping station	2,000.00
Extension of water mains to southeast campus	450.00
Cement testing room	100.00
Repairs, Animal Husbandry	50.00
Farm Cottage repairs	85.00
Total	$7,347.00

SPECIAL BUILDING TAX.

The purposes to which this fund has been devoted during the biennial period have been explained in detail in the preceding pages. For convenience they are here summarized, together with the receipts.

RECEIPTS.

Balance in hands of State and College Treasurers	$ 23,545.21
Amount collected during the biennial period	247,688.16
Total	$271,233.37

DISBURSEMENTS.

Paid on Engineering Hall	3,965.86
Paid on Agricultural Buildings	89,243.44
Paid on Central Building	148,913.80
Total disbursed	$242,123.10
Cash balance in State Treasury	29,110.27
Total	$271,233.37

The following is an estimate of the amount of this fund which will be available during the fiscal year ending June 30, 1906.

Cash balance July 1, 1905	$ 29,110.27
Estimated collections for the year	124,000.00
Total	$153,110.27

The probable charges against the fund for the year on account of improvements now under way, will be as follows:

Central Building		$127,217.50
Agricultural Buildings		
Dairy Building	$16,502.56	
Horticultural dwelling	5,000.00	21,502.56
		$148,720.06

This leaves about $4,400 not appropriated and would give us the following as the balance available for the construction of shops and the commencement of the Hall of Agriculture, the next building in line.

Estimated balance at end of present fiscal year	$ 4,400.00
Entire collections for the second half of calendar year of 1906	52,000.00
Estimate of collections for 1907	122,000.00
Total	$178,400.00

This same result is reached by a consideration of the total income and expenditures on account of the special building tax for the seven years during which this tax runs.

RECEIPTS.

Proceeds of tax 1901, one-tenth mill	$ 54,301.04
Proceeds of tax 1902, one-tenth mill	55,000.00
Proceeds of tax 1903, one-fifth mill	111,913.68
Proceeds of tax 1904, one-fifth mill	127,799.32
Proceeds of tax 1905 one-fifth mill (estimated)	126,000.00
Proceeds of tax 1906, one-fifth mill (estimated)	122,000.00
Proceeds of tax 1907, one-fifth mill (estimated)	122,000.00
Total	$71 4.04

EXPENDITURES.

Engineering Hall		$133,647.61
Agricultural Buildings.		
Experiment Station Barn	$12,858.59	
Addition to Agricultural Hall stock judging pavilion, feeding sheds and greenhouses	95,817.86	
Dairy Building	16,152.56	
Horticultural dwelling (estimated)	5,000.00	129,829.01
Central Building		276,934.85
Total		$540,411.47
(Partly estimated.)		
Leaving a balance to apply on the shops and Hall of Agriculture of		$178,602.57
		$719,0 4.04

The general policy of the trustees in the matter of buildings and repairs has been to have work, involving any considerable expenditure of funds, done under contract, while the minor improvements and repairs have been made under the personal supervision of the custodian or other officer representing the building committee of the Board, which committee has general oversight and direction of all such work. The architect employed is considered to have that expert knowledge of the cost of construction which will enable him to protect the Board against a combination of bidders and no contracts of any magnitude are let without his advice. Examination of the bids on buildings erected at the College would seem to show sufficient competition to insure a reasonable low cost of construction. There were six bids for instance, on the Central Building. The one accepted was $21,000.00 less than the next higher and $40,000.00 less than the highest bid. The three rejected bids on the Dairy Building ranged from $8,000 to $12,000 above the one accepted. Rejected bids on other buildings were in general much higher than the bid constituting the basis of cost to the college. The plan of erecting buildings under contract, is the one in general use by the government and by individuals engaged in large business ventures. In the opinion of the trustees it has worked satisactorily at the college, giving to the institution substantial buildings a comparatively low cost. The detailed plans and specifications of each building are on file at the college, the records give the items of cost, and the buildings speak for themselves as to quality of construction. The trustees invite their most careful inspection.

As already stated, minor repairs and improvements are under the direct charge of the building committee. This committee considers the askings of the several departments and, having in mind the funds at their disposal, decides upon those most needed. In cases where the nature of the work will permit bids are secured and contracts entered into; in other cases careful estimates are prepared, a local superintendent appointed, and the work carried forward under his direct supervision. Estimates on contracts are made by the superintendent; all other bills are passed upon by the committee or its chairman before presentation to the Board of Audit.

OTHER SPECIAL APPROPRIATIONS BY THE STATE.

There was in the hands of the state treasurer at the beginning of the biennial period a balance of $1,682.14 belonging to the appropriation of $5,000 made by the 29th General Assembly to the college for the purchase of pure bred stock. The following exhibit shows the

amount of this fund drawn by the college treasurer and disbursed by him during the past two years.

PURE BRED STOCK.

RECEIPTS.

Amount drawn from the State Treasury	$1,682.14

DISBURSEMENTS.

Hereford cow $300, bull $625	925.00
One Angus bull calf	245.00
One Berkshire sow	152.50
One Poland China boar $50, two sows at $25 each	100.00
Expenses of professors to purchase stock	69.08
One Yorkshire boar pig	50.00
Oxford Down ram and ewe lamb	40.00
One Southdown ram	40.00
One Chester White boar	30.00
Freight and express	30.12
Total expended	$1,681.70
Balance in hands of College Treasurer	.44
	$1,682.14

The following sums were appropriated by the 30th General Assembly for the purposes specified:

Good Roads Experimentation	$7,000.00
Engineering Experimentation	6,000.00

A full statement of the results accomplished in these lines and the benefits accruing therefrom will be found in the reports of the President and the Deans of the departments interested. An idea of of the scope and character of the work can be gained from the following carefully prepared financial exhibits:

GOOD ROADS FUND.

Amount of appropriation for the biennial periods payable quarterly	$7,000.00

RECEIPTS.

Amount drawn from the State Treasury during the first year, ending June 30, 1905	$3,500.00

DISBURSEMENTS.

Salaries—		
T. H. McDonald, two and three-fourths months at $60 per month, nine months at $50 per month	$615.00	
H. M. Bainer, part salary	130.00	
John T. Hoover, part salary	60.00	$ 805.00
Equipment—		
Kodak	27.50	
Map of counties	15.00	
Record Book	8.50	
Stereoptican accessories	136.00	
Chest and locks	7.55	
Miscellaneous Equipment	105.65	300.20
Plans and Publications.		
Student labor at 15c to 20c per hour, drafting and blue printing plans	51.59	
Material—Blueprint paper, tracing cloth, etc.	9.71	
Engraving	5.25	
24 page bulletin "Good Roads Problem in Iowa," 15,000 copies, Campbell-Russell printing Co	266.60	333.15
Investigations—		
Traveling expenses of A. Marston (by order of the Board of Trustees), trip to Binghampton, Albany, New York, N. Y.; Boston, Mass. and Trenton, Atlantic City, New Jersey, to investigate Highway Commissions of the east	151.38	
Expenses of T. H. McDonald, trips to various counties to investigate road work and study road material, etc., Jefferson, Ladora, Carroll, Coon Rapids, Glidden	21.40	
Des Moines	3.47	
Coon Rapids	15.21	
Expenses of A. Marston—		
Des Moines	3.02	
Coon Rapids and Glidden	4.37	
Expenses of T. H. McDonald—		
Rockwell City and Lohrville (four days in Calhoun county)	17.55	
Trip to Bremer, Butler and Chickasaw counties (five days)	20.94	
Trip to Butler, Bremer, Cerro Gordo, Chickasaw, Floyd and Buchanan counties (January 26th to February 19th)	66.19	

Trip to Marble Rock	6.96	
Trip to Jefferson (three days)	11.92	
Trip to Jefferson (two days)	7.00	
Trip to Sac City	4.00	
Trip to Jewel Junction	1.17	
Trip to Independence	5.59	340.17
Developing and Printing Views Taken in Work of Investigation—		
C. R. Quade	60.22	
Other small jobs	24.20	
Supplies for photograph work	26.10	110.52
Six record books kept at as many different points at $10 per year, one-half yearly payment	30.00	
Labor Compiling Census Cards (Agricultural Road Schedule)—		
A. B. Chattin, four months at $60	240.00	
Other help at 20c per hour	55.14	
Postage and express on census cards	15.88	341.02
Experimental Work—		
Road Material—		
Experiments with clay binder for gravel roads. A short section of gravel was constructed. Material and labor	59.73	
Traction Tests of Road Surfaces—		
Teams testing at 32½c per hour	38.18	
Concrete Experiments—		
Cement and stone were given to Commission, costing only freight and drayage, lumber, etc., for moulds, labor at 15c and 25c per hour	82.96	
Road Experiments—		
A section of earth road was constructed. Labor	55.22	236.09
Assistants—		
Student labor on road machinery, etc., at 15c to 20c per hour		27.06
Office Expenses—		
Stamped envelopes	42.40	
Deposit at Ames postoffice for mailing second class matter	100.00	
Telephone, telegrams, stationery, postage, etc.	62.81	
C. S. Nichols, stenographic work at 20c per hour	87.65	
Other office help at 15c to 20c per hour	18.75	311.61
Freight, Drayage and Delivery—		
Charges on laboratory equipment road machinery, etc		306.45

Road School—		
Assistants with machinery, etc	79.80	
Instructors—		
D. Ward King	56.75	
B. Stanton	6.06	
Extra instructors at 25c per hour	142.25	
Demonstrations—motive power for machinery, etc	49.87	
Freight and drayage	42.20	
Miscellaneous	4.67	381.60
Total expended		$3,492.87
Balance in hands of College Treasurer		7.13
Total drawn from State Treasury		$3,500.00
Amount in hands of State Treasurer		3,500.00
Total appropriation		$7,000.00

ENGINEERING EXPERIMENT STATION.

Amount of the appropriation for the biennial period, payable quarterly $6,000.00

RECEIPTS.

Amount drawn from the State Treasury during the first year, ending June 30, 1905 ..... 3,000.00

DISBURSEMENTS.

Salaries—		
A. Marston, ten months at $20.84	$208.34	
G. W. Bissell, ten months at $16.66	166.67	
L. B. Spinney, ten months at $16.66	166.67	
S. W. Beyer, ten months at $8.33	8 .33	
T. H. McDonald, ten months at $8.30	83.30	$ 708.31
Equipment—		
Photometer	13.50	
Injector	30.00	
Galvanometer and accessories	123.50	
Two steel tanks 2x2x6	13.50	
Two porcelain tubes thirty inches long	9.00	
Material for photometer	1.31	
Photometer and accessories	212.50	
Four 5-gang cement moulds	50.00	
Record books	15.32	468.63
Bulletins—		
Traveling Expenses—		
W. H. Meeker and a party of students visiting Ottumwa and Des Moines for the purpose of testing boilers and stokers to obtain data for bulletin on boiler and stoker tests	139.84	
Taylor and Zanke visiting Algona, LuVerne, Eagle Grove, Dows, Clarion, and Goldfield to collect data for bulletin on peat	17.28	
J. B. Wickman visiting Mitchellville, Spirit Lake, Mt. Pleasant, Grinnell, Davenport and Marion to collect data for bulletin on sewage disposal plants, together with kodak supplies, etc., for same	108.57	
M. J. Reinhart visiting Spirit Lake for the purpose of collecting data for bulletin on sewage disposal plants	30.10	
Bulletin No. 8, 2,000 copies, geology, reprint	27.00	
Bulletin No. 9, 2,000 copies	54.20	
Bulletin No. 10, 1,000 copies	12.50	
Bulletin No. 11, 5,000 copies	14.13	
Labor compiling data for bulletins, drafting, testing materials, etc., at 15c to 20c per hour	392.60	
Hoffman, testing lamps at 37½c	116.04	912.26
Stenographic work at 20c per hour		10.00
Express, freight, drayage, postage and blanks for tests		26.44
Total expended		$2,125.64
Balance in hands of College Treasurer		874.36
Total drawn from State Treasury		3,000.00
Amount in hands of State Treasurer		3,000.00

SUPPORT FUNDS.

It is exceedingly difficult to determine what should be included in the support funds of an institution like the State College. The matter, too, is important, since it affects materially the question of total and per capita cost of maintenance. The receipts of the college treasury, outside of the state appropriations for building, improvements and other special purposes might be classified as follows:

1. Interest on national endowment fund and annual appropriations by the national and state governments for the support of the educational departments.

2. Annual appropriations by the national and state governments for the support of the Experiment Station.

3. Fees collected from students, to cover cost of materials used by them in the laboratories and shops and to meet in part the expense of providing heat, light and janitor service for the public rooms.

4. Minor items of income such as rental of rooms, amount received for diplomas, and small sums contributed by individuals or corporations for special purposes.

5. Sales of departments.

There can be no question but that all the receipts coming under the first head belong to the support fund.

Regarding the experiment station it may be said that no portion of the national or state funds appropriated for its maintenance is used to support the educational departments of the college. Indirectly some of these departments are benefitted by being in close touch with the station work but this is fully compensated by the land, buildings and other facilities furnished by the college to the station. The station was established to conduct experiments. Its fund are devoted to that purpose. They constitute no part of the maintenance fund of the educational departments.

The laboratory fees represent, practically, the purchase by the student of material used by him in his laboratory work. He might buy much of it elsewhere but it would be inconvenient and expensive. The College can purchase test tubes, drawing paper, chemicals and other material in large quantities and furnish the same to the student at a low cost without loss. This is accomplished by the plan of charging a laboratory fee. Students, through the janitor's fee, pay also a minor part of the cost of keeping their society and reception halls and recitation rooms heated, lighted and in cleanly condition.

The receipts classified as "minor items of income," are used to repair student rooms, purchase diplomas, maintain a students' statistical bureau, and meet scholarship and fellowship expenses specified by donors. The receipts average less than $5,000 per annum.

The sales of departments can hardly be considered as constituting any part of the support fund: otherwise the college might become self sustaining by buying and selling cattle at the same price. Several years ago the Creamery Department bought annually some $19,000 worth of butter fat and manufacturing it into butter, sold it for approximately the same price. Last year, under changed conditions, the business amounted to only about $6,000. The department sales decreased $13,000 but the College support fund remained unchanged. *Profits* would increase the fund but work largely educational and experimental, cannot be expected to be profitable in a commercial sense. Until it is, the institution must look elsewhere for its support.

It has always been the policy of the college to credit the fees and the proceeds of sales, to the department to which they belong and then

charge the net cost of maintenance in each case to the State and National support fund, keeping the college and station accounts separate as the law requires. The advantage of such a plan is that it shows clearly how the state and National funds have been used. The exhibits that follow are made out on this basis. Statements are attached which give the receipts from fees, the minor sources of income and department sales.

EDUCATIONAL SUPPORT FUNDS.

INCOME.

	1903-4	1904-5
Interest on endowmnent fund	$ 36,295.73	$ 35,265.03
Morrill fund	25,000.00	25,000.00
Annual state appropriations	80,000.00	100,416.66
Totals	$141,295.73	$160,681.69

EXPENDITURES.

1. Instruction and Administration.		
Salaries of Professors, Assistant professors and Administrative Officers (on regular salary pay roll)	$ 58,858.32	$ 73,491.01
Salaries of instructors and assistants (on department pay rolls)	30,121.09	31,878.92
2. Department Expenses and Equipment.		
Agricultural Department	3,197.06	3,449.38
Creamery	3,304.78	961.14
Dairy	519.82	716.85
Agronomy	1,329.68	1,128.14
Farm Mechanics	2,369.20	334.44
Soils	1,849.17	416.03
Animal Husbandry	796.70	662.73
Farm Crops	170.69	545.35
Veterinary Science	520.00	606.42
Agricultural Chemistry	157.89	31.40
Horticulture	1,277.95	1,626.46
Mechanical Engineering	742.89	1,200.94
Civil Engineering	3,010.48	1,766.40
Physics and Electrical Engineering	1,392.86	1,923.60
Mining Engineering	916.83	1,038.3
Engineering Dean's Office		244.20
Geology	280.10	191.87
Chemistry	571.66	888.72
Zoology	799.99	1,038.47
Botany	968.66	824.81
English Literature and Rhetoric (cr.		

$178.77, for 1903-4)		263.15
French and German	150.00	22.44
History	85.00	366.79
Civics		44.88
Mathematics	100.00	615.60
Political Economy	16.74	48.87
Domestic Economy	156.63	237.43
Military Tactics	181.21	491.24
Music	95.28	99.60
Library	1,952.59	2,770.70
Public Speaking { $142.27 / 63.94 } cr.		
3. General Expenses.		
Public Grounds	2,130.93	1,505.66
Public Rooms—Heating, lighting and janitor service	12,572.21	15,000.00
Sabbath Services	449.96	429.36
Contingent Expenses, including clerk hire and other expenses of the executive and administrative offices, cost of catalogues, compendiums, advertising, telephone services, proctors, ringing chimes, etc	9,138.70	12,038.83
Totals	$140,185.07	$158,900.18
Deducting English Literature and Public Speaking credits	321.04	63.94
Total net expenditures	$139,864.03	$158,836.24

Summarizing the expenditures under the headings marked 1, 2 and 3 in the exhibit, we have the following:

	1903-4	1904-5
1. Salaries of Professors, instructors and administrative officers	$ 88,979.41	$105,369.94
2. Department Expenses and equipment	26,592.82	28,973.85
3. General Expenses	24,291.80	24,492.45
	$139,864.03	$158,836.24

For itemized statement of salaries paid see report of Executive Council for 1903-5, pages 616 to 622.

It will be noticed that the income exceeded the expenditures each year thus increasing the cash balance. The following is the showing for the two years:

Cash balance July 1, 1903	**$2,418.60**
Excess of receipts over expenditures for 1904	**1,431.70**
Excess of receipts over expenditures for 1905	**1,845.45**
Cash balance June 30, 1905	**$5,695.75**

EXPERIMENT STATION SUPPORT FUNDS.

Prior to 1902 the station was supported entirely by the national government. Since then the state has given it substantial aid. The following exhibit shows its receipts from all sources with its expenditures classified in accordance with the requirements of the department of Agriculture at Washington.

RECEIPTS.

	1903-4	1904-5
From National Government.		
Annual appropriation	$15,000.00	$15,000.00
United States Agricultural Department on co-operative experiments		600.00
From State.		
Annual appropriation	13,125.00	25,000.00
From outside parties on Professor Holden's salary	400.00	400.00
Totals	$28,525.00	$41,000.00
Proceeds of sales	2,503.94	7,446.82
Totals	$31,028.94	$48,446.82

EXPENDITURES.

Salaries of Station Staff	$ 7,641.65	$12,020.2
Salaries of Station Assistants	3,273.18	5,680.83
Section Expenditures—		
Director's Office	2,721.31	940.41
Bulletins	2,230.72	3,952.04
General Expense	1,076.37	1,060.70
Emergency and Building		110.50
Agronomy	2,595.13	4,706.58
Animal Husbandry	4,537.42	10,804.76
Botany	414.23	706.94
Chemistry	900.06	1,259.87
Dairy	705.14	198.52
Entomology	818.83	519.09
Horticulture	1,900.33	2,378.82
Veterinary Science	133.53	10.10
Farm Mechanics	439.18	1,465.33
Photographic Section		710.33
Soils	527.17	754.32
Total expenditures	$29,914.25	$47,279.40

The receipts for the biennial period exceeded the expenditures by $2,282.11, thus increasing the cash balance to the credit of the station from $2,143.92 to $4,426.03. Annual reports of the receipts and dis

bursements of the station are made to the Department of Agriculture at Washington and its books and vouchers are examined each year by an expert accountant of the Department.

FEES AND SALES.

The following exhibit shows the receipts from fees and sales during the biennial period:

Source.	1903-4. Fees.	1903-4. Sales.	1904-5 Fees.	1904-5 Sales.
Farm		$10,584.10		$ 9,613.88
Janitor Fee	$11,159.00		$11,567.00	
Creamery		7,471.50		1,717.51
Agronomy	754.50	110.46	829.50	6.25
Soils	361.00	1.50	295.50	
Farm Mechanics	407.50	172.89	483.50	
Farm Crops			610.50	
Animal Husbandry	1,464.50		1,832.00	203.28
Dairy	792.75	70.95	117.00	20.28
Horticulture	116.50	712.97	109.10	902.10
Veterinary	371.75	1,052.10	506.50	1,200.05
Mechanical Engineering	2,705.60	646.42	2,656.29	77.74
Civil Engineering	248.00		1,123.00	170.90
Physics and Electrical Engineering	971.00	8.58	843.00	
Agricultural Chemistry	35.00	197.10		
English Literature and Rhetoric	756.75		526.10	4.20
Chemistry	3,670.90		3,423.43	
Zoology	442.38		468.50	
Mining Engineering		89.30		34.00
Geology		31.25		10.00
Botany	1,011.25	30.14	935.05	
Domestic Economy	518.32	3.23	774.50	
Library	68.00	15.22	156.00	
Sabbath Services		5.00		.50
Public Grounds		653.52		91.08
Public Speaking	218.00		163.00	
Good Roads School.			78.00	
Experiment Station.		2,503.94		7,446.82
Totals	$26,072.70	$24,360.17	$27,497.47	$21,498.59

As already stated it has been the policy of the college to credit these fees and sales to the departments to which they belong and to allow such departments to expend them in the same way that they expend the amounts appropriated to their use, by the Board, from the support fund. Added to the debits and credits of the different department accounts they will give the gross receipts and expenditures of such departments. A table of department expenditures made out upon this basis will be found on page 623 of the report of the Executive Council for 1904-5.

MINOR SOURCES OF INCOME.

These sources of income are fully explained an page 119 of the last biennial report. The following statement shows both the nature and amount of the receipts and the purposes for which they were used.

RECEIPTS.

Tuition of students from outside state	$1,352.00	$1,084.00
Rental of Rooms	1,917.18	1,909.90
Rental of donated land	32.00	36.00
Diploma account	615.00	875.00
Agricultural fellowship fund	905.00	475.00
Iowa state scholarship	200.00	200.00
Clay fund for support of agricultural journalism		458.33
Sale of wreckage material		826.87
Totals	$5,021.18	$5,865.10

EXPENDITURES.

Room Rent—		
Repairs on Margaret Hall, including installing water closet system in place of creamatory $660.94; kalsomining and cleaning $66.45; furniture and furnishings, $356.41; freight, express, drayage, stationery, telephone and telegraph, $45.45	$1,129.25	
Repairs and improvements on cottages, including painting and kalsomining, $61.73; furniture and furnishing, $332.62; freight, express, drayage, etc., $9.75	404.10	
Repairing creamery dormitories	42.77	
Repairing office building, faculty club house and postoffice building	134.85	
Furniture and furnishings for college buildings	576.22	
Part of custodian's salary at $1,200 per annum	637.30	
Part of carpenter's salary at $60 per month	486.94	
Fitting up room in Morrill Hall for barber shop (rented at $12.50 per month)	87.20	
Part of salary of secretary of building committee	8.34	3,506.97
Diplomas—		
Diplomas at 85c to $1.00 each and programs at $3.00 per thousand	451.65	
Clerical work in keeping students' records at $50.00 per month and 20c to 25c per hour	437.72	

Cards for students' record system, and miscellaneous printing	195.97	
Telephone, telegrams, express and postage	21.46	1,106.80
Agricultural Fellowship Fund—		
Paid graudate assistants in Animal Husbandry as follows:		
W. W. Smith, nine and one-half months at $25.00 per month	237.50	
Newton C. Rew, four months at $25.00 per month	100.00	
Wayne Linsmore, twelve months at $8.83 per month	99.96	
J. A. Conover, twenty-two months at $25.00 per month	550.00	
C. W. Rubel, nine months at $25.00 per month, and for part of month $5.83	230.83	1,218.29
Iowa State Fair Scholarship—		
Paid students as per terms of scholarship:		
Ellis Rail, eight months at $25.00 per month	200.00	
Chas. F. Steen, five months at $25.00 per month	125.00	325.00
Clay Fund for Support of Agricultural Journalism.		
Salary of W. H. Ogilvie paid by John Clay of Chicago, eleven months at $500.00 per annum		458.33
Sale and Wreckage Account—		
Paid students for wrecking old creamery at 20c per hour	355.75	
Paid Foster & Jacobson, hauling at 30c per hour	98.63	
Paid H. W. Schlueter for rubble for foundation of new creamery, 4304300 lbs. at 7c per hundred lbs	430.43	884.81
Total expended on minor income accounts		$7,500.20

Under the orders of the Board the sum of $3,336.00 was transferred from the tuition fund to the repair and improvement account.

The educational and station support funds after salaries are deducted are apportioned by the Board of Trustees among the college departments and station sections. Within the limit of the means furnished, the head of each department or section is expected to so plan his work as to secure the best results. This necessarily involves the determination of how the funds assigned to such work shall be used. In industrial colleges, especially, the material equipment of a department is such a vital factor in its development that unless the professor in charge is allowed to direct the department expenditures, he cannot reasonably be held responsible for its growth. The problem of granting to the heads of the several departments such control of expenditures as will lead tothe greatest efficiency and yet enable the college to secure the benefits of purchasing in large quantities and upon competitive bids has been gradually worked out in a fairly satisfactory way. The purchasing committee established some two years ago is now quite fully organized. It aims to work in harmony with the heads of departments and thus avail itself of their expert knowledge concerning special apparatus and equipment and the places where the same can be obtained to the best advantage. In some instances the heads of departments make purchases. The Dean of Agriculture and the Professor of Animal Husbandry are better judges of farm stock and stock values than the committee and therefore better qualified than the committee to make purchases along this line. Again, in some of the experimental work the competitive idea of purchase has no legitimate place. The expert in charge and he only can determine where and when to buy the particular thing needed. The rules of the Board of Trustees permit the committee in all such cases to give the head of the department written authority to make the purchase. With exceptions of this character, the committee make all purchases. It receives bids and awards contracts for stationery, printing, laboratory supplies and apparatus, coal, lumber, tools, hardware, electrical supplies, oil, gasoline, pipe and fittings and all other ordinary commercial articles required for the maintenance and support of the college. It is believed that this plan secures for the institution as low prices as can be obtained in any other way. The records of the committee are open to inspection and the trustees court the most thorough investigation of the system and its results.

No bills are paid until they are approved by the board of audit which consists of the president of the college and the secretary of the board of trustees. Before such bills are presented to the auditing board they are certified to as correct by the respective heads of departments. This certificate signifies that the goods have been received and that the quality and price are satisfactory; it constitutes an excellent check upon the purchasing committee. The secretary makes monthly settlement with the treasurer, while the books and accounts of both the treasurer and the secretary are examined and reported upon each year by a committee of the Board of Trustees and biennially by the Board of Control.

The following summaries show the total receipts and disbursements for the biennial period exclusive of fees refunded and transfers from one department to another.

RECEIPTS AND DISBURSEMENTS FOR THE BIENNIAL PERIOD.

1903-1904.

RECEIPTS.

Educational support funds—		
From national sources	$ 61,295.73	
From state	80,000.00	$141,295.73
Station support funds—		
From national sources	15,000.00	
From state	13,125.00	
From outside parties (contributed)	400.00	28,525.00
Janitor and laboratory fees—		
Minor sources of income—		
Buildings and improvements—		
Annual building tax	97,551.46	
Annual repair and improvement fund	19,437.50	
Special appropriations	23,346.85	140,335.81
Other state appropriations		1,681.70
Total college and station income for all purposes		$342,932.12
Proceeds of sales of departments (not considered as adding anything to income)		24,360.17
Total		$367,292.29

DISBURSEMENTS.

Salaries—		
Professors, assistant professors and administrative officers	$ 58,858.32	
Instructors and assistants	30,121.09	$ 88,979.41
Educational Departments—		
Support fund expended for current expenses and apparatus	26,592.82	
Laboratory fees used in buying material	14,913.70	
Proceeds of sales used in making further purchases	21,197.71	62,704.23
Experiment station—		
Salaries of station staff and assistants	10,524.90	

Station support fund expended for current expenses and equipment of station	16,885.41	
Proceeds of sales used in making further purchases	2,503.94	29,914.25
Administrative and general expense—		9,593.66
Maintenance of buildings and grounds—		
(not including repairs)		
Support fund expended	14,703.14	
Fees from students applied on heating, lighting and janitor service account	11,159.00	
Proceeds of sales from public grounds expended on public grounds	653.52	26,515.66
Expenditures of minor income accounts—		
Buildings and improvements—		
Tuition fund devoted to repairs	1,997.64	
Annual building tax	97,551.11	
Annual repair and improvement fund	18,500.00	
Special state appropriations	23,346.85	141,395.60
Other state appropriations		1,681.70
Total disbursements		$363,405.72

1904-1905.

RECEIPTS.

Educational support funds		
From national sources	$ 60,265.03	
From state	100,416.66	$160,681.69
Station support funds—		
From national sources, including $600 contributed by U. S. Department of Agriculture on co-operative experiments	15,600.00	
From state	25,000.00	
From outside parties (contributed)	400.00	41,000.00
Janitor and laboratory fees—		
Minor sources of income—		
Buildings and improvements—		
Annual building tax	143,821.72	
Annual repair and improvement fund	23,000.00	
Special appropriations	68,371.42	235,193.14
Other state appropriations		6,500.00

Total college and station income for all purposes		$476,737.40
Proceeds of sales of departments not considered as increasing the income.		21,498.59
Total		$498,235.99

DISBURSEMENTS.

Salaries—		
Professors and assistant professors and administrative officers	$ 73,491.01	
Instructors and assistants	31,878.93	$105,369.94
Educational Departments—		
Support fund expended for current expenses and apparatus	24,492.45	
Laboratory fees used in buying material	15,930.47	
Proceeds of sales used in making further purchases	13,960.19	54,383.11
Experiment station—		
Salaries of station staff and assistants	17,701.09	
Station support fund expended for current expenses and equipment of station sections	21,831.49	
Proceeds of sales used in making further purchases	7,746.82	47,279.40
Administrative and general expenses		12,468.69
Maintenance of buildings and grounds—		
(Not including repair of buildings.)		
Support fund expended	16,505.66	
Fees from students applied on heating, lighting and janitor service accounts	11,567.00	
Proceeds of sales from public grounds expended on public grounds	91.08	28,163.74
Expenditures on minor income accounts		4,878.99
Buildings and improvements—		
Tuition fund devoted to repairs	1,338.36	
Annual building tax	144,571.99	
Annual repair and improvement fund	23,937.50	
Special appropriations	68,363.07	238,210.92
Other state appropriations		5,618.51
Total disbursements		$496,373.30

SUMMARY OF RECEIPTS AND DISBURSEMENTS FOR THE BIENNIAL PERIOD.

	Receipts.	Disbursements.
For 1903-1904	$367,292.29	$363,405.72
For 1904-5	498,235.99	496,373.30
Totals	$865,528.28	$859,779.02

It will be noticed that the receipts have exceeded the expenditures by $5,749.26, thus increasing the cash balance by that amount. This checks with the treasurer's books. The totals differ from the debit and credit sides of his cash account by the sum of fees collected and refunded, and transfers made from one department to another. In the foregoing summaries these are stricken from both sides of the account. If we deduct the sales of the different departments amounting to $45,858.76 from the totals given we will have the amount received by the college from the national government, the state and students, for all purposes, and the amount expended by the college authorities in the maintenance and up-building of the institution. The following shows the expenditures for the biennial period duly classified:-

Maintenance of the College	$361,452.34
Maintenance of the Agricultural Experiment Station	67,242.89
Building and Improvements	379,606.52
Engineering and Good Roads Experimentation	5,618.51
Total	$813,920.26

RESOURCES OF THE COLLEGE.

1905-6.

These may be divided into two classess:-

1. Unexpended balances of appropriations of the Thirtieth General Assembly for special purposes. These have been already discussed.

2. What we may consider as the present regular income of the college for the erection and repair of buildings and the support of its departments and the Experiment Station.

1.	**Building and repairs—**		
	Special building tax		$124,000.00
	Annual appropriation for repair and improvements		23,000.00
2.	**Educational support fund—**		
	From national sources	$ 60,000.00	
	From the state	110,000.00	170,000.00

3.	**Experiment station support fund—**		
	From national sources	$15,000.00	
	From the state	25,000.00	$ 40,000.00
4.	Fees charged students to cover cost of laboratory material furnished them and to meet in part the expense of heat, light and janitor service for laboratories and public rooms		27,500.00
5.	Minor sources of income		5,000.00
	Present regular income of college and station for all purposes		$389,500.00

Concerning the expenditure of these funds it may be said:

First. It was shown in the statement regarding the special building tax that the contracts covering the completion of the new central hall and the Dairy Building will absorb the amount available during the fiscal year with the exception of about $4,400.00.

Second. The exhibits relating to the annual repairs and improvement fund show that the appropriations made by the Building Committee leave a balance of less than $1,500 with which to meet emergencies during the fiscal year. There is also on the "waiting list" about $7,000 of askings more or less urgent.

Third. The minor sources of income, as will be noted are in general of such character as to require that they be expended for special purposes. The amount involved too, is comparatively small being about $5,000.00.

Fourth. The fees collected from students are in the nature of payments for material furnished, or services rendered by particular departments and are naturally credited to such departments.

Fifth. The educational and station support funds are apportioned at the beginning of each year, among the different departments of the college and the several sections of the station. Under the rules of the Board of Trustees the sum of $2,500.00 is reserved from the educational support fund as a working balance. The cash balance on hand to the credit of this fund at the beginning of the present year was $5,695.75, after deducting the $2,500.00 there remained a balance of $3,195.75 subject to appropriation by the Board.

The Trustees adopted this year for the first time the plan of reappropriating to the various departments the unexpended balances to their credit at the close of the last year, instead of returning such balances, as heretofore to the general fund. These balances amounted to less than the surplus on hand above the required reserve, This surplus, $3,195.75, was therefore added to the income, $170,000.00, making 173,195.75 as the basis of the joint appropriation of the unexpended balances and the new amounts allowed.

The following is the education support fund budget for the coming year:

EDUCATIONAL SUPPORT FUND.

1905-1906.

		Unexpended Balances Re-appropriated.	New Appropriations for Current Expenses and Equipment.	Totals.
1.	**Department Expenses and Equipment.**			
	Farm	$ 43.00	$ 1,700.00	$ 1,743.00
	Animal Husbandry	198.00	960.00	1,158.00
	Animal Husbandry, Short Course	123.00	150.00	273.00
	Agronomy		962.50	962.50
	Agronomy, Short Course		150.00	150.00
	Agricultural Engineering	13.00	654.50	667.50
	Farm Crops		362.50	362.50
	Soils	8 00	362.50	370 50
	Dairy	37.00	2,000.00	2,037.00
	Horticulture and Forestry	98.00	1,200.00	1,298.00
	Vetinary Science	67.00	725.00	792.00
	Mechanical Engineering	790.00	1,200.00	1,990.00
	Civil Engineering	23.00	1,340.00	1,363.00
	Physics and Electrical Engineering	16.00	1,535.10	1,551.10
	Mining Engineering	110.00	800.00	910.00
	Geology	8.00	200.00	208.00
	Military Tactics	33.00	225.00	258.00
	English and Rhetoric	154.00	300.00	454.00
	Chemistry	267.00	700.00	967.00
	Zoology and Physiology	11.00	800.00	811.00
	Botany		700.00	700.00
	Mathematics		230.00	230.00
	Economic Science	5.00	50.00	55.00
	Civics	1.00	50.00	51.00
	Public Speaking	16.00	150.00	166.00
	History	8.00	156.50	164.50
	Modern Languages		25.00	25.00
	Domestic Economy	262.50	450.00	712.50
	Preceptress' Fund	31.00	175.00	206.00
	Music		100.00	100.00
	Library	179.00	2,218.50	2,397.50
		$2,501.50	$20,632.10	$23,133.60
2.	**Salaries—**			
	Professors, assistant professors and administrative officers	$80,646.08		
	Instructors and assistants	32,555.68		$112,501.74

3. Maintenance of Public Grounds and Buildings—			
Public grounds		1,706.00	
Public rooms, heating, lighting and janitor service		21,911.81	23,617.81
4. Sabbath Services			520.00
5. Administrative and Contingent Expenses—			
President's office		2,598.00	
Treasurer's and recorder's office		2,234.50	
Secretary's office		1,276.00	
Purchasing committee		1,350.00	
Engineering Dean's office		355.00	
Agricultural Dean's office		400.00	
Junior College Dean's office		725 00	
Catalogue, Compendium and Advertising		2,515.00	
Ringing chimes		115.00	
Telephone service		125.00	
Address before Trustees		100.00	
Agricultural College Association Fee		15.00	
Faculty Committee on assignment to classes		221.00	
Harvest Home Excursion		250.00	
Proctors		175.00	
Commencement Week expenses		50.00	
High School inspection		100.00	
Reserve for contingencies		500.00	13,105.00
Total appropriated			$173,578.15

The following is the salary roll of professors and assistant professors and administrative officers as fixed for the school year, beginning September 1, 1905, together with the funds to which such salaries will be charged:

	Support Fund	Agrl. Exp. Station	Other College Funds	Totals
A. B. Storms, President and dean of science	5,000.00			5,000.00
E. W. Stanton, mathematics dean of junior college and secretary of the board of trustees	3,000.00			3,000.00
C. F. Curtiss, dean of agriculture and director of Experiment Station	2,000.00	2,000.00		4,000.00
J. R. Lincoln, military science	1,000.00			1,000.00
A. A. Bennett, chemistry	2,100.00			2,100.00
L. H. Pammel, botany, station botanist	1,700.00	300.00		2,000.00
G. W. Bissell, mechanical engineering	1,900.00		*200.00 *200.00	2,300.00
A. Marston, civil engineering, dean of engineering, college engineer	2,300.00		*300.00 *250.00	2,750.00
Lizzie M. Allis, French and German	1,400.00			1,400.00
L. B. Spinney, physics, and electrical engineering	1,800.00		*200.00	2,000.00
W. J. Kennedy, animal husbandry, vice-director experiment station	1,250.00	1,250.00		2,500.00
S. W. Beyer, geology and mining engineering	1,900.00		*100.00	2,000.00

A. B. Noble, rhetoric and english literature	1,800.00			1,800.00
H. E. Summers, zoology, station entomologist	1,500.00	300.00		1,800.00
A. M. Newens, public speaking	1,700.00			1,700.00
G. L. McKay, dairying	1,800.00	300.00		2,100.00
O. H. Cessna, history and ethics, college chaplain	2,300.00			2,300.00
J. H. McNeil, anatomy and principles and practice of surgery, and dean of veterinary science	1,700.00	100.00		1,800.00
R. C. Barrett, civics	2,000.00			2,000.00
Georgietta Witter, domestic economy	1,400.00			1,400.00
P. G. Holden, agronomy and vice dean of agriculture (Receives additional sum of $400 contributed by outside parties).	1,300.00	1,300.00		2,600.00
S. A. Beach, horticulture and forestry	1,250.00	1,250.00		2,500.00
W. H. Meeker, mechanical engineering	1,900.00			1,900.00
L. E. Ashbaugh, civil engineering	1,600.00			1,600.00
Frank French, civil engineering	1,400.00			1,400.00
F. A. Fish, physics and electrical engineering	1,800.00			1,800.00
Marion H. Kilbourne, dean of women	900.00			900.00
W. E. Harriman, college physician (Receives in addition $300 from College Hospital fund).	1,100.00			1,100.00
Maria M. Roberts, mathematics	1,250.00			1,250.00
H. W. Dow, mechanical engineering	1,500.00			1,500.00
Herman Knapp,	1,200.00	250.00	°100.00	1,650.00
Charged to Fires, Lights and Incidentals (Receives in addition from College Book Store $250.00)	100.00			
A. T. Irwin, horticulture	800.00	700.00		1,500.00
W. J. Rutherford, animal husbandry	900.00	900.00		1,800.00
E. E. Bugbee, mining and engineering	1,600.00			1,600.00
J. B. Davidson, agricultural engineering	833.34	666.66		1,500.00
W. H. Stevenson, soils	900.00	900.00		1,800.00
Walter E. Sturr, veterinary science	1,400.00	100.00		1,500.00
R. R. Drykstra, veterinary science	1,200.00			1,200.00
L. M. Hurt, veterinary science	1,200.00			1,200.00
B. H. Hibbard, economic science	1,500.00			1,500.00
Lola A. Placeway, chemistry	1,100.00			1,100.00
Vina E. Clark, librarian,	800.00	100.00		900.00
Bessie B. Larrabee, English	1,000.00			1,000.00
Elizabeth Maclean, English	1,000.00			1,000.00
W. M. Wilson, mechanical engineering	1,200.00			1,200.00
I. A. Williams, mining engineering	1,100.00		°100.00	1,200.00
Paul S. Pierce, history	1,100.00			1,100.00
J. E. Guthrie, zoology	1,100.00			1,100.00
O. Larsen, dairying	650.0	650.00		1,300.00
F. W. Bouska, bacteriology	935.00	465.00		1,400.00
Adolph Shaul, electrical engineering	1,200.00			1,200.00
J. Watson, physical director (Receives $900 from Athletic Council.)	900.00			900.00
W. F. Coover, chemistry	1,800.00			1,800.00
E. E. Little, horticulture		1,000.00		1,000.00
E. S. Gardner, station photographer		1,500.00		1,500.00
I. O. Schaub, soils	750.00	750.00		1,500.00
L. G. Michaels, station chemist	100.00	1,400.00		1,500.00
Wayne Dinsmore, animal husbandry	600.00	600.00		1,200.00
M. P. Cleghorn, mechanical engineering	1,000.00			1,000.00
H. P. Baker, forestry	425.00	425.00		850.00
W. H. Ogilvie, bulletin editor		1,000.00		1,000.00

(Receives $1,000 additional from fund furnished by John Clay of Chicago.)				
T. H. MacDonald, good roads			**1,200.00	1,200.00
Total salaries listed on salary roll	$81,443.34	$18,206.66	$2,550.00	$102,200.00

*Engineering Experiment Station.
**Good Roads.
°Repairs and Improvements.

Houses on the College grounds are occupied by President Storms and Professors Curtiss, Holden, Noble, Summers, Stanton, Marston, Bissell, McKay and Beech. The annual rental is fixed by the Board at $200.00.

The following is the list of the instructors and assistants for the school year beginning September 1, 1905, with the salary of each and the fund from which it will be paid.

Instructors and Assistants	Support Fund	Agrl. Exp. Station	Other College Funds	Totals
Farm Foreman	1,000.00			1,000.00
E. T. Robbins, animal husbandry (Receives $100 additional from fellowship fund).	500.00			500.00
H. M. Bainer, agricultural engineering	400.00	300.00	**200.00	900.00
J. T. Hoover, agricultural engineering	300.00	300.00	**120.00	720.00
M. L. Bowman, farm crops	500.00	500.00		1,000.00
J. W. Jones, farm crops (Receives $600 additional from the United States government).	160.00	240.00		400.00
M. L. Mosher, farm crops	400.00			400.00
E. B. Watson, soils	400.00	400.00		800.00
Assistant, dairying	800.00			800.00
V. H. Gardner, horticulture (For 10 months).	416 66			416 66
J. Erdmann, horticulture	700.00			700.00
Geo. Judisch, veterinary	50.00			50.00
J. G. Hummel, mechanical engineering	900.00			900.00
E. C. Potter, mechanical engineering	900.00			900.00
D. M. Curl, mechanical engineering	720.00			720.00
E. M. Spangler, mechanical engineering	450.00			450.00
C. M. McCormick, mechanical engineering	450.00			450.00
F. G. Allen, mechanical engineering	800.00			800.00
F. L. Blackmann, mechanical engineering	500.00			500.00
Student assistants	135.00			135.00
John Berg, civil engineering	950.00			950.00
M. J. Reinbart, civil engineering	650.00		*100.00	750.00
W. B. Anderson, electrical engineering	1,000.00			1,000.00
A. H. Hoffman, electrical engineering	800.00			800.00
Bird Slater, chemistry	700.00			700.00
Jeannette Bartholomew, chemistry	500.00			500.00
Lola Stephens, chemistry	500.00			500.00
Edith Stevens, chemistry	500.00			500.00
C. E Bartholomew, zoology	500.00			500.00
H. J Quayle, zoology	400.00	800.00		1,200.00
R. E Buchanan, botany	400.00	300.00		700.00
Harriet Kellogg, botany	300.00	300.00		600.00
Estelle Fogel, botany	360.00			360.00
W. S. Dudgeon, botany	40.00			40.00
Charlotte King, artist	150.00	570.00		720.00
Elizabeth Moore, English	700.00			700.00
Rose Abel, English	700.00			700.00
Dora Tompkins, English	600.00			600.00

Julia Vaulx, English	350.00			350.00
Grace Norton, modern languages	800.00			800.00
Florence Lucas, modern languages	800.00			800.00
Lisle McCullom, modern languages	800.00			800.00
Dorothea Beggs, modern languages	600.00			600.00
Mae Miller, history	600.00			600.00
Other assistants, history	200.00			200.00
E. A. Pattengill, mathematics	1,000.00			1,000.00
Julia Colpitts, mathematics	1,000.00			1,000.00
Anna Fleming, mathematics	650.00			650.00
J. D. Suter, mathematics	800.00			800.00
Elizabeth Cronin, mathematics	600.00			600.00
Student assistants, mathematics	124.00			124.00
Keo Anderson, mathematics	600.00			600.00
Instructor of band, military	300.00			300.00
Sybil Lentner, public speaking	600.00			600.00
Winifred Tilden, public speaking (Receives $225.00 additional from current expense).	175.00			175.00
Anna Wilkins, domestic economy	800.00			800.00
Ruth Morrison, domestic economy	600.00			600.00
Mary Rausch, domestic economy	100.00			100.00
Carolyn Gabrielsen, library	600.00			600.00
Student assistants, library	225.00			225.00
Mr. and Mrs. F. J. Resler, music	500.00			500.00
C. E. Ellis, chemistry		1,000.00		1,000.00
Assistants, chemistry		400.00		400.00
	$31,555.66	$5,110.00	$420.00	$38,085.66

*Engineering Experiment Station
**Good Roads

Summarizing the salaries charged against the different funds, we have:

Educational Support fund including administrative officers	$113,999.00
Agricultural Experiment Fund	23,316.66
Engineering Experiment Fund	950.00
Good Roads	1,520.00
Repairs and Improvements	500.00
Total	$140,285.66

These salary totals differ from the salary totals which appear in the expense budgets of the college and station. This is due to the fact that the fiscal year and college year do not co-incide, the one beginning July 1st, the other not until September 1st., The fiscal salary year therefore includes two months of one school year and ten months of the one that follows. The salaries given represent however, the basis of expense, in these different lines, on which the College will run after the school year begins, Sept 1, 1906.

In making up the expense budget of the Agricultural Experiment Station, account is taken of the cash on hand as well as the income from State and national sources. The amount available for the fiscal year 1905-1906 is made up as follows:

Cash on hand at beginning of year	$ 4,111.26
National appropriation	15,000.00
State appropriation	25,000.00
Total	$44,111.26

Under the orders of the Board this is apportioned as follows:

AGRICULTURAL EXPERIMENT STATION BUDGET.

1905-1906.

For salaries of Station Staff and Assistants		$22,656.09
For Expenses of Sections—		
Bulletins and Bulletin Office	$4,000.00	
General expenses, heat, water, janitors, etc	1,450.00	
Director's office	1,200.00	
Animal Husbandry	3,750.00	
Agronomy, including Farm Crops	3,000.00	
Soils	800.00	
Agricultural Engineering	600.00	
Horticulture and Forestry	2,000.00	
Dairying	1,000.00	
Veterinary	400.00	
Chemistry	1,000.00	
Botany	700.00	
Entomology	600.00	
Photographic Supplies and Current expenses	750.00	
Emergency and Building	205.17	$21,455.17
Total		$44,111.26

It is the policy of the Board to limit the appropriations for any year to the funds available during that year. In neither the building nor support funds have any appropriations been made in conflict with this policy. All outstanding contracts and obligations can be met by the funds which will come in during the present fiscal year.

GRADUATES AND DEGREES.

The following table shows the number of graduates in the different college courses during the biennial period:

College Course.	First Year, June, 1904.	Second Year, June, 1905.
In the course in agronomy	4	10
In the course in dairying	3	7
In the course in animal husbandry	12	25
In the course in horticulture	3	2
In the course in veterinary science	4	12
In the course in mechanical engineering	19	21
In the course in civil engineering	19	31
In the course in electrical engineering	26	21
In the course in mining engineering	3	3
In the course in science as related to the industries	14	15
In the course in general and domestic science	13	19
Totals	120	166

Appropriate degrees were conferred upon these graduates. Other degrees were conferred as follows:

MASTER OF SCIENTIFIC AGRICULTURE.

June, 1904	June, 1905.
H. M. Bainer,	A. G. Lauder,
J. H. Frandson,	J. T. Caine,
C. Larsen.	T. S. Hunt,
	L. S. Klinck,
	R. Rueda.

ADVANCED DEGREES IN ENGINEERING

Degree of Civil Engineer.

W. C. Armstrong, F. C. French,
George W. Catt. J. C. Sample.

Degree of Mechanical Engineer.

D. M. Hosford. R. M. Dyer.

Degree of Electrical Engineer.

B. S. Lamphear.

Degree of Mining Engineer.

L. E. Young.

SUMMARY FOR 1906.

Graduates in four year courses	166
Post-graduates	8
Completing two years' course in Domestic Science	8
Total	182

Respectfully submitted,

E. W. STANTON,
Secretary.

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