

TWENTY-SECOND REPORT

OF THE

Iowa State College of Agriculture
and Mechanic Arts

MADE TO

THE GOVERNOR OF IOWA

For the Period

July 1, 1905, to June 30, 1906

DES MOINES
EMORY H. ENGLISH, STATE PRINTER
1907

LETTER OF TRANSMITTAL.

IOWA STATE COLLEGE OF AGRICULTURE
AND THE MECHANIC ARTS,
AMES, IOWA, December 1, 1906.

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 State College of Agriculture and the Mechanic Arts, I have the honor to transmit herewith the twenty-second 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 report:

Owing to the change in the year of the legislative session, this should perhaps be considered in the light of a supplement to the biennial report presented for the period 1903-05 and will include the period of the fiscal year, July 1, 1905, to June 30, 1906. As parts of this supplement are included the reports from the Deans of Divisions, the report of the Treasurer, and the report of the Secretary of the Board of Trustees. It will also contain the report of the Director of the Agricultural Experiment Station and the report of the Director of the Engineering Experiment Station and a brief report of the Iowa Highway Commission. Certain general considerations affecting the welfare of the College and the Station work are herewith submitted for your consideration.

THE LAND GRANT COLLEGE.

The first Morrill Endowment Act was passed by the National Congress July 2, 1862, and became a law upon the signature of a resident Lincoln. A great and fruitful educational idea was thus engrafted into a federal statute. This endowment created by the sale of public lands became a trust fund which might be accepted by any and all of the States and was so accepted by the State Iowa through the act of its Ninth General Assembly, September 11, 1862. The first Morrill Act, therefore, becomes the organic law of the land grant colleges and expresses their fundamental purpose in language to be treasured as the intellectual and industrial Magna Charta of tens of thousands of American youth. A part of the language of this Act reads as follows:

* * * * and the interest of which shall be inviolably appropriated by each State, which may take and claim the benefit of this act,

to the endowment, support and maintenance of at least one college, where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life.

The State, in accepting this trust fund, accepted it upon the basis of the Morrill Act and for the purpose expressed. In 1882 the General Assembly of Iowa passed an act defining the course of study to be pursued:

There shall be adopted and taught in the State Agricultural College, a broad, liberal and practical course of study, in which the leading branches of learning shall relate to agriculture and the mechanic arts, and which shall also embrace such other branches of learning as will most practically and liberally educate the agricultural and industrial classes in the several pursuits and professions of life, including military tactics. (Section 1.)

That all acts, and parts of acts inconsistent with this act are hereby repealed. (Section 2.) (Section 1621.)

Nearly all of the States of the Union have eagerly accepted this Government grant and have undertaken this trust. In most of the States, except the very newest, supplemental State aid has also been given and the land grant colleges have become State colleges of agriculture and mechanic arts.

The land grant colleges from feeble and more or less destitute beginnings have acquired an acknowledged and honored position among the institutions for technical education, with a total endowment of over eighty-one million dollars and an annual income of over eleven and three-fourths million dollars and with faculties aggregating two thousand six hundred and seventy-two and giving instruction to a total of nearly sixty thousand students, of whom nearly nine thousand are students of agriculture.*

COURSES OF STUDY.

At first these institutions, though inspired with a great and fruitful idea and with a desire to make higher and scientific and technical education democratic and to bring its privileges near to all the people, had, nevertheless, to feel their way towards a definition of their purpose and to work out suitable courses of study. This task becomes one of deepest interest and fraught with not a few difficulties because the whole field of applied science is new.

In agriculture particularly a knowledge of scientific principles and their application to the problems of animal husbandry and of the soil, of dairying and of horticulture, was quite imperfect but has rapidly increased in definiteness, scientific accuracy, and industrial importance. The progress of the last forty years, whether measured by bulk or quality, is probably more significant and more important than that of all the preceding centuries.

The task of defining the field of science and applied science in college courses also presented educational problems of the gravest importance. If, in accordance with the National and State law, the youth who were to attend these institutions were to be broadly and liberally educated, and at the same time to be technically trained in science as related to the industries, a double purpose of most critical importance must be kept in view,—the broad and liberal education of young men and young women and at the same time their scientific and technical training. The land grant colleges have, in recent years, been in close conference one with another, their presidents and representatives meeting in annual association, each profiting by the experience of the rest in an endeavor to develop courses of study, to establish standards, and to determine the requirements for scientific and technical degrees. It is obvious that there must be a compromise between the old classical ideal of a college course in which "nothing useful is taught" and the equally extreme and inadequate notion that such an institution should be a trades-school. A trades-school does not broadly and liberally educate, neither can it be scientific in its methods. In the nature of the case the framers of the original organic law, of the Morrill Act, and of the State acts, did not, themselves, have a completely elaborated and perfected system of education clearly in mind, but rather a great and fruitful idea which must be left to the college authorities for elaboration and perfection. The development, however, should be in fundamental and sincere harmony with the purposes of the law, and hence the law itself has become the guiding principle and regulating ideal.

While under the law it would be entirely consistent for a land grant college to offer classical courses leading to the degree of Bachelor of Arts and while in some States this is done, in others, as in our own, classical courses, as such, are not offered nor the degree of Bachelor of Arts given. The emphasis of our work is upon science studies and upon the branches of applied science which particularly affect agriculture and mechanic arts. As in all well established and accredited institutions assuming to give broad

* Director Henry Armsby, Pennsylvania State College in "Science," Nov. 30, 1906.—p. 674.

and liberal education, certain general studies are considered essential, such as English, including principles of speech and expression and a sufficient study of English literature to give the student a somewhat adequate standard of individual taste and judgment; brief but comprehensive courses in history that shall familiarize the technical student with the origin and development of the industrial, social and political institutions and to fit him for intelligent citizenship in a free country. Some study of modern languages is universally recognized as an important element in all technical institutions of collegiate grade. This is particularly true in those branches or groups of studies in applied science which lead the student to the literature of science in other tongues than our own, and for the technical student to make him familiar with the language of peoples with whom he is likely to deal in professional and scientific work in after life.

While the Iowa State College does not claim or presume to have attained perfection in its courses of study or to have yet found a completely satisfactory balance between studies of a more general and those of a more specific and technical character in any or all of its groupings of courses, it is our conviction that a fairly satisfactory result has been attained. Judging by results, graduates of this institution are demonstrating the value and sufficiency of their training here to fit them for efficiency in their various pursuits and callings in life. They are in a large and satisfactory degree doing the things that need to be done in the world and are a credit as citizens and leaders to the institution and to the State. To cite a single instance or two, it may be noted that nineteen of the State colleges of agriculture and mechanic arts in the United States have at the head of their animal husbandry departments graduates of the Iowa State College. Fourteen of these have been elected to their positions from the graduates of our school of the last three years. The graduates in dairying and horticulture have also assumed leading positions. Upwards of eighty per cent of the graduates of the agricultural courses for the last five years are now engaged in some form of agricultural operations. The old charge that a college of agriculture led its students to despise agriculture and to forsake the farm is no longer true.

In engineering this school has established an enviable standing among the leading institutions of engineering in this country, and many of its graduates are rendering important service in other lands, particularly the Spanish dependencies now requiring efficient workers in the development of natural resources. With an

attendance the present year of at least eight hundred in the division of engineering, and with entrance requirements equal to those of the stronger institutions of the country, we are fitting men for successful professional careers as engineers. The leading mechanical industries of the entire country are in the habit of looking to Ames for some of their best men and many of the sons of Iowa look with gratitude to their Alma Mater and their State for the educational equipment which they have received.

The time has already come when far greater attention must be given to the development in manufacturing lines of the agricultural and other resources of our own State within our own borders. The enormous export of raw materials to be sent back again as finished products at greatly increased cost imposes an unnecessary burden upon the people. As Alexander Hamilton so ably urged upon the First National Congress, so we must still appreciate that agriculture and mechanic arts must develop together for the mutual strength and efficiency of each.

There is a vital and fundamental relationship between the colleges that now exist on the campus at Ames, giving them unity, mutual helpfulness, and efficiency that could scarcely be attained if any of these four were wanting or if they were overshadowed by professional and classical institutions on the same campus and under the same management. With over one hundred laboratories and with its divisions of agriculture and engineering, of veterinary medicine and of science, the Iowa State College has enough to do and is not seeking to enter other fields. It does ask at the hands of the State adequate equipment and support to do the work which it is set to do and to furnish the education which is being sought by increasing numbers of our sons and daughters.

CONCERNING ENTRANCE REQUIREMENTS TO COLLEGE COURSES.

It is gratifying to note that with the raising of the standards for entrance to all college courses there has been not a decreased total attendance, as might have been anticipated, but an increase in attendance. The requirements for entrance to the engineering and science courses are now those of the best established colleges of the country, and in the courses of agriculture and veterinary medicine they are in advance of most institutions. It is our conviction that the degree of Bachelor of Science in agriculture or in engineering or in science should mean as much of severe mental discipline and of scientific attainments and have as much of educational value as any bachelor degree. Formerly it was contended

that courses in agriculture must be of a lower grade and students admitted who were poorly prepared in order to obtain satisfactory numbers of students in these courses. This argument has now been proven fallacious by the experience and achievements of our own college. Institutions in other States are now looking to us for guidance in these particulars and are taking courage for stronger work. Our own college has more students of collegiate grade in courses in agriculture who have passed entrance requirements, and has graduated larger numbers in our classes to bachelor's degree in agriculture than any other institution in the country. This gratifying result is worthy of high appreciation and should surely stop the mouth of any censorious critic.

CONCERNING PREPARATORY OR ACADEMIC WORK.

It is the policy of the State Colleges to lessen as rapidly as it can be done, without unjustifiable closure of the door of opportunity to the youth of Iowa, the amount of academic or preparatory work. The necessity for maintaining a certain amount of such work is obvious from the fact that there are upwards of one hundred and forty-five high schools in the State having somewhat less than the required amount of work to fit students for freshman standing. Some of these schools are doing excellent work so far as they go, but their graduates still need a year or a year and a half of more advanced preparatory study in order to enter the freshman class. It is also the case that students who enter as freshmen sometimes show themselves so poorly prepared in one or more subjects as to necessitate a review of these subjects. The advanced academic classes are therefore necessary. We are able to maintain very much more satisfactory standards for freshman classes than we could possibly do were it not for this amount of preparatory work which we give. It is gratifying to note that the number of students enrolled as academic students is growing relatively less. It is also extremely gratifying that of the entering class this year over three hundred have come as graduates of Iowa high schools.

CONCERNING THE CONTROL AND ADMINISTRATION OF COLLEGE INTERESTS.

Upon no subject affecting the interests of higher education, that is considered to be open at all for discussion, does there appear to be more unanimous and positive conviction among educators of experience than for institutions of higher learning to have autonomy and independence. It is a most difficult and delicate task, requiring patience and devotion and the highest skill and years of time to develop any institution of higher learning to a position of unity and efficiency. It is already a serious fact that a number of institutions attempting to give all kinds of higher education on one campus and under one management are becoming top-heavy and unwieldy.

An institution of learning comes to have a soul of its own. It should have, and must have for its prosperity, the single-hearted and intelligent interest of its controlling authority. Nothing can be more repressive than to introduce such methods of control as would destroy its individuality or so hamper and discourage its technical and scientific work as to substitute for intellectual and actual independence on the part of its faculty members and its controlling board the kind of dominating authority which inevitably comes from non-expert control. There is no danger more menacing to State educational institutions than non-expert control, that, whether dominated by political officiousness or with the best of motives or by the desire to make a record for mere economy, shall put the controlling power into the hands of men who can not, in the nature of the case, be intelligent as to the nature and importance of the affairs committed to their charge.

It is the policy of the Iowa State College of Agriculture and Mechanic Arts, a policy that has been the outgrowth of the experience of the years and which constitutes a vital factor in its prosperity and development, to give to its heads of departments, as much as is consistent with accountability, that large measure of independence in control of the finances which is necessary for the purchase of equipment, determining of policies in the running of laboratories and offering of courses, and the like. Academic freedom, which in a technical and scientific institution, is absolutely bound up with a measure of freedom in the use of funds, is the lifeblood of educational work. This, however, in no sense implies lack of responsibility. Every head of department, after fullest conference with trustees and college authorities, is made definite

appropriation of funds for the fiscal year. These funds become available in twelve monthly payments, placed to the credit of the departments on the treasurer's books. Certain established and well understood limitations are fixed as to the nature of expenditures that will be authorized. All bills come before the Auditing Committee for audit. Any unusual expenditure must be authorized in advance by the Board of Audit and the head of the department is held to strict account for his expenditures, but within these limits he is left unhampered as, in the nature of the case, he is best qualified to judge of the wisdom of the expenditures for his work.

Wherever a method of requiring requisitions to be submitted to a non-expert and therefore non-intelligent authority has been in vogue, it has proven extremely irritating, repressive and hurtful.

FINANCIAL POLICY.

Purchasing Committee.—It should be borne in mind that all purchases are now made through the purchasing committee and thereby advantage is taken of competitive bids on all materials and equipment for all departments of the institution. The beneficial results of this method of making purchases are sufficiently indicated in the report of the secretary upon the work of the purchasing committee.

Department Funds.—With an increased attendance nearly double that of previous years and an utterly insufficient support fund, it was inevitable that the college should fall into arrears or that it should absolutely shut down some of its departments and cripple its work. The issue was frankly faced and a deficit incurred of nearly twenty thousand dollars. The situation was presented fully to the Legislature of 1904, which made provision for this deficit and for the more urgent immediate needs in an increased appropriation to the support funds. It would be easy for heads of departments, with many and very urgent needs in the nature of equipment and instruction force, to overreach their appropriations and incur a deficit. Beginning with the fiscal year of 1904-05 a policy was adopted of appropriating to the work of the College all funds that would accrue under the appropriations for the year and then of requiring the departments to keep strictly within the limit of their appropriations. The soundness of this policy was evident to all and there has been most earnest effort on the part of the department heads and of college authorities having charge of appropriations to adhere to this policy. The result has

been that for two years we have been able to report to the Board of Trustees that there were practically no deficits. To compass this end has, in many instances, placed upon the instruction force of various departments a much heavier amount of work than they should consistently be asked to do or than they can do continuously and with success, and it has also meant, in many departments, such a serious shortage of equipment as to cripple their efficiency. Nevertheless the policy has been adhered to in good faith and it has been demonstrated at least that the College can control its finances.

Clerical Help.—A cursory survey of the treasurer's and secretary's reports, and particularly of the secretary's report to the executive council, will show the large volume and multitudinous details of the business of an institution like this one. We occupy a unique situation in that the correspondence of the College with the people of the State is simply enormous and cannot be neglected or treated carelessly. This correspondence can in part only be now cared for by the Agricultural Extension Department provided for by the last Legislature. A considerable part can only be answered by men technically informed in the departments to which the inquiries come. Moreover, the mere business of the College is enormous. The bills between the various departments and of commercial character with parties outside the College in the purchase of supplies, laboratory materials, equipment and the like, are very great. The business operations of running the farm or the farms and experimental plots, occupying as they do over one thousand acres, is itself no small matter.

In nearly every instance, also, the departments have a scientific or technical character that requires more or less expert ability to handle and the business of the college through its various departments is many times as great as it would be in an ordinary college where the only concerns are those of an academic or class-room character. Even our instructional work involves a very considerable amount of stenographic assistance. In a number of our technical courses the lectures are prepared by our professors and outlines of notes must be furnished to the students, as the text-books for the subjects are quite inadequate or entirely wanting. This is one of the conditions which we face from the fact that we are in some lines leading in the educational work and thought of the country. Moreover, much scientific and technical work of a higher order can never be satisfactorily done by mere text-book methods.

It is the policy of the College administration to encourage and to require a grade of instruction work which necessitates personal

initiative on the part of the professors and a great deal of outside preparation for their lecture and laboratory periods. So far as stenographic help can assist these men, carrying heavy work as they do, it is economy to use it. It would be "penny wise and pound foolish" to ask a man on the salary of a professor to spend his time working a typewriter or mimeograph. This policy would very speedily reduce our efficiency by half.

CLERKS AND STENOGRAPHERS, 1905-06.

EXECUTIVE OFFICES.

President's:	
Mary E. Turner, secretary.....	\$ 75.00
A. E. Hunt, stenographer and bulletin clerk.....	55.00
Secretaries:	
Ira J. Welch, pur. com., \$75; F. L. & I, \$100 per year.....	83.33
Berenice Johnson, secretary's office.....	60.00
Ora Brandt, jr., dean, \$40; rep. and impr., \$20.....	60.00
Bess Disbrow, sec.'s office, \$15; pur. com., \$15; jr. dean, \$15..	45.00
Treasurers:	
Gertrude Mereness, treas. office, \$30; F. L. & I., \$30.....	60.00
Maud Rice, treas. office, \$40; F. L. & I., \$20.....	60.00
Katharine Goble, treas. office, \$25; diploma, \$30.....	55.00
Josephine Stewart, treas. office, \$10; book dept., \$45.....	55.00
Mabel Campbell, treas. office, \$20; diploma, \$15; cat., \$15.....	50.00

DIVISION OF AGRICULTURE.

Office of Dean:	
Mabel Z. Keith, dean's office, \$25; director's, \$45.....	70.00
Agronomy Department:	
G. E. Stayner, ag. dept., \$32.50; section, \$32.50.....	65.00
Jessica Besack, ag. dept., \$15; ag. sect., \$15; farm crops dept., \$15; farm crops sect., \$15.....	60.00
Nora Persons, soils dept., \$11.25; soil sect., \$11.25; ag. eng. dept., \$11.25; ag. eng. sect., \$11.25.....	45.00
Dairy Department:	
Florence L. Coe, dairy dept., \$25; dairy sect., \$15.....	40.00
Animal Husbandry Department:	
Rose Stobert, an. husb. dept.....	60.00
Mary Laughran, an. husb. dept., \$26; an. husb. sect., \$26 (4-5 time)	52.00
Horticultural Department:	
Lena Kennedy, horticultural department.....	40.00
Miscellaneous:	
Ray Weirick, sect. of entomology (1 to 5 dally).....	30.00
Bulletin section hires help by the hour, paying from 12½ cents to 22 cents per hour, according to nature of work.	

DIVISION OF VETERINARY MEDICINE.

Karl Hollingsworth, vet. dept., \$12.50; vet. sect., \$15; dom. sc. dept., \$27.50	55.00
--	-------

DIVISION OF ENGINEERING.

Dean's Office and Civil Engineering Department:	
Bess Dunham	60.00
Mechanical:	
Laura Humphries, M. E. dept., \$27.50; F. L. & I., \$27.50.....	55.00
Electrical and Mining:	
Harriet W. Douglass, E. E. dept., \$27.50; M. E., \$27.50.....	55.00
Civil Engineering Department, and Highway Commission:	
C. S. Nichols, by hour, average per month.....	25.00

DIVISION OF SCIENCE.

Botany:	
J. Nye Bourne, bot. dept., \$25; bot. sect., \$25.....	50.00
Domestic Science:	
Karl Hollingsworth (see div. of vet. med.).	
The departments of mathematics, chemistry, English, history, public speaking, modern languages, civics and entrance requirements, and military science employ clerks and stenographers by the hour, paying from 15 cents to 25 cents, according to the nature of the work.	
Miscellaneous:	
C. C. Moore, custodian's office, \$25 from F. L. & I.....	25.00
E. D. Barrows, Mr. Grover's office, 17½ cents per hour, Preceptress' office pays 8 cents per hour for assistants.	

THE COLLEGE DEPARTMENTS ARE RUN ON AN EDUCATIONAL AND NOT ON A COMMERCIAL BASIS.

The departments that have a semi-commercial character, as the farm and the dairy, are largely self-supporting so far as the actual products are concerned and their cost. These and all similar departments are, however, to be regarded as laboratories for instruction and for experimentation rather than for commercial profit. In the case of the animal husbandry department, instead of keeping one or at most two breeds of stock, as would be the policy if profit in a commercial sense were the object, a large number of different breeds must be kept, and this, in the nature of the case, does not prove profitable but is of great advantage for educational purposes, as it brings our students to a wider knowledge of varieties and breeds of live stock than would be possible otherwise. The animals, moreover, must be handled constantly for the purposes of stock

judging, requiring a considerable force of assistants to prepare them for the pavilion and stock judging classes and having them in charge daily for this purpose.

On the farm, moreover, many small plats are either assigned to students or are devoted to the raising of small quantities of a large number of different grains and crops and, as before, with an educational rather than a commercial purpose. In the dairy, instead of running the machinery with as little help and as few machines as possible, we must install as many as possible and give opportunity for a large number of classes to carry on the actual work of the dairy processes. All of the work, moreover, is done from the scientific and educational point of view rather than with a purpose of making the results commercially profitable in the case of the College departments. All of these departments, therefore, require net appropriations from the college funds for their support annually.

In the experimentation plats and work, as in horticulture, farm crops, dairying, etc., the results of course cannot be commercially profitable. In the large majority of cases the results of patient and continuous experimentation, and often the most valuable results, are negative rather than positive, showing what not to do in the future. There is grave danger that the "get rich quick" spirit and the commercial eagerness of the age will embarrass the true spirit of scientific research. Truth must ever be the supreme object of devotion on the part of her devotees. Whether the results prove commercially profitable or not is incidental and must be secondary. The supreme purpose in educational processes and methods must always be search for and reverence for the truth. To encourage this spirit and to stand for the dignity of science is the chief end and aim of true research and of true instruction.

INFLUENCE OF THE COLLEGE.

The people of the State of Iowa are proud of our educational institutions and not least of the State College at Ames, and the people and their representatives undoubtedly have the sincere purpose to further and foster the educational and the experimental work there being done. What the present position of the State might have been or might now be without the leadership and influence and service of our College of Agriculture and Mechanic Arts it may be idle to speculate, but that it would be considerably less than it now is none can question. Measured by the standard, not of character, intelligence and ideals, which certainly constitute the supreme factors of value in any civilization, but measured by dol-

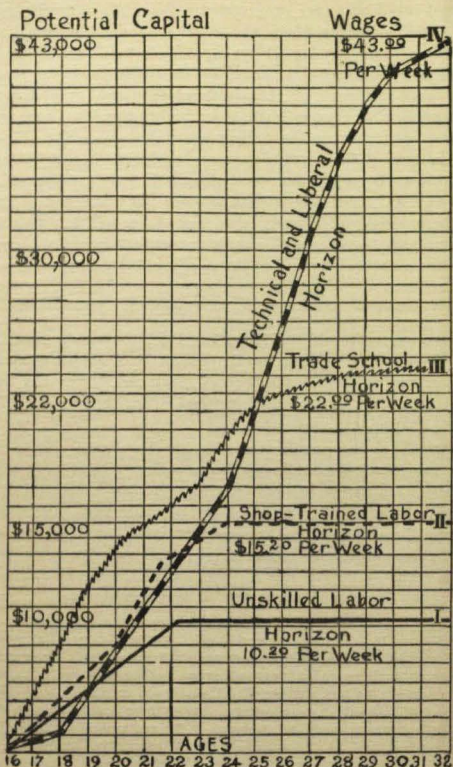
lars and cents, it is generally admitted that the service of the College has returned to the State manifold its cost. If the estimate of sober and intelligent men approximates the truth it would be fair to say that the increased productions of a single year like the one just closing would pay for all the expenses to the State of its Agricultural and Mechanical College for its entire history. But we cannot think so meanly of the people of this great commonwealth as to suppose that they estimate more highly the corn, hogs, cattle and sheep than they do the welfare and intelligence and efficiency and happiness of their own sons and daughters. Great Britain is awakening to the conviction that she must cease putting the emphasis of her National defense upon her navy and put it rather upon the brains and industrial efficiency of her people. This great commonwealth, together with our sister commonwealths of America, cannot too soon realize the full force of a similar argument.

IS A COLLEGE EDUCATION A GOOD BUSINESS INVESTMENT?

The Epworth Herald for August 4, 1906, contains a most interesting digest of an address by Mr. James M. Dodge, president of the American Society of Mechanical Engineers, "who has, in his careful way, after the 'scientific method,' furnished a scientifically accurate answer to the question."

"With the young people themselves as the 'capital,' their wages as the 'interests,' what influence has a college education or a technical education on the earning power or increase of capital?" He gathered a large number of actual average cases from practical life, and from these data drew certain deductions that should have the earnest consideration of young people, their parents, teachers and friends. The following was his method and we invite a careful study of the diagram in connection with this explanation:

Let us start with the average boy of sixteen, and assume that he is worth to himself in earning power \$3,000; this is his potential capital—himself viewed only as an economic proposition. At this point we will also assume that he is as yet neither skilled in any craft, nor shop-trained, nor has he had the benefit of any trade school, or even been in any school of technology, or a college. Hence, four possibilities lie before him. 1. To train an unskilled laborer. 2. To get a shop training. 3. To go to a trade school. 4. To acquire a liberal education. Start four boys, then, on the four lines and let us see what influence training of an equal sort actually has as measured by money returns. (See diagram.)



1. The unskilled laborer. On the average he is earning \$4 a week at the end of his sixteenth year; \$5 a week a year later, and his advance continues with regularity to his twenty-second year, when he is worth as "capital" to himself \$10,000, and he has a wage-earning capacity of \$10.20 a week. But here he reaches the highest economic value of unskilled labor, which will not significantly increase in value however many years he adds.

2. The shop-trained worker. Even his narrower, rule-of-thumb training pays good interest from the start. In six years he has passed the unskilled laborer; by the time he is twenty-four, however, he has reached his maximum; his potential capital is \$15,000, and his wage \$15.20 a week. This is the highest point reached by the shop worker.

3. The trade-school young man. The early broadening of his work immediately brings better wages. Note on the diagram that before he is eighteen he has forever distanced the unskilled worker. Before he is twenty-one he has also left the shop-worker behind him. When he is twenty-four he has an earning power of \$22 a week. He reaches his highest valuation at thirty-one years, and here he finds the highest point in the trade-school economic horizon.

4. The technically and liberally educated boy. For several years this young man lags behind all three of the other classes. When he is nineteen the unskilled laborer is ahead of him. Not till he is twenty-five does he catch up with the shop-trained boy, or rise above the economic horizon of the trade-school man. But what then? All three of his competitors have already reached their earning limit. Their horizons are fixed; but from that twenty-fifth year and its potential capitalization of \$22,000 the college-trained man shoots up in seven years more to an earning power of \$43 a week, and has not as yet reached his full economic horizon! A liberal education has added a potential capitalization of \$21,000 over all competitors (from \$22,000 to \$43,000). Education took him at the age of sixteen at \$3,000, it leaves him at the age of thirty-two years at \$43,000.

These facts speak for themselves; they are not the guesses of an educational enthusiast, but are the logical results of a careful scientific investigation by one thoroughly competent to make it. What better investment of himself can one make than to secure a college education?

AGRICULTURAL AND MECHANICAL HIGH SCHOOLS.

The science of agriculture has so developed and intelligent interest in agricultural affairs has so increased as to make agricultural and mechanical high schools exceedingly desirable, not to say necessary. Other States are appreciating this demand so forcibly as already to have passed legislative acts authorizing the establishment of such schools and making provision for their maintenance. The State of Wisconsin has already opened several schools of this character. The State of Georgia is preparing to do so, and the proposition is being considered in Minnesota. That it would be highly desirable that there should be several high schools of this

character in the State of Iowa seems evident. They would serve a double purpose, namely, preparation of such students as desire a college course in agricultural or mechanical science for entrance to the freshman year in college, and to give a practical education to such as did not desire or because of circumstances could not afford to take a college course.

A very great and increasing demand for short courses in agriculture, as evidenced by the success of the short courses at the College and those given at Red Oak and at Mount Pleasant, is sufficient evidence of the need for such schools. If such a policy should be adopted by this State there would, of course, be the exercise of discretion in their location so as not merely to be schools that would compete with the high schools already established in cities and towns but so as to supplement or complement their work. The consolidation of district schools already in progress suggests the feasibility of these centers for larger areas where additional work of a more thorough nature than in a short course as now conducted could be furnished and yet all brought within the reach of those who cannot attend college and who cannot prepare for college under present conditions. The draft of the Georgia bill authorized the Governor to accept from any county the grant of two hundred acres or more for the establishment of a district agricultural high school and provided that the fees received from the inspection of fertilizers, oils, and other inspection fees received by the department of agriculture in that State over and above the expenses of such inspection shall be used for the purpose of establishing and maintaining such schools. It is anticipated that this will be amply adequate. Provision is also made for boards of trustees to consist of one from each county in the respective congressional district in which the school shall be established.

As the city high schools naturally and inevitably cause the minds of their students to bend towards commerce and the business that centers in city life, so such schools would have a tendency to turn the minds of the students towards country life. That such a tendency in any marked degree would be valuable all can appreciate but none more sincerely than those who themselves live in towns or cities and who often sigh for the freedom and the healthful conditions of country life.

Manual training, and to such an extent as might be deemed advisable advanced instruction in the mechanical trades, and in

agricultural engineering and all agricultural subjects could appropriately be taught in such schools.

Already the demand for instruction in elementary agricultural subjects is manifesting itself quite widely in the public schools. Encouragement and wise direction should be given to this movement. A plot of ground under intelligent supervision should be connected with every schoolhouse in the land. An elementary experiment plot and elementary studies in crops and plant life should be given. There should also be prepared leaflets and booklets of direction and teachers should be employed who have an initial interest in agricultural subjects. The United States Department of Agriculture presented to the last Association of the Colleges of Agriculture and Mechanic Arts an outline of carefully prepared bulletins upon the subject of elementary and secondary school instruction in agricultural subjects. That, when published, should be made available for every public school-teacher of the State. It is highly desirable that the superintendent of public instruction should in some way be able to utilize these bulletins for the public schools of Iowa. In all of this work so important to the people of the State, the College at Ames respectfully proffers its service.

Instead of a few hundred attending the regular courses in agriculture and instead of a thousand attending the short winter course at the College and several hundred at one or two other points, as at Mount Pleasant and Red Oak, there should be thorough organization of these agencies for the instruction of the people in the fundamentals of agricultural science so that the numbers receiving instruction and inspiration should be counted by the thousands annually. The time has already come when the continued prosperity and happiness of the people must rest upon the more thorough and economical and therefore scientific and intelligent use of the natural resources of soil and climate.

SUMMER SESSION.

For a considerable time it has been quite evident to the College authorities that a summer session of the College should be held. The institution represents an investment by the State and the Nation of a large sum of money and the plant with its shops, laboratories, and equipment, is for the most part, except as experiment station work is carried forward, idle during the long vacation. The wood shop, forge shop, and machine shop should be thrown open under competent instructors, for those unable to take regular college courses but desiring to improve themselves in the various

industries. There is also a very significant demand for introductory courses in agriculture from public school-teachers who could well spend a few weeks of vacation in studying agricultural science at the College. There are in all over one hundred laboratories that should be open for the use of those who desire such instruction. It is estimated that a summer session could be established at an annual expenditure of not to exceed five thousand dollars per year and cover six weeks of time. It is extremely desirable that this should be provided for the coming summer of 1907.

CORRESPONDENCE SCHOOLS.

Already the correspondence that has sprung up between the various departments of the College and the people of the State is so extensive, bringing in not less than forty thousand letters annually to the College, requiring answers more or less individual and particular, that it forms the basis for correspondence courses. These, in the judgment of the College authorities, should be established at the earliest possible moment, not on a commercial basis but with the idea of giving to the people of the State at the bare incidental cost or less the information which it is within the power of the College to disseminate. There are multitudes of ambitious youth and in many instances older men and women who would gladly avail themselves of simple, comprehensive correspondence courses in agriculture and in the arts if the opportunity were given, and the basis for such correspondence work already exists in the large correspondence already maintained. This should be added to the functions of the Agricultural Extension Department and could be so added at a minimum expense. Already booklets and bulletins and leaflets have been partially prepared by our Extension staff to answer the demands being made. Correspondence courses, with the prestige and authority of the College behind them, would command the confidence of the people which no commercial enterprise can enjoy.

CONCERNING BUILDINGS AND EQUIPMENT.

During the year the Central Building was completed and has since been occupied. It contains the Executive Offices and the Departments of English, Modern Languages, Civics, Mathematics, Economic Science, Public Speaking, History and Botany. The Central Building will stand for centuries a monument to the foresight and generosity and wise provision of our people and of their representatives. "The Central Building at Ames," says Mr. Dixon,

Chairman of the Building Committee of the Board of Trustees, "is considered by builders and educators the best and most durable educational building in the Central West. Cost considered, it is one of the best investments the State has ever made. With its granite base, its walls of solid Bedford stone, roof of tile, its beautiful and pleasing architecture, it will be an inspiration to the thousands of young men and women that will go in and out of its halls for hundreds of years, a worthy monument to the generosity, enterprise, and high educational ideals of the people of Iowa." Special credit is due to the General Assembly for authorizing, almost unanimously and without objection, the erection of the attic story and dome and the front portico. This matter was presented to the General Assembly in 1904 and they approved the expenditures for these purposes and provided for the same. The departments now housed in the Central Building, save as one or two of them may be crowded out by increased attendance, are thus adequately provided for.

In Engineering Hall we have also a most excellent building for its purpose. This will probably need to be duplicated in the not distant future as the enrollment of students in this division is now four times as great as when the building was planned.

The new Hall of Agriculture, the foundations for which are now being laid, will when built, together with the old Hall of Agriculture, furnish very satisfactory accommodations for the agricultural departments of the College and for the sections of the Agricultural Experiment Station. Every foot of room, however, will be needed and is needed already.

The gradual realization of funds from the building tax will enable the College authorities to provide in whole or in part for a Veterinary Building, for a Library, for a Woman's Building in which to care for the Department of Domestic Science now so seriously crowded and cramped in incommodious quarters, and perhaps for some of the other buildings that are most needed. An emergency, however, exists still in the matter of engineering shops. One additional shop is being erected, to be designated the Forge Shop, at a cost of fifty-five hundred dollars. An actual emergency exists that will make it necessary at the earliest possible moment to erect additional shops and to furnish additional equipment.

It is a matter of sincere regret that the limitations placed upon the cost of the Hall of Agriculture have made it necessary for the Trustees to eliminate the Agricultural Assembly Hall, which the original plans included in a semi-circular wing in the rear of the

building. The elimination of this feature still leaves the Agricultural Division without any provision for an Assembly Room. This is a need which all institutions of a character similar to our own have sought to provide for, notably Kansas Agricultural College at Manhattan, the Illinois Agricultural Division at Champaign, the Wisconsin Agricultural Division at Madison, and the Minnesota School of Agriculture at St. Anthony's Park.

I would commend for especially earnest attention the plea of Dean McNeil for the erection at the earliest practicable moment of a Veterinary Building in which to house this growing and important division of our work.

EQUIPMENT.

There was presented before the Appropriation Committees of the last General Assembly a detailed statement of equipment needed, amounting in all to a cost of somewhat more than one hundred thousand dollars. Accompanying this was a request from the Board of Trustees of the College that this need be provided for by an annual appropriation of twenty thousand dollars. Provision was made, however, for a direct appropriation of only five thousand dollars distinctively for equipment. This has been utilized to the best advantage possible but seems pitifully inadequate in the face of the needs. The College authorities unite in asking that the support fund be placed at the figure named four years ago, which involves an increased annual appropriation at this time of twenty-five thousand dollars. In view of the fact that every dollar which was then asked was needed and that the student enrollment at present is materially larger than ever before, it seems to the College authorities that nothing less than this amount will enable them to do the work expected of them. For equipment the request is respectfully and earnestly renewed for an appropriation of twenty thousand dollars annually.

ENROLLMENT OF STUDENTS—1905-1906.

Course	Senior	Junior	Soph.	French	Acad.	Sp.	Total
C. E.	31	32	48	110	89	5	268
M. E.	19	13	19	43	27	8	129
E. E.	26	30	55	81	45	4	241
Mn. E.	6	4	7	18	7	*7 & 1	46
Acad. Engrs. ....	.....	.....	.....	.....	31	.....	31
Sc.	6	8	.....	.....	29	.....	36
G. & D. S. ....	.....	.....	20	38	8	.....	76
D. S.	8	7	.....	8	.....	.....	40
Se. & Agr. ....	.....	.....	2	1	.....	.....	4
A. H. ....	.....	.....	.....	61	33	.....	212
Agron.	7	11	7	11	13	.....	64
Hort.	3	5	4	6	3	.....	23
Acad. Agrl. ....	.....	3	2	6	.....	21	25
Dairy. ....	.....	.....	.....	.....	.....	**2 & 1	25
Vet.	4	9	15	27	.....	.....	56
Total	133	131	222	433	256	156	1,332

* 2-year Mining. ** 1-year Dairying.

College	1,332
Sp. Music	81
	1,363
Winter Courses	737
Good Roads School	39
Total	2,139

The present enrollment for the year 1906-7 in college courses is on the basis of from 1,550 to 1,600 when the enrollment is completed with the entrance of new students in the second semester. An actual increase of 250 in regular college course.

WOMEN IN THE COLLEGE.

One of the most important as well as the most interesting departments of the institution is that of Domestic Science, especially for young women. This work has been placed upon a thoroughly scientific basis. The accommodations for young women in the dormitory of Margaret Hall are altogether inadequate, as are the accommodations for the Department of Domestic Science and Domestic Art. An addition should be made during the coming year to Margaret Hall and a Woman's Building erected at the earliest possible date.

The following report is submitted by Miss Witter, head of the Department of Domestic Science, in regard to their needs:

The following report I submit on the basis of our enrollment for the fall of 1906. We have made no provision for increase of attendance at Christmas time. We have simply carried the attendance the fall semester

forward for the spring semester. During the last two years the spring semester has shown an increase of about twenty per cent over the attendance during the fall, and it would be only legitimate to expect a similar increase in the spring of 1907. The class lists in the Department of Domestic Science in the fall of 1906 total 350, as against 221 in the fall of 1905. The class enrollment for the spring of 1907 will be at least 350, and adding to this our 20 per cent increase will give us a class enrollment of 420, or a total class enrollment for the year of 1906-07 of 770, as opposed to 483 for the year 1905-06.

Several new courses have been added; second semester work in dietaries, second semester work in home sanitation, and two semesters work in the theory and practice of teaching domestic art.

Several courses have been made optional instead of required for the simple reason that we have no laboratory in which to offer the work. We have in this department 15 laboratories and 12 recitations per week. This means that our laboratories are worked to the fullest extent and we are wondering what will happen to us next semester when our work will demand at least two more laboratory periods.

I take the liberty of quoting to you from the last Biennial Report: "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, dilapidated, dark and inaccessible building. This extremely necessary and important work deserves and should have such accommodations as are proposed in the new building (hall of agriculture) as soon as they can be furnished." We are still in the same attic and dilapidated building with no relief in sight because of the remodeling of the plans for the hall of agriculture. We will not be accommodated in that building and we must have room, and not only room but quarters that are presentable. There is great need of a building to accommodate this work. We hope this will be a reality in the near future. Plans have been outlined for such a building and we feel that the work in home making should be of enough importance to the people of Iowa to warrant the carrying out of these plans.

Respectfully,

(Signed) GEORGETTA WITTER.

The College authorities, having engaged the services of Olmsted Brothers of Boston to advise with them concerning landscape questions and the erection of buildings, received from Mr. John Olmsted, who spent considerable time at the College, a preliminary report in which he strongly urged that massive and imposing buildings, such as those now being erected, should no longer be placed at hap-hazard upon the campus but should stand in formal relations with one another. His recommendations were such as to preserve, so far as possible, the park features of the beautiful campus and yet not leave the buildings in "staggered" relations. In accordance with Mr. Olmsted's views, the Trustees have located the site for the new Hall of Agriculture on an axis with Central Building and on

the west side of the campus, leaving space for parking and opportunity for location of other buildings both on the east and west sides of the campus and leaving the central and south campus free from the encroachment of buildings. Mr. Olmsted also urged the removal of the motor railway line from the central campus to a location north of Agricultural and Margaret Halls.

MOTOR LINE AND ELECTRIC RAILWAY.

By act of the Legislature of 1906 right of way across the campus for an electric railway was granted to the Des Moines, Fort Dodge & Southern Railway, the Executive Council being authorized to determine the location and conditions upon which the franchise should be granted. The contract for this improvement has now been signed and the grading is under way, which will give the College rapid transit service between the College and Ames and to Des Moines and other connection points.

CEMENT WALKS, GRADING, AND IMPROVEMENT OF CAMPUS.

By careful husbanding of the pro rata for the partial quarter between the passage of the last appropriation bills and the 30th of June, 1906, one thousand dollars was set aside for sidewalk construction. This, together with certain subscriptions from residents west of the campus, has enabled the College to build a six-foot cement sidewalk from the front and by the south end of Engineering Hall to the Engineering Shops and thence along the driveway past old Engineering Hall to the west gate. This is a much needed improvement but still leaves the grading around Central Building unfinished and makes no provision for the grading between Central Building and Engineering Hall or for the grading around the new Hall of Agriculture or for the construction of sidewalks on other parts of the campus. One mile of sidewalks in all are still needed.

Acting under the advice of the landscape architect, the athletic grounds, which of necessity should be changed, will be located on the southwest quarter of the campus. Some grading has already been done and the balance of the grading should be done as early as a date as practicable that the grounds may settle and be ready for use when needed.

Professor Marston furnishes the following estimate of funds needed for sidewalk construction and grading.

DEAR PRESIDENT STORMS: I have gone over the estimate of sidewalks and grading and would recommend that the College ask of the Legislature \$4,000 for the construction of sidewalks and \$2,000 for grading around

Central building and Agricultural hall. I would also suggest the advisability of asking an additional \$500 for grading on account of the new Athletic Field.

Very respectfully,
(Signed) A. MARSTON, College Engineer.

The College Park, consisting of a tract of several acres of rough and picturesque land on the south side of the right of way of the North-Western Railway and west of the College farm, is at present in a very unsightly condition. There should be sufficient expenditure to put this woodland park in proper condition, and also to improve the College cemetery where rest the remains of President Welch, President Beardshear, and others whose names are associated with the history of the College in its past. It would require at least two thousand dollars to make suitable improvements on these grounds.

CENTRAL HEATING AND POWER PLANT.

Professor Bissell furnishes the following estimate of the cost of completion of the heating and power plant:

MY DEAR DR. STORMS: In response to your request for an estimate of the cost of the completion of the new central heating plant and distributing system, or at least such portion thereof as will have to be finished during the next biennial period, I am advising you as follows:

Tunnel System: The tunnel system, comprising 1,000 feet of tunnel equipped with 14-inch steam pipe, 800 feet with 12-inch pipe, 700 feet with 10-inch pipe, 600 feet with 8-inch pipe, and 600 feet of branch tunnel, will cost, on the basis of the present prices, \$54,295, complete with return pipe, compressed air, vacuum and electric service wires.

Power Station Equipment: The additional power station equipment required to make it possible to use the new central heating plant to the exclusion of the old will require the following expenditures: One engine generator, \$10,000; 1,000-horsepower of boilers and stokers, \$20,000; induced draft apparatus, \$1,500; coal and ash conveyor system, \$10,000; auxiliary apparatus, \$4,700; total for this item, \$46,200.

This gives a grand total of \$100,495 as the amount which ought to be provided in order to complete the central heating and power station for service to the college buildings now in use and to the new Agricultural hall.

Respectfully submitted,

(Signed) G. W. BISSELL, Professor of Mech. Eng.

WATER SUPPLY.

Professor Marston furnishes the following data concerning the College water supply.

The present supply is derived from two sources:

One is the college artesian well, 2,215 feet deep, located adjoining the old power station. At this point is a power deep well pump which lifts

the water from a point 250 feet below the surface to the college elevated tank, the flow line of which is about 150 feet above the pump. The work is very heavy, owing to the high lift, and the pump, although of an efficient type, is frequently breaking down. We have found that it is not reliable enough nor does it have sufficient capacity to supply the college needs.

The other source of supply is from a shallow well located northeast of the farm barns on the site of an old spring. At this point is located a triplex pump driven by an electric motor, the pump being within suction reach of the water. This pump gives satisfactory service but is too small to meet our full needs and it is useless to increase its size materially because the amount of water to be produced from this shallow well is limited. It frequently proves insufficient to supply our wants.

During the present season the united capacity of these two pumping stations has proved insufficient to supply the college demands and it has been necessary to hire a traction engine to supply steam and to put in a deep well pump on an old deep well not far east of the shallow well above mentioned.

It is now plainly evident that it has become absolutely necessary to increase our water supply facilities. At the site of the deep well the supply can be increased by putting in a large surface reservoir to which the water can be lifted from the deep well by an air lift pump, or by some other efficient type of pumping machinery. There should be located here a second pump to lift the water from the surface reservoir to the elevated tank.

Or, at the site of the shallow well, if borings to be made in the future should determine that sufficient water could be obtained within suction range of the surface, a large circular well, serving also as a reservoir, could be constructed and a larger pump installed.

With either of the above arrangements added fire protection would be secured from the pumps.

The present situation is somewhat desperate and money is needed for immediate improvements.

Yours very truly,

(Signed) A. MARSTON.

ASSOCIATION BUILDING OR ALUMNI HALL.

Not the least of the College equipment for improved service to its students is the Association Building, or Alumni Hall. This building will be the headquarters for the Young Men's Christian Association and for the Young Women's Christian Association and probably for a Secretary of the Alumni Association. The building to cost upwards of fifty thousand dollars when furnished, will be the gift of the students and the alumni and the faculty to the institution. The students themselves, who, without other assistance, subscribed upwards of ten thousand dollars at the inception of the enterprise three years ago, came forward again last winter

with a subscription amounting to more than ten thousand dollars additional. Some of the alumni gave generous subscriptions. Mr. Charles N. Dietz of Omaha gave five thousand dollars and Mr. L. W. Noyes of Chicago gave five thousand dollars, making possible the completion of the building without debt. These gifts from alumni and friends and students are worthy of the highest praise, and it is to be hoped that larger gifts will be made in other ways to provide for the larger usefulness and efficiency of the institution to the people. The attitude of alumni and friends of eastern institutions should inspire the friends of the western schools to like munificence and forethought.

OUTSIDE WORK OF PROFESSORS.

It is in the highest degree important that men at the head of departments and giving instruction in technical and professional collegiate work should be, themselves, thoroughly familiar with the professional and technical fields of work to which their graduates must go. We must have men who are recognized as authorities in their respective fields. Men who would isolate themselves in college offices and lecture rooms and become mere abstract theorists would no longer be suitable for instructors. This is so generally recognized in technical schools that other institutions of the highest standing insist upon their head professors keeping active professional and responsible relations with the business world, especially as consulting engineers or as specialists in agricultural subjects or in fields of science. The following regulation was adopted by the Board of Trustees at its meeting June 5, 1906, upon the recommendation of the Faculty Committee of the Board:

"No employee of the college shall undertake any outside engagement or employment detrimental to his college work, or which (in case of remunerative work done in term time) is not beneficial thereto.

"During term time, written permission on proper blank forms shall be obtained from the President or his authorized representative for all outside work undertaken. On the forms particulars of the work shall be set forth, and copies shall be made matter of permanent record in the President's office."

It has been and is the policy of the College, as was explained to the Board when this action was taken, to encourage a close relationship between our professors and the industrial interests in the particular lines of their teaching. It is highly important that this vital interest and relationship should be maintained. It is, more-

over, to be recognized that the compensation of professors who are engaged in technical lines of instruction is quite below the compensation secured in professional services and that it is clearly legitimate that professor's salaries should be somewhat supplemented, when it is possible to do so without injury to their college work, by professional and advisory services rendered outside the institution.

While this privilege is, of course, capable of abuse, we believe it has seldom been abused in the history of this institution and if it should be abused that fact would very soon reveal itself in the inefficient service in the College work. This would very soon lead to dissatisfaction with the work of any professor in the school.

For the protection of the College, the Faculty Committee of the Board felt that we should be able to say at all times that the College authorities were aware of whatever work is being done by its professors or instructors and that such work is approved. They, therefore, adopted the regulation, copy of which appears above.

It should be noted, however, that the work of our instruction force is so heavy that professors have very little time for outside engagements or work, even of a consultation character, except on Saturdays or in vacations. It should also be noted that very frequently the apparent compensation for consultation or expert service goes finally to advanced students who do the detail work of plans, specifications, and supervision. As a matter of fact, compensation for outside services, in most cases, amount to but little. In the great majority of instances the service which the college faculties render to the public is given without compensation. This is particularly true in matters of analyses, tests, examination of materials, etc. Our experiment stations make free analyses and tests where the advantage is to the public in general, and charge only the bare cost of the laboratory work for private individuals. Our men have a genuine enthusiasm in their desire to render service to the people of the State.

The fact that the College has the services of experts in engineering and in agriculture makes it possible for the College to dispense with the special employment of such services from outside sources. The services of Professor Marston, as College Engineer, and Professor Bissell in all matters pertaining to the construction of heating and power plants, tunnel construction, plumbing, lighting, etc., have been of special value to the College, as have been the services of Professor McKay in the construction of the Dairy Building, Professor Kennedy and Professor Curtiss in the purchase and

equipment of the Dairy Farm and in all operations of the Station and the farm involving the purchase and selection of live stock. These men have been of service to the State and to the institution many times the value of their compensation, aside from the instructional and experimental work over which they have supervision and for which they are strictly responsible.

SCIENTIFIC CONTRIBUTIONS FROM MEMBERS OF THE FACULTY DURING
1905-06.

DIVISION OF AGRICULTURE.

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

Addresses before the following associations:

National Dairy Association at Chicago.

Annual Association of Agricultural Colleges and Experiment Stations.

State Board of Agriculture—Minnesota.

State Department of Agriculture—Iowa.

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

"Selecting, Testing and Grading Seed Corn."

Written for *The Furrow*.

"Selecting and Preparing Seed Corn."

Reissue of Experiment Station Bulletin No. 77.

"The A B C of Corn Culture."

Published by Simmons Publishing Company.

"Practical Aspects on Corn Growing."

Written for *Encyclopedia of American Agriculture*, Ithaca, N. Y.
Series of two articles on "Corn."

Written for *American Farmer*.

Series of four articles on "Corn."

Written for *The Furrow*.

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

"Cattle, Sheep and Swine Feeding in Europe."

Bulletin No. 77, Bureau of Animal Husbandry, U. S. Department of Agriculture.

"Hunter Horse Breeding in Ireland."

Bureau of Animal Industry, Annual Report, 1905.

"The Shire Horse of England."

The National Stockman and Farmer, Pittsburg, Pa.

"The Clydesdale Horse of Scotland."

The National Stockman and Farmer, Pittsburg, Pa.

"The Irish Hunter Horse."

The Horseman, Chicago, Ill.

"The Channel Island Breeds of Cattle."

The Canadian Thresherman, Winnipeg, Manitoba, Canada.

W. J. Kennedy, Vice-Director of Experiment Station—Continued.
"Sheep Breeding in England."

The Twentieth Century Farmer, Omaha, Neb.

"Animal Breeding in Europe."

American Breeders' Association Meeting, Lincoln, Neb.

"Shorthorn Cattle Breeding in Great Britain."

Nebraska Live Stock Breeders' Association.

"The Breeding of Jersey Cattle on the Island of Jersey."

The Twentieth Century Farmer, Omaha, Neb.

"Beef Production in Scotland."

The Breeders' Gazette, Chicago.

"Bacon Production in Denmark."

The American Swineherd, Chicago.

"Dairy Farming in Denmark."

The Twentieth Century Farmer.

"Fitting Cattle for Show Purposes."

The Breeders' Gazette.

"Bacon Production in Ireland."

The Twentieth Century Farmer.

"Feeding Dairy Cattle in Holland."

The Twentieth Century Farmer.

"The Production of Baby Beef."

The Iowa Homestead, Des Moines, Iowa.

"Compounding Feeding Rations."

The Drovers' Journal, Chicago.

"English Methods of Feeding the Breeding Flock."

The American Sheep Breeder, Chicago.

"Steaming, Cooking and Fermenting Feeding Stuffs."

The Northwestern Agriculturist, Minneapolis, Minn.

"Fattening Cattle on Grass."

The Prairie Farmer, Chicago.

"The Feeding Value of Dairy By-Products."

The Northwestern Agriculturist, Minneapolis.

W. H. Stevenson, Professor of Soils.

"Soil Physics Laboratory Guide."

Text-Book published by the Orange Judd Co., New York.

"Crop Rations."

The Furrow, October, 1905.

"The Physical Properties of Soils."

Cyclopedia of Agriculture, edited by L. H. Bailey.

"The Principal Soil Areas of Iowa."

The Iowa Agriculturist, October, 1905.

"Treatment of Peaty Swamp Lands."

Wallace's Farmer, August, 1905.

"Drainage of Farm Lands."

Series of articles in *The Furrow*.

B. A. Beach, Professor of Horticulture.

"Apples of New York," Volumes I and II.

Report of the General Fruit Committee before the Kansas City meeting of the American Pomological Society.

- B. A. Beach*, Professor of Horticulture—Continued.
Report to the Iowa State Horticultural Society on the Status of the Experiment Stations of the Society.
"Handling Fall Apples."
Address before annual meeting of Northwestern Iowa Horticultural Society.
"Winter Spraying."
Address before Southwestern Iowa Horticultural Society.
"Some Orchard Troubles and Their Treatment."
Address before Northeastern Iowa Horticultural Society.
"Apple Scab and Its Control."
Address before Southeastern Iowa Horticultural Society.
"The Bordeaux Mixture."
Address before Wisconsin Horticultural Society.
"The Management of Orchard Soils."
Address before Missouri Horticultural Society.
"The Relation of the Agricultural Experiment Stations to Some Economic Phases of Horticulture."
Address before Kansas Horticultural Society.
"Breeding Grapes."
Address before American Breeders' Association, Lincoln, Neb.
- A. T. Erwin*, Associate Professor of Horticulture.
"The Bush Fruits."
Booklet.
"Amelanchier Alnifolia and Allied Forms."
Address before Iowa Academy of Science.
"Street Trees for Iowa."
Address before Iowa Park and Forestry Association.
"Cherry Growing in the Prairie States."
Address before Illinois Horticultural Society.
- H. P. Baker*, Associate Professor in Charge of Forestry.
"The Holding and Reclamation of Sand Dunes and Sand Wastes by Tree Planting."
Address before the Iowa Academy of Science.
"A Forest Survey of Iowa."
Address before Iowa Horticultural Society.
"Improvement and Care of the Native Farm Woodlot."
Address before Southeastern Iowa Horticultural Society.
"The Growing of Trees for Posts, Fuel and Farm Repair Material."
Address before Northwestern Iowa Horticultural Society.
"Woodlots and Shelterbelts for Iowa Farms."
Address before Northeastern Iowa Horticultural Society.
"Recent Progress of Forestry in the United States."
Address before State Horticultural Society.
"The Planting of Ten Acres of Trees from the Viewpoint of the United States Forest Service."
Address before Iowa Park and Forestry Association.
"The Planted Groves of Iowa."
Address before the Iowa Park and Forestry Association.

- H. P. Baker*, Associate Professor in charge of Forestry—Continued.
"Treatment of Fence Posts to Increase Durability."
Iowa Yearbook of Agriculture, 1905.
"Forestry in Iowa."
Mail and Times, Des Moines, Iowa.
- J. B. Davidson*, Assistant Professor in Charge of Agriculture Engineering.
"Tillage Machinery."
Cyclopedia of American Agriculture.

DIVISION OF VETERINARY MEDICINE.

- W. A. Stuhr*, Associate Professor of Histology, Pathology and Therapeutics.
"Pathology and Treatment of Fever."
R. R. Dykstra, Assistant Professor of Anatomy and Obstetrics.
"Disinfection."
George Judisch, Lecturer on Pharmacy.
"Dispensary Hints."

DIVISION OF ENGINEERING.

- A. Marston*, Dean of the Division of Engineering and Professor of Civil Engineering.
"Tests of Cement."
Engineering Experiment Station Bulletin Vol. III, No. 1.
"Roads and Pavements in Iowa."
Report of the Chairman of the Committee on Roads and Pavements of the Iowa Engineering Society, January, 1906.
"Brick vs. Asphalt Pavements."
Paper read before Iowa Brick and Tile Manufacturers' Association, January, 1906.
Reprinted in "Brick" and other journals.
"Sewage Disposal for the Iowa Farm Home."
Paper Read before State Agricultural Society, December, 1905.
- A. Marston and M. J. Reinhart*.
"Tests of Concrete Blocks."
Paper read before Iowa Cement Users' Association, March, 1906.
- L. E. Ashbaugh*, Associate Professor of Civil Engineering.
"The Assessment of Drainage Districts."
Engineering Experiment Station Bulletin, Vol. III, No. 6.
Reprinted from the Proceedings of the Western Society of Engineers.
- T. H. MacDonald*, Assistant Professor in Charge of Good Road Investigations.
"First Annual Report of the Iowa Highway Commission."
"Proceedings of the Iowa Good Roads Association."
"Use of Concrete for Highway Culverts and Bridges."
Paper read before Iowa Good Roads Association, June 15-16, 1905.
"Solving the Good Roads Problem."
Suburban Life, May, 1906.

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

"Some Present Engineering Problems."

Iowa Engineering Society, Des Moines, Iowa, January 21, 1906.

"Gas Engines."

Iowa Brick and Tile Association, Des Moines, Iowa, January 11, 1906.

"Business Engineering."

Iowa Engineer, January, 1906.

"The Training of an Engineer."

National Association of Stationary Engineers, Des Moines, Iowa, November 17, 1905.

"Notes on Power Generation in Iowa." (With Professor Meeker.)

Engineering Experiment Station Bulletin, Vol. III, No. 3.

"Depreciation of Electrical Properties."

Iowa Electrical Association, April 18, 1906.

W. H. Meeker, Association Professor of Mechanical Engineering.

"Notes on Power Generation in Iowa." (With Professor Bissell.)

Engineering Experiment Station Bulletin, Vol. III, No. 3.

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

"Tests of Incandescent Lamps."

Engineering Experiment Station Bulletin, Vol. III, No. 4.

"Recent Advances in Electrical Engineering in the State of Iowa."

Iowa Engineering Society, Iowa City, Iowa.

Adolph Ahane, Assistant Professor of Electrical Engineering.

"Determination of Faults in a Direct Current Armature."

Published in Iowa Engineer.

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

Supplementary Report on Portland Cement Materials in Iowa.

Iowa Geological Survey Bulletin, No. 3.

Mineral Statistics for Iowa for the Year 1905, published in the

sixteenth annual report of the Iowa Geological Survey.

I. A. Williams, Assistant Professor of Mining Engineering.

"Physical Tests of Iowa Limes."

Transactions of American Ceramic Society, Vol. III.

Geology of Franklin County, Iowa.

Iowa Geological Survey, Vol. XVI.

DIVISION OF SCIENCE.

L. H. Pammel, Professor of Botany.

"Logging Camps a Menace to Water."

Seattle Times, July 29, 1906.

"Fungus Diseases of Plants in Iowa."

Experimental Station Bulletin.

"Some Mycological Contributions During the Year 1905."

Reprint Iowa State Horticultural Society, 40:218-230.

"Some of Our Neglected Wild Flowers."

Reprint, Iowa State Horticultural Society, 10:73-81.

L. H. Pammel, Professor of Botany—Continued.

"Quack and Wheat Grasses."

Experiment Station Bulletin, 83:395-416.

"Some Soil Binding Grasses."

Experiment Station Bulletin, 83:417-421.

"The Cedar Apple Fungus and Apple Rust in Iowa."

Experiment Station Bulletin, 84:1-36.

"The Present Viewpoint of Forestry and Civic Improvement."

Iowa Park and Forestry Association Proceedings, 1906.

"The Education of the Veterinarian and His Relation to the Commonwealth."

Reprint American Veterinary Review, 1906, 27-43.

"The Weeds of Roadsides."

Iowa Good Roads Association Proceedings, 1905, 30-35.

Charlotte M. King, Experiment Station Artist.

Phenological Notes for 1905.

Reprint Iowa State Horticultural Society, 40:204-212, 1906.

DIVISION OF SCIENCE.

The courses of study offered in the Division of Science are fundamental to those in the technical divisions. For example, students in Animal Husbandry are required to take certain courses in Zoology and Chemistry as preparation for their Animal Husbandry studies. Students in the Agronomy, Horticulture and Dairying courses give some attention to Botany, Chemistry and Bacteriology. Physics and Geology also become important in the courses in Agricultural Engineering. For all the courses in Engineering Mathematics and Physics, as well as Chemistry, are especially fundamental and important, and for all courses in all divisions there are certain essential requirements in English, Civics, History, Public Speaking, Economics, and Modern Languages. The departments of the natural sciences are, therefore, strongly developed and form the basis of the Scientific course for such students as desire a general course of study leading to the degree of Bachelor of Science.

The following are the changes of special importance in the Division of Science:

The Department of Botany, so long occupying temporary and inadequate quarters in the old dining-room of Margaret Hall, has been installed in its new laboratories, lecture rooms, and seminar rooms in the Central Building, occupying the greater portion of the fourth story. Work is now being given under favorable conditions in Histological and Pathological Botany, Cytology, Physiological Botany, Economic Botany and General Bacteriology. The valuable

herbariums of ninety thousand mounted and cataloged specimens is now safely housed in a fireproof building. There is also quite a complete collection of grasses, containing excellent material from every part of the State and various parts of the United States and Europe. The specimens of woods, from which herbarium cases are made, the economics collection, the seed collection, and the fungi collection are of special value and importance.

In the Department of Zoology a new instructor has been added, made imperatively necessary by the increased number of students.

In Economic Science it has been found imperatively necessary to add an assistant instructor, who will take up his duties in the spring semester of 1907.

In the Departments of English, Domestic Science, Public Speaking, Modern Languages and Civics the lecture and class room work has been largely increased owing to the increased number in attendance and to the strengthening of the courses and the increasing number of courses offered. In the Modern Language Department Spanish has been added. This is in response to a very urgent demand from the technical students, particularly in Engineering and Agriculture. Our students are among the more enterprising advance guard of western civilization in our Spanish-speaking dependencies. Already upwards of one hundred students have elected Spanish.

In the immediate future it will be necessary to add to the instructing force in the Departments particularly of Mathematics, Chemistry, Botany, Zoology, Economic Science, Domestic Economy, English, Public Speaking, Modern Language and History. The classes, as now organized, are in most instances far too large. No instructor can advantageously handle so many students in each class as they are now of necessity required to do and give to the students the personal attention which they need.

CHANGES IN THE FACULTY

During the Period July 1, 1905, to June 30, 1906.

VACANCIES.

PROFESSORS. 1906.

- W. J. Rutherford, B. S. A., Associate Professor of Animal Husbandry, resigned.
E. E. Bugbee, E. M., Assistant Professor of Mining Engineering, resigned.
P. S. Pierce, Ph. D., Assistant Professor of History, resigned.

INSTRUCTORS AND ASSISTANTS. 1905.

- M. L. Merritt, B. S. A., instructor in Horticulture, resigned.
G. I. Christie, B. S. A., Instructor in Soils, resigned.
E. B. Tuttle, B. S. in E. E., Instructor in Electrical Engineering, term expired.
F. Wenner, B. S., Instructor in Electrical Engineering, term expired.
Ward Jones, B. C. E., Instructor in Mathematics, term expired.
John Travis, A. M., Instructor in Mathematics, term expired.
J. A. Kuesche, Instructor in Mechanical Engineering, term expired.
J. H. Lawton, Instructor in Mechanical Engineering, term expired.
C. E. Bartholomew, B. Sc., Instructor in Zoology, resigned.
Frances Williams, Instructor in Domestic Economy, resigned.
W. W. Smith, B. S. A., Assistant in Animal Husbandry, term expired.
M. L. Mosher, B. S. A., Assistant in Farm Crops, term expired.
J. A. Conover, B. S. A., Assistant in Animal Husbandry, term expired.
R. C. McKinney, B. Sc., Assistant in Chemistry, term expired.
W. A. Bevan, B. Sc., Assistant in Chemistry, term expired.
Eddie McKimm, B. Sc., Assistant in Chemistry, term expired.

INSTRUCTORS AND ASSISTANTS. 1906.

- H. M. Bainer, M. S. A., M. Sc., Instructor in Agricultural Engineering, resigned.
Jesse Suter, A. B., Instructor in Mathematics, term expired.
Bird Slater, B. Sc., Instructor in Chemistry, term expired.
Edith Stevens, B. Sc., Instructor in Chemistry, term expired.
Rose Abel, A. B., Instructor in English, resigned.
Mae Miller, B. Sc., Instructor in History, resigned.
Dorothea Beggs, Instructor in German, resigned.

MISCELLANEOUS.

M. L. Bowman, B. S. A., Farm Superintendent, resigned.
 Olive Stevens, B. L., Assistant Librarian, resigned.
 W. T. MacDonald, M. S. A., Farm Superintendent, resigned.

APPOINTMENTS.

PROFESSORS.

1905.

J. B. Davidson, B. S. M. E., Assistant Professor of Agricultural Engineering, in charge of Department.

1906.

J. A. McLean, B. A., B. S. A., Assistant Professor of Animal Husbandry.
 H. G. Van Pelt, B. S. A., Assistant Professor of Animal Husbandry.
 L. C. Hodson, B. C. E., E. M., Assistant Professor of Mining Engineering.

L. B. Schmidt, A. M., Assistant Professor of History.

INSTRUCTORS AND ASSISTANTS.

1905.

M. L. Bowman, B. S. A., Instructor in Farm Crops.
 V. R. Gardner, B. S. A., Instructor in Horticulture.
 E. B. Watson, B. S. A., Instructor in Soils.
 R. R. Dykstra, D. V. M., Instructor in Veterinary Science.
 W. B. Anderson, B. S., M. S., Instructor in Electrical Engineering.
 A. H. Hoffman, B. S. in E. E., Instructor in Electrical Engineering.
 Jesse Suter, A. B., Instructor in Mathematics.

INSTRUCTORS AND ASSISTANTS.

1906.

Elizabeth Cronin, M. S., Instructor in Mathematics.
 Keo Anderson, B. S., Instructor in Mathematics.
 Bird Slater, B. S., Instructor in Chemistry.
 Lola Stephens, B. S., Laboratory Instructor in Chemistry.
 Edith Stevens, B. S., Laboratory Instructor in Chemistry.
 Jeannette Bartholomew, B. S., Laboratory Instructor in Chemistry.
 Dorothea Beggs, Instructor in German.
 H. J. Quayle, A. B., Instructor in Zoology.
 Anna M. Wilking, Instructor in Domestic Economy.
 Julia Vaux, A. M., Instructor in English.
 E. T. Robbins, B. S. A., Assistant in Animal Husbandry.
 J. T. Hoover, Assistant in Agricultural Engineering.
 M. L. Mosher, B. S. A., Assistant in Farm Crops.
 M. E. McCulloch, B. S. A., Assistant in Farm Crops.

1906.

A. E. Miller, B. A., M. E., Instructor in Agricultural Engineering.
 John Bower, B. S. A., Instructor in Dairying.
 H. C. Pierce, Instructor in Animal Husbandry.
 R. L. Gribben, B. S. A., Instructor in Animal Husbandry.

Ward Jones, B. C. E., Instructor in Mathematics.
 Laura Taggart, B. S., Assistant in Chemistry.
 Melissa Flynn, B. S., Assistant in Chemistry.
 A. E. Bobst, Assistant in Chemistry.
 Grace Caldwell, Instructor in Spanish and German.
 Ethyl Cessna, B. S., Instructor in History.
 Eugene Humbert, B. S. A., Assistant in Farm Crops.

MISCELLANEOUS.

1905.

W. T. MacDonald, M. S. A., Farm Superintendent.
 J. T. Calne, Herdsman.
 B. Durell, Assistant Herdsman.
 George Mitchell, Farm Superintendent.
 Carolyn Gabrielsen, B. S., Assistant Librarian.

PROMOTIONS.

PROFESSORS.

1905.

Frank French, B. C. E., C. E., from Assistant Professor to Associate Professor of Civil Engineering.

1906.

F. G. Allen, B. S. in M. E., from Instructor to Assistant Professor of Mechanical Engineering.

F. W. Bouska, M. S. A., from Assistant Professor of Bacteriology to Associate Professor of Dairy Bacteriology.

C. Larsen, B. S. A., from Assistant Professor to Associate Professor of Dairying.

E. A. Pattengill, B. S., from Instructor to Assistant Professor of Mathematics.

Julia Colpitts, A. M., from Instructor to Assistant Professor of Mathematics.

M. L. Bowman, B. S. A., from Instructor to Associate Professor in charge of the Department of Farm Crops.

J. B. Davidson, B. S. M. E., from Assistant Professor to Associate Professor in charge of the Department of Agricultural Engineering.

H. P. Baker, B. S., M. F., from Assistant Professor to Associate Professor of Forestry.

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

J. H. McNeil, V. M. D., Dean of Division of Veterinary Medicine and Professor of Veterinary Medicine and Surgery, made Station Veterinarian.

R. E. Buchanan, B. S., from Instructor in Bacteriology to Assistant Professor of General Bacteriology.

Estelle D. Fogel, B. A., B. S., made Instructor in Botany.

DIVISION OF ENGINEERING.

AMES, IOWA, November 27, 1906.

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

DEAR DR. STORMS,—I would respectfully report as follows concerning the work of the Engineering Division during the college year ending July 1, 1906:

The year has been one of continued growth in attendance as appears from the following statistics of attendance of Engineering students:

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
1905-06	139	281	529	47	726

HISTORY OF ENGINEERING DIVISION.

A brief outline of the history of the Engineering Division will be of value in considering its present work, and its needs for the future.

Engineering work at our College was necessarily established at the opening of the College, in compliance with that clause of our organic law which devoted the College "to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." To have omitted it would have been to defraud part of the industrial classes of their legal rights.

Hence the Engineering Division as it stands today is the result of thirty-eight years of steady and normal growth. The faculty

have been trained to the work and to work together. No head of department has been with the College less than thirteen years. The equipment has been secured in answer to the urgent actual demands of the work. The students have come in increased numbers as the good repute of our engineering work made our school more and more widely known.

ENGINEERING DEPARTMENTS.

At present the Engineering Division includes four distinct and carefully organized departments, each of which give a thorough, four years' course of instruction in its special line. These are the departments of—

Mechanical Engineering,
Civil Engineering,
Electrical Engineering,
Mining Engineering.

With these four departments is closely associated—

The Engineering Experiment Station.

The Engineering and Agricultural Divisions are associated in the work of—

The Iowa Highway Commission.

MECHANICAL ENGINEERING DEPARTMENT.

This department was established when the College was opened and is under charge of Professor G. W. Bissell, also Vice Dean of the Engineering Division, whose invaluable service to the College has extended over a period of fifteen years. With him is Associate Professor Meeker of equal length of service. There are also three assistant professors, seven instructors, and three student instructors in the faculty of this department.

The Mechanical Engineering Department is of the greatest importance to the work of the Engineering Division, for it gives instruction not only to its own students, but in several most important subjects to the students of all the engineering courses. These subjects are, Mechanical Drawing, Shop Work, and Mechanics.

It also gives a large part of the instruction in Engineering Laboratory work.

The great need of this department at the present time is for more shop and laboratory facilities. The present facilities are swamped by the demands of our large number of Engineering students.

CIVIL ENGINEERING DEPARTMENT.

This department also was established when the College was opened and is under direct charge of myself, with Associate Professors Ashbaugh and French. In addition, there are three instructors; Assistant Professor MacDonald's time is required wholly for the Good Roads work of the Highway Commission.

The Civil Engineering Department now has the largest attendance of students of any of the engineering departments, and gives instruction in Descriptive Geometry to all the engineering students.

Its great need is for greatly increased instrumental equipment and laboratory facilities and draughting room. About 240 students take field work in surveying with this department each semester, and both the equipment and the instruction force should be greatly increased.

ELECTRICAL ENGINEERING DEPARTMENT.

The Electrical Engineering Department was established in 1891. It is under charge of Prof. L. B. Spinney, whose period of college service is already thirteen years. Associate Professor Fish, one assistant professor, and three instructors are associated with Professor Spinney.

The Electrical Engineering Department is a close second to the Civil Engineering in point of attendance, and has been one of our most prosperous courses since its first establishment.

It has very urgent need of greatly increased class room and laboratory facilities to accommodate its students.

MINING ENGINEERING DEPARTMENT.

The Mining Engineering Department, the youngest in the Engineering Division, was established in 1892 by special act of the State legislature. It is under charge of Professor S. W. Beyer, whose service for the College extends over a period of fifteen years. He is assisted by two assistant professors and one instructor.

While Mining Engineering Departments in general do not in any institution have such a large attendance as the other engineering courses, our Mining Engineering Department has had a remarkable rate of increase. It is associated very vitally with important sources of Iowa's wealth, and needs special equipment along the lines of coal mining, cement and clay manufacture.

The department needs much in the way of laboratory equipment along these lines.

ENGINEERING EXPERIMENT STATION.

The Engineering Experiment Station, of which the writer is Director, was established by act of the legislature in 1904. It was the natural outgrowth of the efforts of the Engineering Division to meet the repeated and increasing demands from the industries of Iowa for technical assistance in their development. The State appears now to have reached a point, as shown by the census statistics, when development of manufacturing industries is absolutely essential to her progress. In the present scientific age the aid of scientists skilled in technology, and of well-equipped technical laboratories, is absolutely essential to industrial development.

Our Engineering Experiment Station represents our attempt to assist Iowa in these lines.

Some idea of the work already accomplished with the limited means placed at our disposal can be gained from the titles of the bulletins already published, as follows:

Bulletin No. 1—The Iowa State College Sewage Disposal Plant and Investigations.

Bulletin No. 2—Bacteriological Investigations of the Iowa State College Sewage.

Bulletin No. 3—Data of Iowa Sewage and Sewage Disposal.

Bulletin No. 4—Bacteriological Investigations of the Iowa State College Sewage Disposal Plant.

Bulletin No. 5—The Chemical Composition of the Sewage of the Iowa State College Sewage Disposal Plant.

Bulletin No. 6—Tests of Iowa Common Brick.

Bulletin No. 7—Sewage Disposal in Iowa.

Bulletin No. 8—Tests of Dry Press Brick Used in Iowa.

Bulletin No. 9—Notes on Steam Generation with Iowa Coal.

Bulletin No. 10—Dredging by the Hydraulic Method.

Bulletin No. 11—An Investigation of Some Iowa Sewage Disposal Systems.

Vol. II, No. 6—The Good Roads Problem in Iowa.

Vol. III, No. 1—Tests of Cement.

Vol. III, No. 2—State Railroad Taxation.

Vol. III, No. 3—Steam Generation with Iowa Coals.

Vol. III, No. 4—Incandescent Lamp Testing.

Vol. III, No. 5—Steam Pipe Covering Tests.

Vol. III, No. 6—The Assessment of Drainage Districts.

Lines of work now under way may be mentioned briefly as follows:

Cement and Lime Investigations.—Tests and studies of Iowa materials and products are being made, and we attempt in every way to aid both manufacturer and user.

Clay Investigations.—We are constantly making analyses and reports on new and old materials, and studying possibilities in Iowa along this line.

Fuel Investigations.—Special studies and reports of Iowa fuels and the best methods of using them.

Power Investigations.—Studies of Iowa power plants and possible economies.

Electric Light Investigations.—The work of the station in electric lamp testing has been very extensive and is continuing. Plants are tested and studied with a view to improvements.

Pavements.—Special studies have been made of asphalt and brick pavements in Iowa. An asphalt testing laboratory, the only one in the West, has just been established.

Sewage Disposal.—Regular tests of all plants in the state are made each year. Experiments are under way with new methods. An efficient plant for private houses, costing less than \$100, has been devised and tested. Purification of creamery sewage is being studied.

Tests.—Paving brick, cement, steel, stone, road materials, water sewage and many other things are tested for residents of Iowa for the bare cost of the work.

Transportation.—The great problems of steam and electric railway construction and management are being studied.

The Engineering Experiment Station needs most urgently increased funds for the work. The present, small sum of \$3,500 per annum is utterly inadequate to the work which we ought to do. It should be made at least \$6,000 per annum at once, and \$15,000 in the near future.

IOWA HIGHWAY COMMISSION.

The work of the Highway Commission, which is under the direction of Dean Curtiss and myself, will, in accordance with the law, be made the subject of a detailed separate report to the Governor. It is of very great and growing importance. We believe that a great deal of good has already been accomplished for Iowa roads by the Commission. In the future the State will be bound to deal more intelligently with its roads, and to realize better the importance to the community. A commission must be its instrument for this work.

GENERAL FEATURES OF WORK OF ENGINEERING DIVISION.

In addition to discussing the work of the Engineering Division in detail as above, I would say in general that during the year all the courses were completely revised as regards the Freshman years, and that the revision is being extended to the other years. The results so far are very satisfactory.

During the year a separate ENGINEERING LIBRARY has been established in Engineering Hall, through the generosity of the late G. W. Catt. It is proving most beneficial to our students and our work. We need an assistant Librarian to have charge of it.

NEEDS OF ENGINEERING DIVISION.

In my last biennial report (p. 80), I showed that the number of engineering students per instructor had increased from eighteen in 1894 to thirty in 1905. Only a slight relief has since been afforded, and our need for additional instructors is still great.

We pay much lower salaries than our sister engineering schools, and much lower than the State University of Iowa, for Engineering Professors of equal rank. These inequalities should be made good.

NEW SHOPS, LABORATORIES AND EQUIPMENT.

By far our most pressing need at the present time, however, is for new shops, laboratories and equipment. In these respects we have dropped far behind our growth in other respects.

I therefore ask that the College architect be instructed to prepare, for submission to the legislature and for immediate construction, plans for the following:

1. A two-story draughting room, and laboratory building with some offices and class rooms, say 200 feet by 50 feet.
2. Remodeling old engineering hall into a modern engineering laboratory building.

I would further urge our needs for equipment. A careful detailed estimate shows \$40,000 urgently needed for this purpose.

Respectfully submitted,

A. MARSTON.
Dean of Engineering.

DIVISION OF VETERINARY MEDICINE.

November 22, 1906.

MY DEAR PRESIDENT STORMS,—I herewith transmit this, my second annual report for the Division of Veterinary Medicine.

This division of the College is passing into a period of substantial growth and development, following slowly the great advancement made in Scientific Agriculture, which includes that most profitable branch, Animal Husbandry, the guardian of which is the Scientific Veterinarian.

The Division of Veterinary Medicine never received young men so well qualified to take up their work. Never were our best men turned out so well equipped, and never were they more needed in the public service and private practice than at the present time.

The new National Meat Inspection Laws, which recently went into effect, have extended the scope of usefulness of the Veterinarian and created positions which will not in years to come be filled by competent men, unless the State can be induced to recognize the necessity of appropriating funds sufficient to properly equip a school and maintain an adequate faculty to insure the graduation of men trained to the hour in the Science and Practice of Veterinary Medicine.

The position of the Veterinarian in the Army is gradually improving. The insular possessions offer positions with opportunities for work in research and preventive medicine at salaries, which, if not princely, can hardly be said to be meager.

Municipal, State and National authorities are gradually but surely awakening to the value of the services which can be rendered only by efficiently trained Veterinarians.

At the close of the last school year, there was graduated from the Veterinary Division, the first men from a school in America maintaining a graded four-year course of study in Veterinary Medicine.

The present school year opens under the most encouraging conditions. With the lengthening of the course of study, and the very material advance made in the entrance requirements, the attendance has gradually increased, and I am pleased to report that for

the first semester of the present school year there have been matriculated in the Veterinary Division 43 Freshmen, making a total of 85 straight Veterinary students.

I beg to include the following comparative report for each year since 1902.

Students matriculated in the Veterinary Division for the year 1902 and 1903:

Veterinary Course:			
Freshmen	.....	36	
Juniors	.....	8	
Seniors	.....	4	48
Agricultural Course:			
Agricultural students taking Veterinary work	.....	38	38
Total	.....		86

1903 and 1904.

Veterinary Course:			
Freshmen	.....	30	
Sophomores	.....	3	
Juniors	.....	15	
Seniors	.....	4	
Post Graduates	.....	1	53
Agricultural Course:			
Agricultural students taking Veterinary work	.....	64	64
Total	.....		117

1904 and 1905.

Veterinary Course:			
Freshmen	.....	35	
Sophomores	.....	14	
Juniors	.....	5	
Seniors	.....	12	66
Agricultural Course:			
Agricultural students taking Veterinary work	.....	71	71
Total	.....		137

1905 and 1906.

Veterinary Course:			
Freshmen	.....	27	
Sophomores	.....	15	
Juniors	.....	9	
Seniors	.....	4	
Special	.....	1	56
Agricultural Course:			
Agricultural students taking Veterinary work	.....	64	64
Total	.....		120

First Semester 1906 and 1907.

Veterinary Course:	
Freshmen	43
Sophomores	16
Juniors	17
Seniors	8
Post Graduates	1 85
Agricultural Course:	
Agricultural students taking Veterinary work.....	42 42
Total	127

The Veterinary Hospital, conducted in connection with the school, furnishes a large number of patients and quite a variety of cases for clinical instruction, which is a very important factor in the education of the veterinary student.

The management of the Veterinary Hospital has remained the same since my last report—a free or out clinic and a paid or in clinic is conducted for the care and treatment of sick animals. The results upon the whole have been very satisfactory, considering the lack of equipment, operating and clinic room; owing to which lack of room most of the operations must of necessity be performed out in the open air, causing, especially during the fall, winter and spring months, quite an amount of inconvenience and exposure, not only for the operator and the patient, but for the students as well, who are in a body required to pay strict attention to all surgical operations as well as do a large share of the dressing.

The Hospital practice is not confined within the narrow limits of the immediate vicinity as many animals are sent for treatment from a distance.

Two years ago an appropriation was made for a temporary structure to be erected south of the present main building, which at that time accommodated the cases, but since then the Hospital practice has increased and necessitates the turning away of some new cases, as well as dismissing older cases before they are really ready to be removed. During the winter months it is necessary to have on hand a large number of horses for dissection purposes, and as these must be sheltered during the inclement weather they have to be tied in halls and upon the main floor. From the above statement of fact it is very evident that something must be done at once to relieve this congested condition and maintain the prestige already established.

It is obvious to the most careless observer that a new Veterinary Building is one of the most imperative needs of the College at

this time. The Veterinary Division has established itself as one of the foremost Veterinary schools on the American continent and this prominence is largely due to the efficient, loyal and painstaking members of the Veterinary faculty. In order to retain the Veterinary faculty and maintain this high standard, it will be necessary to materially increase the maintenance fund and make some preparation for the construction of a new building and the purchase of necessary equipment.

Because of a lack of space and the proper arrangement of Lecture and Clinic room, much of the practical instruction, so necessary for the education of the student, must be omitted. The laboratory classes have been divided and subdivided in order that the individual student may receive proper attention, and our largest class room is crowded to its utmost capacity.

The Veterinary Division of Cornell University at Ithaca and the College of Veterinary Medicine of the Idaho State University have commodious, well-equipped Veterinary buildings. Through the generosity and foresight of the members of the legislature of Pennsylvania, the Veterinary Department of the University has received the princely sum of \$200,000, with which to construct and equip a modern Veterinary building; and the great State of Iowa, with her extensive agricultural and kindred interests, can ill afford to be behind in appropriating funds for her Veterinary School, when in other lines she is so far in advance of all other States. \$150,000 could be used for this purpose and not one cent squandered, and I most respectfully urge that some effort be directed towards securing such an appropriation.

The live stock interests of this State are enormous, aggregating more than any sister State, and the breeder and feeder should have the advice of competent men regarding the control of existing diseases and the adoption of measures necessary for the exclusion of infectious animal diseases or their extinction should they accidentally appear. There are not at this time enough competent men in private practice to care for these vast interests, and for that reason great losses have been sustained from such controllable infectious diseases as hog cholera and tuberculosis.

With the finest and most improved breeds of cattle and hogs, and the most magnificent types of horses in the world, and a teeming population whose wealth and health are largely centered in these, we have, because of an almost utter lack of knowledge or appreciation, neglected to protect them to the fullest extent from the ravages of insidious disease, by forgetting to foster and encourage that

science which alone can accomplish this. This apparent neglect has cost the stock raiser of Iowa untold millions, and until this condition is righted and Veterinary Medicine placed upon an equal footing with the other professions, we shall continue to record annually the irreparable damages, both to health and wealth of the State and Nation, inflicted by the influence of the contagious animal diseases.

Respectfully submitted,

(Signed) J. H. McNEIL,
Dean of Veterinary Division.

DIVISION OF AGRICULTURE.

AMES, IOWA, November 27, 1906.

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

DEAR PRESIDENT STORMS,—The Division of Agriculture has been materially strengthened in its scope and organization during the present year, by the provision for the extension work and the addition of the Poultry and Dairy Farm work, and the addition to the Experiment Station fund by the Congressional appropriation known as the Adams act. This additional support has enabled us to organize our instruction work on a basis more nearly independent and free from the interferences of Farmers' Institutes, County Fairs, and other forms of outside work, and to a large extent, independent of the investigation work. The best results can be secured in teaching, only where the members of a faculty are able to give the work practically their undivided attention. The same is true of the investigations of the Experiment Station and of the extension work.

The last legislature made an appropriation of \$15,000 for the present year, for the organization of an Agricultural Extension Department. This work was organized by placing Professor P. G. Holden in charge, as Superintendent of Agricultural Extension, with the following staff of Assistants: Mr. R. K. Bliss, in charge of Animal Husbandry; Mr. M. L. Mosher, in charge of Farm Crops; Mr. J. W. Jones, in charge of Horticulture; Mr. A. H. Snyder, in charge of Soils; Mr. J. C. Guthrie, in charge of Dairying, and Miss Mary F. Rausch, in charge of Domestic Science.

The Agricultural Extension Staff, under the leadership of Professor Holden, has taken immediate charge of the Farmers' Institute, Stock and Grain Judging, Short Course, County Farm experiments and other forms of extension work. Short courses covering a

period of one week, corresponding in the method and scope of their instruction to the two weeks Short Course at this institution, have been established at Red Oak and Mount Pleasant. The Red Oak Short Course has now been established two years and has proved to be eminently popular and successful. Both of these courses draw upon our staff for most of their instructors and the demand upon our Extension staff for help in various forms of Extension work throughout the State, has been far greater than could be met by the present force. The heads of our instruction departments have not entirely severed their connection with this work, as it seems desirable to have them keep in touch with the interests of the State represented by their departments. The amount of this work conducted by heads of instruction departments, however, has been limited to such an extent as to avoid interferences with their duties in instruction and investigation work.

A full report will be made upon the Extension work at the close of the year. It is already apparent, however, that a much larger force will be needed to meet the demands made upon the College in this field. There is also a constantly growing demand for correspondence instruction in agriculture. This demand is evident from the fact that there are, at a conservative estimate, not less than twenty-five or thirty thousand residents of this State now enrolled in correspondence schools established in other localities. To make even fairly adequate provision for carrying on the Agricultural Extension work in a satisfactory manner, we should have an annual appropriation of at least twenty-five thousand dollars.

The enrollment during the first semester of the present year is larger than we have ever had before. Our classes and laboratories have been crowded to their utmost capacity and in many cases the numbers have been entirely too large for satisfactory work.

ANIMAL HUSBANDRY DEPARTMENT.

In the Animal Husbandry Department we have a total enrollment of five hundred and twenty-nine students during the present semester. All of these students, with the exception of two classes, take both lecture and laboratory work. The Animal Husbandry Department gives instruction during the Freshman and Sophomore years to all students enrolled in the Agricultural courses and in addition to all students in the Veterinary courses. The live stock equipment on the College Farm is used for laboratory work. It serves the same purpose as laboratories equipped with scientific

apparatus in other departments. The live stock equipment constitutes an exceedingly important adjunct to the Animal Husbandry instruction. The transfer of the dairy stock to the Dairy Farm will enable us to carry a larger amount of stock on the College Farm proper and to handle it in a more satisfactory and practical manner.

Some colleges are more fortunately situated with reference to accessibility to good collections of live stock in the vicinity of the college than we are at Ames. It is practically impossible for us to make use of any live stock for class instruction purposes, except that owned by the College, and aside from the annual trip made by the advanced class in stock judging to the American Royal Show at Kansas City. The indications are that we shall not be able to get railroad rates that will make it possible to take even our advanced class to that show in the future.

The Armour Scholarships, referred to elsewhere, afford an additional reason for strengthening our live stock equipment. Iowa is the foremost live stock State in the Union and its Agricultural College is expected to lead in live stock instruction. If this institution is not able to take the foremost rank in the Armour scholarship competition, it will be a direct reflection upon the work of the institution in Animal Husbandry lines. The Armour scholarships will bring the various agricultural colleges into direct competition at the International and Iowa can not afford to lose.

For the next biennial period we shall need an additional appropriation of \$10,000 for the purchase and maintenance of live stock for Animal Husbandry instruction. This is a very meager sum, in comparison with the magnitude of the live stock industry in this State. Illinois appropriates \$25,000 annually for live stock work at their agricultural college, and the Ohio legislature last winter appropriated \$25,000 for a horse barn, \$25,000 for a cattle barn, and \$10,000 for the purchase of live stock, notwithstanding the fact that their students have access by interurban railway within a few hours' ride of the institution to a great number of the best flocks and herds of pure bred animals that are available in any section of the country.

The work of equipping the Dairy Farm and Poultry Department has been delayed on account of the appropriation being payable quarterly and only about one-half of it being available during the present season. The work will be completed so far as the present funds will permit, early in the spring. The appropriation for this work, however, was entirely inadequate. It was recommended

originally that an appropriation of \$10,000 be made for the Poultry Department and \$10,000 for the Dairy Farm. This was reduced to \$10,000 for both departments. The high price of labor and building material during the past season has made it impossible to secure more than half of the buildings needed on the Dairy Farm for the maintenance and care of the dairy herd, and the same is true with reference to the buildings for the Poultry Department. The additional appropriation of \$10,000 for equipping and stocking the Poultry and Dairy Farm will be required to complete these departments.

FARM CROPS DEPARTMENT.

A Farm Crops Department has been established as a separate department during the past year. It has an enrollment of one hundred and eighty-nine students during the present semester. The Farm Crops laboratory which has been in an incomplete state for several years, is being furnished with suitable equipment, which will greatly strengthen that feature of the work. A small chemical laboratory has been made available, by which students taking advanced research work can pursue investigations in this line. A class in Farm Management is carrying on an extensive investigation of the system and methods of the most successful farmers of the State.

There are no text-books covering the Farm Crops and Farm Management work as it is taught in this institution and it is necessary in this as in various other branches of our agricultural work, to prepare the material for the classes from day to day in the form of mimeographed outlines of lectures. It is also necessary in training students in Farm Crops work, as in Animal Husbandry, to have access to a large amount of material for instruction and judging. To this end it is necessary to secure samples of corn of various types grown in different parts of the State and other localities. The laboratory work in the Farm Crops Department has been extended to the fields during the summer season, where the students make personal observations and notes on growing crops and conduct various tests of educational value.

The Farm Crops Department is in urgent need of at least one additional instructor. Some of the sections are now fully twice as large as they should be for giving instruction in the most successful manner.

SOIL DEPARTMENT.

The Soil Department has also been established as an independent department during the past year. In this department there are now sixty students enrolled. The soil Department of this institution now leads all other institutions in this country in the number of courses it offers and the value and character of its equipment. The laboratory recently fitted up has been taxed to its utmost capacity and the next class will undoubtedly be larger than can be accommodated with the present facilities. The department will be seriously hampered for room and equipment until the new Agricultural Building is finished. The Soil bacteriology work to be taken up at that time will enable the department to carry on its instruction and investigations in a more scientific manner and make them of greater service to the agricultural interests of the State. A thorough system of instruction in the properties, management and fertility of soils is of comparatively recent origin in college work, but no department of instruction is of more vital service to the resources of the State or more important as a system of agricultural education. The strength of the equipment for soil study in this institution has already attracted advanced students from other States and the farmers of Iowa have manifested a deep interest in the work of the Soil Department of the Iowa State College.

HORTICULTURAL DEPARTMENT.

The Horticultural Department has a total enrollment of two hundred and nineteen students during the present semester. About half of these students are taking laboratory work and the facilities for instruction are by no means adequate, nor can they be made adequate until the completion of the new Agricultural Building and the department gets into its new quarters. The encroachment of new buildings upon the Horticultural grounds has interfered seriously with the orchard and nursery work of the department during the past few years. The purchase of fifty-five acres of additional land will enable the department to extend this work on a larger and more permanent basis. This new tract will be put under cultivation and extended, as soon as the funds will permit, and will enable the department to greatly strengthen its field and laboratory work along practical lines.

The inevitable increase of students in this department during the next year will make it necessary to increase the teaching force by one instructor.

This department is seriously in need of better nursery and laboratory equipment and more extensive plantings to serve for the practical instruction of students in spraying, pruning and other orchard operations.

DAIRY DEPARTMENT.

The Dairy Department is now provided with excellent quarters in the new Dairy Building, but the building has not yet been fully equipped with laboratory and other instruction material. On account of the present overcrowded condition of the Agricultural buildings, it has been found necessary to house the Extension Department in two rooms of the Dairy Building until the completion of the new Agricultural Building. These rooms are needed for the dairy work and should be made available as early as practicable.

The manufacture of butter and cheese under present conditions presents some comparatively new and unsolved problems. Within the past five years there has been almost a complete change from the factory separator system, where milk was hauled direct from the farms to the factory and separated at the creamery and the skim-milk returned, to a system of farm separators, by which the milk is separated on the farm and only the cream delivered to the factory. The conditions under which the cream is separated on the farm and the product handled until it reaches the creamery are very variable and in many cases are detrimental to the best results and there has been a marked deterioration in the butter of this State. It has been found exceedingly difficult to control these conditions and manufacture a product of uniformly high grade. Hand separator cream is being shipped to the College Dairy Department and a careful study and investigation made of the problems confronting the creameries of the State and instruction is given to our students along this line. The department also receives butter manufactured at the various creameries of the State for examination and scoring and criticism as to methods employed. The Dairy students are given practical work in the processes of making butter and cheese in connection with their studies of the principles of dairying. The demand for competent, well educated, well trained men to manage large central creameries has become very urgent and made it necessary to establish a correspondingly higher standard of efficiency in dairy instruction.

AGRICULTURAL ENGINEERING DEPARTMENT.

The Department of Agricultural Engineering has been established on a separate basis as a full department during the past year. The work in this department includes forge and shop work, in addition to lectures and laboratory instruction. The work also includes farm drainage and field observations and practice. The total enrollment of students during the present Semester is one hundred and ten. The drawing room accommodates only seventeen students at a time. It is exceedingly difficult to give the required instruction under present conditions. A drawing room with accommodations for at least forty is urgently needed. The department is also short of room for storage of agricultural implements and machinery for laboratory and demonstration work.

The instruction in this department covers a wide range of subjects. It is intended to make students familiar with the mechanical principles involved in the various forms and types of agricultural machinery from the standpoint of economy of operation, durability and value for practical service. It embraces a careful study of the various forms of power applied to farm work and the adaptation of each under varying conditions. Considerable attention is being given this semester to the use of alcohol for motive power and the probability of its coming to general use on the farm. Instruction is given in the care, management and repairing of machinery and farm implements.

The present cramped condition of the Agricultural Engineering Department can not be relieved until the completion of the new building, when a part of the present Agricultural building can be devoted to that purpose.

ARMOUR SCHOLARSHIPS.

Mr. J. Ogden Armour of Chicago has offered \$5,000.00 a year in the form of twenty scholarships of \$250.00 each, to be competed for annually by agricultural colleges at the International Livestock Exposition. The competition for these scholarships is to be based upon student stock and grain judging contests and exhibits of stock and grain products by the colleges at the International Exposition.

This may be regarded as the most significant and far-reaching recognition that has yet been recorded of the colleges giving instruction in agriculture and it promises to serve as a decided stimulus to agricultural education. The first competition for these scholarships will take place in 1907.

SHORT COURSES.

The students enumerated in the foregoing pages under the heads of the various departments include only those enrolled in the regular collegiate course and some special students taking collegiate course work. In addition to this enrollment we have annually about seven or eight hundred short course students enrolled for two weeks' work each year during the winter vacation immediately following the holidays. This work has proven to be exceedingly popular and has annually brought together a body of the brightest and most aggressive men of the State who take a keen interest in the instruction which has been mainly confined in the past to stock and grain judging and to special instruction for butter-makers, given in the Dairy Department. The stock-judging work has been supplemented by a course of veterinary lectures by Dr. McNeal. His lectures have been particularly popular with the stockmen of the State, and this year, in response to a demand for horticultural instruction, the Horticultural Department will offer instruction in horticulture, in connection with other short course work.

The field covered by the various lines of work embraced in the Division of Agriculture is constantly widening and extending. The number of people looking to the institution for instruction and practical assistance has increased by leaps and bounds and the educational work of the department is no longer confined to a limited number of students, but covers a field far beyond the borders of the State and a multitude of problems arising on the farms of Iowa are presented to the college authorities for solution. The personal inquiries and correspondence has become very extensive in some lines of our work.

We have from a thousand to twelve hundred students, including those in short courses, coming to the college class rooms and laboratories each year for instruction and our bulletins and press notices reach, at a conservative estimate, from one hundred to one hundred and fifty thousand readers. There is a constantly increasing number of people engaged in agricultural pursuits looking to the colleges and experiment stations for assistance and instruction, and the work of these institutions has unquestionably exerted a large influence in modifying and improving the methods of American agriculture. Investigations of the United States Department of Agriculture show that land values in the United States have increased on an average of 38 per cent in the past

five years. Lands in this and other older settled localities that fifteen or twenty years ago were considered so high as to be unprofitable at \$25.00 an acre are now returning a good income on a valuation ranging from \$100.00 to \$125.00 per acre. There is every indication that this progress and advancement of advanced methods is to go on and that the work of the colleges and experiment stations will become a more and more important factor with each succeeding year. The advancement and support of these institutions on a liberal basis is therefore an economic necessity and a profitable investment from the standpoint of the material interests of the State.

Respectfully submitted.

C. F. CURTISS.

REPORT OF THE DIRECTOR OF THE IOWA AGRICULTURAL EXPERIMENT STATION.

The work of the Agricultural Experiment Station, as now organized, includes the following lines or divisions: Animal Husbandry, including poultry and dairy stock; Farm Crops; Soils; Horticulture and Forestry; Dairying; Botany; Entomology, and Agricultural Engineering.

The income of the Experiment Station is derived from the following sources:

Congressional Act of 1887.....	\$15,000.00	annually
State Appropriation.....	25,000.00	"
Congressional Act of 1906.....	7,000.00	"
Making a total of.....	\$47,000.00	"

We now have a total of thirty-five persons, including administrative officers, connected with the Experiment Station staff devoting their time wholly or partially to agricultural investigations. There are thirteen members of the staff who give their entire time to the Experiment Station work. The heads of departments divide their time between the instruction work of the college and the Station investigations and the salary is apportioned accordingly. It has been the policy, so far as our funds will permit, to employ competent assistants in each department, who give their entire time to instruction or investigation. The passage of the Adams' act by the last Congress in June, 1906, has enabled us to carry out this policy to a larger degree than has prevailed in the past.

To do the most efficient work in the field of investigation, men should be free to devote their time solely to that kind of work. Many of the investigations carried on by the Experiment Station are necessarily of long duration and laborious and involve the expenditure of a large amount of money and extend over a period of years. Such investigations may produce either positive or negative results. A number of the experiments conducted by the Experiment Station involve both field and laboratory work on an extensive scale. We have been and are still handicapped by lack of funds in the conducting of our experimental work, on account of not being able to plan and carry on investigations on a sufficiently extensive scale to be of greatest service.

In the Soils Section investigations are being conducted, not only on the Experiment Station grounds and in the laboratories of the department, but at various points in the State, with a view to studying local conditions and problems. A careful and quite thorough preliminary soil survey of the State has been made and a bulletin published, which has been received with general favor throughout the State. These investigations both at the college and at other points in the State will need to extend over a period of several years before anything in the way of definite results can be secured. In many parts of Iowa our soils are already beginning to give evidence of exhaustion and the conserving of fertility and the productive capacity of the farm lands of Iowa is a problem of vital interest and of vast economic importance to the welfare of all citizens of the State.

In Horticulture our resources are practically undeveloped; however, it has been conclusively demonstrated that fruits can be grown in Iowa comparing favorably with the best that can be grown in regions making a specialty of Horticultural products. We are urgently in need of more information about the adaptability of species and varieties of Horticultural plants and the production of new species and varieties adapted to Iowa conditions. The Horticultural Section is doing considerable work in the breeding of plants, particularly orchard fruits, to secure improved varieties for Iowa. Many of our present varieties are hardy and productive, but lack in keeping qualities for winter use and extensive investigations are being conducted, in co-operation with the United States Department of Agriculture, to determine the keeping qualities of Iowa green fruit under cold storage conditions.

The approximate number of varieties in the Station orchards is as follows:

Apples, about 800 trees, including about 300 varieties.				
Pears, " 35 " " " 20 "				
Plums, " 400 " " " 200 "				
Cherries, " 150 " " " 50 "				
Peaches, " 30 " " " 10 "				

Total orchard trees of named varieties under test about 1,400, including about 580 varieties. Besides this there is being tested about 180 varieties of grapes and small fruits. There are also the following seedlings of known parentage being tested:

Plum Seedlings, about 1,400
Peach Seedlings, " 250
Cherry Seedlings, " 120

Making a total of...1,170 seedlings.

The Forestry Section is giving attention to the treatment and preservation of soft wood post timber to increase durability; to restoration of the trees growing on the campus; to forming new plantations of trees adapted to the production of posts, poles, repair material and fuel; breeding forest trees; to reforesting areas of land in various parts of the State are adapted for anything except tree growing, and the preservation of stream erosion by tree planting.

The Chemical Section has been engaged for the past year and a half in making an extensive study of the commercial feed stuffs and manufactured products on the market throughout the State and shipped in by outside firms. Many of the products have been found to be adulterated and sold under gross misrepresentation, thereby causing a heavy loss to the purchasers of feed stuffs. A bulletin is now in print, giving a result of this investigation, which will undoubtedly be the means of effecting a large saving to the farmers and stockmen of the State.

The Botanical Section has been engaged in making an extensive study of the injurious weeds of Iowa and methods of eradication and preventing their spread and distribution. Investigation pertaining to this subject has been of deep interest to the farmers of the State. The Botanical Section has also made an extensive study of the impurities of clover and other grass seeds and identified a great many varieties of weed seeds commonly found in commercial grass seeds. The diseases of plants has been a subject of careful inquiry and the State has been mapped, showing the extent of

injury from fungus diseases. Information has been furnished in the Station bulletins concerning methods of combatting fungus diseases.

The subject of farm water supply has been under investigation for two years, with particular reference to the purity of water on the farm for family and live stock use, including a qualitative and quantitative study of the bacteria and algae in farm water supplies, particularly those that contaminate water.

The head of the Entomology Section of the Station, in addition to his duties as Station Entomologist is also State Entomologist and has charge of the inspection of the nurseries of the State for San Jose scale and other injurious diseases of a serious nature. The section is also conducting fumigation experiments to determine the resistance of various plants and insects to insecticides used in the eradication of insect pests; the methods of generation of gases and their rate of diffusion through soil of different character and through air compartments of different sizes. The Entomology Section has rendered assistance to the farmers in various localities of the State who send in reports of depredation of insects.

The Animal Husbandry Section is carrying on extensive feeding experiments with cattle and swine to determine the value of new feed stuffs on the market and combinations of feed stuffs giving the best and most economical results. In these investigations, the value of grasses and feed stuffs grown on the farm have received special attention.

The Section has also been conducting a feeding test, using creamery skim-milk containing germs of tuberculosis, with a view to determining the danger of extending the disease through the use of skim-milk without pasteurization. The Animal Husbandry Section gives direct assistance to a great many farmers and feeders of the State in response to personal inquiries addressed to the Station. This section is also preparing to take up investigations with poultry and with the feed, care and management of dairy stock as soon as the equipment for the poultry and dairy plants can be completed.

The Dairy Section has continued its study of the keeping qualities of butter made at different temperatures when put in cold storage, with a view to determining the causes of the different abnormal flavors which develop in butter when stored. The effect of different degrees of acidity of cream upon the keeping qualities of butter has been a subject of investigation and the question

of the percentage of moisture that can be incorporated in butter with good results has received special attention at this Station. The results of the Station investigations in this line have been of incalculable value to the butter-makers of the State. It has been clearly demonstrated that butter may contain as high as fifteen to seventeen per cent of moisture and be superior in flavor and keeping qualities to butter containing only ten or twelve per cent moisture. The incorporation of five or six per cent of additional moisture without diminishing the value of the product is an economic item of tremendous importance when applied to the output of the creameries of the State. Butter from over a hundred of the different creameries has been sent to the College Creamery for storage and chemical analysis and investigation and the samples forwarded to market for final scoring and rating. This work has been of direct practical value and has enabled the butter-makers of the State to improve their product and correspondingly increase its market value.

The Farm Crops Section is conducting extensive field experiments with corn, particularly with reference to the improvement of the quality and by the elimination of barren stocks and the breeding of purer and better types. The injury caused by the corn root worm and methods of preventing the depredations of this insect have received special attention and a bulletin giving the results is being prepared. The Station is also conducting extensive experiments in the cross-fertilization and breeding of the small grains, with a view to increasing the resistance of our cereal crops to rust and growing stiffer straw and a better yield.

The Agricultural Engineering Section has given special attention to investigation of various forms of power for use on the farm, including windmills, gasoline and steam engines, electric motors, and alcohol engines. The construction, mechanism and duration of all of the leading types of farm machinery is studied and draft tests in field operations have been conducted under varying conditions. The section has also conducted drainage and irrigation experiments, including the use of machines for ditching and laying tile.

The Veterinary Section deals with the health of the live stock of the State and advises with stockmen in cases of an outbreak of contagious diseases or the appearance of new diseases. The sanitary care and treatment of domestic animals is outlined in bulletins and other publications and precautionary measures recommended to guard against the spread of diseases. Many post-mor-

tem cases are sent to the Station laboratory for investigation.

Bulletins and press reports and press notices are issued, giving the results of experiments from time to time. Nearly all of the bulletins previously issued are now out of print and some have been printed a second time. These bulletins are furnished free to all residents of the State and press notices calling attention to them are sent to all the newspapers of the State. Quite a number of the Station bulletins are being used in the schools of the State, as a means of giving elementary instruction in agriculture. The heads of the various sections of the Experiment Station take up from time to time new problems that present themselves in their respective lines.

The present organization of the Station staff will enable the Station work to be carried on more extensively and efficiently than in the past, yet many of the problems arising in the several lines are of such magnitude that the limitations of the Station funds and equipment are soon reached. With better facilities and larger means for conducting these investigations, the solution of many problems could be reached in a much shorter time.

Respectfully submitted,

C. F. CURTISS,
Director.

TREASURER'S REPORT.

The following is a complete statement of the transactions of the accounts for the fiscal year ending June 30, 1906.

Account	Balance July 1, 1905		Fiscal Year		Total		Support Fund		Balance June 30, 1906	
	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit
Support funds, balance July 1, 1905.....	\$5,695.75				\$ 5,695.75			\$ 5,695.75		
Interest on lands belonging to Congressional grant.....				\$ 72.00		72.00			72.00	
Interest on investment of endowment fund.....			34,013.40		34,013.40			34,013.40		
Interest on lands obtained by foreclosure.....				85.00		85.00			85.00	
Morrill support fund.....				25,000.00		25,000.00			25,000.00	
State additional support funds.....				128,958.32		128,958.32			128,958.32	
Agricultural fellowship.....	391.71	\$ 350.00			391.71	350.00				\$ 41.71
Agricultural journalism.....	1,000.00				1,000.00					
Diploma fund.....	685.17	676.91	692.72		676.91	1,377.89				700.98
Donation fund.....	229.83		37.20		297.03					297.03
Hospital.....	332.98	3,180.20	3,543.00		3,180.20	3,875.58				693.88
Piano rent.....		192.00	194.00		192.00	194.00				2.00
Railroad damages.....	88.00				88.00					88.00
Room rent.....	292.25	2,080.94	1,850.96		2,080.94	2,130.22				60.28
State fair scholarship.....	75.00	275.00	300.00		275.00	275.00				1,008.57
Tuition.....	299.43	1,308.00			299.43	1,308.00				
Salaries Morrill support.....					25,000.00			\$ 25,000.00		
Salaries support funds.....		55,484.70			55,484.70			55,484.70		
Agricultural Dean's office.....		388.52			388.52			388.52		
Agricultural engineering.....		2,885.38			2,885.38			2,885.38		
Agronomy.....		3,154.08	1,032.84		2,154.08	1,032.84			1,101.24	
Animal husbandry.....		4,172.58	2,586.32		4,172.58	2,586.32			1,586.26	
Botany.....		2,861.68	912.06		2,861.68	912.06			1,949.62	
Chemistry.....		671.60	3,854.34		671.60	3,854.34			3,017.66	
Civics.....		50.95			50.95				50.95	
Civil engineering.....		4,322.86	1,469.90		4,322.86	1,469.90			2,852.96	
Dairy.....		3,866.59	6,704.31		3,866.59	6,704.31			2,837.72	
Dairy farm.....		1,048.12	1,385.00		1,048.12	1,385.00			346.88	
Domestic economy.....		2,808.86	759.70		2,808.86	759.70			2,079.16	
Economic science.....		40.17			40.17				40.17	
Electrical engineering.....		4,072.78	986.40		4,072.78	986.40			3,086.38	
Engineering Dean's office.....		351.09			351.09				351.09	
English.....		3,176.64	545.00		3,176.64	545.00			2,631.64	
Farm.....		16,912.66	14,455.31		16,912.66	14,455.31			2,457.35	
Farm crops.....		2,123.12	784.00		2,123.12	784.00			1,339.12	
Geology.....		418.38	223.00		418.38	223.00			195.38	
History.....		944.28			944.28				944.28	
Horticulture.....		3,756.69	1,884.32		3,756.69	1,884.32			2,371.77	
Junior college Dean's office.....		689.01			689.01				689.01	
Library.....		3,182.67	180.00		3,182.67	180.00			2,832.67	
Mathematics.....		4,944.88			4,944.88				4,944.88	
Mechanical engineering.....		11,212.63	4,496.98		11,212.63	4,496.98			6,715.65	
Military.....		49.13			49.13				49.13	
Mining engineering.....		949.68	39.75		949.68	39.75			909.93	
Modern languages.....		3,021.34			3,021.34				3,021.34	
Music.....		630.39			630.39				630.39	
Preceptress' fund.....		169.01	3.00		169.01	3.00			166.01	
Public speaking.....		1,009.85	165.00		1,009.85	165.00			844.85	
Sole.....		1,083.39	315.76		1,083.39	315.76			767.63	
Veterinary.....		2,988.53	2,108.75		2,988.53	2,108.75			819.78	
Zoology.....		2,219.53	534.20		2,219.53	534.20			1,685.33	
Catalog, compendium and advertising.....		2,315.50			2,315.50				2,315.50	
Contingent expense.....		1,566.26			1,566.26				1,566.26	
Fires, lights and incidentals.....	11.81	56,015.17	32,599.96		56,015.17	32,611.07			24,002.10	
Purchasing committee.....		2,329.67			2,329.67				2,329.67	
Public grounds.....		2,034.23	128.85		2,034.23	128.85			1,905.38	
President's office.....		1,272.67			1,272.67				1,272.67	
Sabbath services.....		485.29			485.29				485.29	
Secretary's office.....		1,283.04			1,283.04				1,283.04	
Treasurer's office.....		2,215.18			2,215.18				2,215.18	
State appropriations.....	890.84	294,685.69	296,022.43		294,685.68	296,912.27				2,226.59
Total.....	89,722.95	\$284,263.72	\$542,275.17		\$534,362.72	\$550,998.12		\$172,649.49		\$ 5,122.84
Balance support funds.....								21,521.96		21,521.96
Cash to balance as follows:										
Support funds.....	55,695.75	15,826.11			21,521.86				21,521.86	
State appropriations.....	889.84	1,328.75			2,228.59				2,228.59	
Miscellaneous accounts.....	2,137.36	766.59			2,903.95				2,903.95	
Total.....	89,722.95	89,722.95	\$542,275.17		\$550,998.12	\$550,998.12	\$194,171.35	\$194,171.35	\$26,644.40	\$26,644.40

TREASURER'S REPORT—CONTINUED.

Experiment Station.

Account	Balance July 1, 1905		Fiscal Year		Total		Support Fund		Balance June 30, 1906	
	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit
Government appropriation—Adam's fund.....				\$ 5,000.00		\$ 5,000.00		\$ 5,000.00		
Government appropriation—Hatch fund.....				15,000.00		15,000.00		15,000.00		
State support fund.....	\$4,426.03			27,083.83		31,509.86		31,509.86		
Salaries.....			\$ 17,551.03		\$ 17,551.03		\$ 17,551.03			
Agricultural engineering section.....			1,200.00		1,200.00		1,200.00			
Agronomy section.....			5,925.75	2,188.57	8,114.32	2,188.57	3,740.18			
Animal husbandry section.....			11,383.53	7,633.80	11,383.53	7,633.80	3,749.73			
Artist.....			570.00		570.00		570.00			
Botanical section.....			1,282.92		1,282.92		1,282.92			
Emergence and buildings section.....			66.66		66.66		66.66			
Bulletin section.....			2,032.49	7.50	2,032.49	7.50	2,024.99			
Chemical section.....			3,145.97	778.24	3,145.97	778.24	2,370.73			
Dairy section.....			1,002.68	27.03	1,002.68	27.03	975.65			
Director's section.....			1,142.78		1,142.78		1,142.78			
Entomological section.....			1,380.50		1,380.50		1,380.50			
General expenses section.....			1,739.31		1,739.31		1,739.31			
Horticultural section.....			1,928.60	72.42	1,928.60	72.42	1,856.18			
Photography section.....			1,066.38	730.02	1,066.38	730.02	336.87			
Soils section.....			1,143.03		1,143.03		1,143.03			
Veterinary section.....			174.18		174.18		174.18			
Total.....	\$4,426.03	\$4,426.03	\$ 58,530.91	\$ 52,752.32	\$ 62,946.94	\$ 41,314.74	\$ 51,509.36			
Balance.....			5,768.59		10,194.62				\$ 10,194.62	\$ 10,194.62
Cash to balance.....										
Total.....	\$4,426.03	\$4,426.03	\$ 58,530.91	\$ 58,530.91	\$ 62,946.94	\$ 62,946.94	\$ 51,509.36	\$ 51,509.36	\$ 10,194.62	\$ 10,194.62

STATE COLLEGE OF AGRICULTURE

STATE APPROPRIATIONS.

Account	Balance July 1, 1905	Drawn From State Treasury	Expended During Year	Balance June 30, 1906
Books and periodicals.....		\$ 520.00	\$ 363.84	\$ 156.16
Central building additional.....		59,913.02	59,913.02	
Central heating plant.....		20,641.31	20,641.11	.20
Dairy building, farm and equipment.....	\$ 8.35	29,873.65	29,882.00	
Engineering experiment station (old).....	874.96	3,000.00	3,344.55	229.81
Engineering experiment station (pro rata).....		728.38		728.38
Good roads experimentation (old).....		3,500.00	3,507.13	
Good roads experimentation (pro rata).....		1,082.35	622.96	460.34
Land additional.....		5,500.00	5,500.00	
Repairs and improvements.....		23,000.00	22,676.81	323.19
Special building tax.....		119,232.79	119,232.23	.56
Total.....	\$ 880.84	\$ 260,022.43	\$ 264,683.68	\$ 2,229.50

TREASURER'S REPORT

IOWA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS

REPORT OF THE SECRETARY.

MEMBERS OF THE 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. E. R. Moninger, Marshalltown.....	1912
Sixth District—Hon. W. O. McElroy, Newton.....	1908
Seventh District—Hon. Chas. R. Brenton, Dallas Center.....	1912
Eighth District—Hon. Geo. S. Allyn, Mt. Ayr.....	1910
Ninth District—Hon. James H. Wilson, Menlo.....	1908
Tenth District—Hon. J. B. Hungerford, Carroll.....	1912
Eleventh District—Hon. W. J. Dixon, Sac City.....	1912

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 Course of Study—Trustee McElroy, Superintendent Riggs, Trustees Hungerford, Dixon, Letts, Zmunt.

Finance Committee—Trustees Allyn, McElroy, Hungerford, Alexander, Dixon and Governor Cummins.

Building Committee—Trustees Dixon, Hungerford and Letts; additional members, Trustees Wilson and Brenton.

Committee on Rules—Trustees Orr, Zmunt and McElroy.

Committee on Bonds and Contracts—Trustees Moninger and Wilson.

Committee on Endowments—Trustees Moninger, Allyn and Governor Cummins.

Purchasing Committee—E. W. Stanton, Herman Knapp, Trustee Moninger, W. H. Meeker, Trustees Orr, McElroy and Wilson.

(B) DEPARTMENT COMMITTEES.

Committee on Agriculture—Trustees Letts, Brenton, Moninger, Allyn, Orr, Dixon and Governor Cummins.

Committee on Engineering Departments—Trustees Zmunt, Superintendent Riggs, Trustees Orr, McElroy and Alexander.

Committee on Scientific Departments—Trustees Alexander, Superintendent Riggs, Trustees Allyn, Orr and Brenton.

Committee on Literary Departments and Library—Trustees Wilson, Zmunt, Superintendent Riggs, Trustees Brenton and Alexander.

Committee on Public Grounds and Assignment of Rooms—Trustees Hungerford, Zmunt and Letts.

Committee on College Hospital and Sanitary Arrangements—Superintendent Riggs, Zmunt and Wilson.

This report includes:

First: A brief history of the financial operations for the fiscal year ending June 30, 1906.

Second: An exhibit of the resources of the College and the funds available for the year ending June 30, 1907; also a division of the fund for that year.

Third: A brief outline of the method of conducting the financial affairs of the College.

FINANCIAL OPERATIONS OF THE YEAR.

These relate to:

1. The endowment fund.
2. The building and improvement funds.
3. The support or maintenance funds.

I. THE ENDOWMENT FUND.

The following shows the amount of the fund and the method of investment:

Invested in Land.....	\$ 2,418.55
Invested in Farm Mortgages.....	680,500.00
Cash awaiting investment.....	789.97

Total \$683,708.52

Three tracts of endowment fund land containing 336.02 acres were patented during the year. The College interest in this land, determined by contracts of sale made in the early years of the land agency, amounted to \$1,744.08. This amount was remitted by Agent Knapp to the State Treasurer and credited by him to the funds of the Financial Agency. This closes out the land agency of Mr. Knapp and, with a single exception, places the entire endowment fund under the charge of Agent W. A. Helsell. One forty-acre tract of land in Polk county, obtained under foreclosure, and carried on the College books at an appraised value of \$2,418.55, is managed directly by the Board. It is leased at present on short time at \$85 per annum.

The following is a summary of the work of the financial agency for the year:

Uninvested balance at beginning of year.....	\$ 2,745.89
Loans paid during the year.....	71,600.00
Lands patented and proceeds credited to the agency....	1,744.08

Total to be loaned..... \$ 76,089.97

The agent has loaned during the year:

On 5 per cent mortgages..... 75,300.00

leaving balance uninvested:

In hands of State Treasurer.....	\$ 89.97
In hands of Agent Helsell.....	700.00
	<u>\$ 789.97</u>

Total \$ 76,089.97

Loans amounting to \$25,600.00 were renewed during the year, making a total of new and renewed loans of \$100,900.00.

The delinquent interest amounts to \$1,335.00. This is not a large sum considering the aggregate of the loans involved.

II. THE BUILDING AND IMPROVEMENT FUNDS.

A natural line of division exists between the funds devoted to the permanent enlargement and improvement of the College plant and those used to meet current expenses and maintain the various departments.

The amounts drawn from the State Treasury, under the first class, for the fiscal year are as follows:

Special Building Tax.....	\$118,232.79
Special Appropriation for completing the Central Building	59,913.02
Special appropriation for Dairy Building, Farm and equipment	29,873.65
Special appropriation for Central Heating Plant.....	20,641.31
Special appropriation for purchase of additional land....	5,500.00
Annual repair and improvement fund.....	23,000.00

Total \$257,160.77

The following are the expenditures for the year along the line of these permanent improvement accounts. They are arranged under the special funds to which they are chargeable:

Special Building Tax:

New Central Building.....	\$102,405.94
Dairy Building.....	10,773.97
Horticultural Cottage.....	5,018.68
New Agricultural Hall.....	33.64
	<u>\$118,232.23</u>

Additional appropriation for completing and furnishing

Central Building.....	\$ 59,913.02
Central Heating Plant Appropriation.....	20,641.11
Dairy Building, Farm and Equipment.....	29,882.00
Additional land.....	5,500.00
Annual Repair and Improvement Fund.....	22,076.81

Total \$256,845.17

Taking these up for consideration under the headings of the different buildings, we have first the

NEW CENTRAL BUILDING.

The expenditures on this account, for the year, as shown in the foregoing statement are as follows:

Charged to the Special Building Tax.....	\$102,405.94
Charged to the Special Appropriation of the Thirtieth General Assembly for completing and furnishing the building	59,913.02
Total	\$162,318.96

The following is a more detailed statement of these expenditures:

Charged Special Building Tax:

New Central Building—

H. W. Schlueter on contract for erection of building	\$ 83,594.93
Extras on contract.....	1,656.94
Holbrook Marble & Tile Co. on their contract of \$4,050 for marble for toilet rooms....	3,465.00
S. A. Berkemeyer on contract for slate blackboards: Amount of contract \$1,692; deducted because of omission of 472 sq. ft. at 25c, \$108.56.....	1,583.44
St. John & Barquist, tile on dome.....	97.00
Stoner Wallpaper Co., finishing hardwood floors and extra painting.....	255.00
Labor and material in connection with installing heating system.....	224.42
Westinghouse Electric Company for motors for heating and ventilating system.....	847.22
Part of the cost of labor and material in connection with the installation of electric lighting system; work done under the direction of the Mechanical department, balance of cost charged to the special legislative appropriation for the completion of the Central Building.....	2,151.31
Proudfoot & Bird, architects, on their contract of 3 per cent on cost of construction.	3,000.00
Mitchell Vance Company, on their contract of \$3,000 for electric light fixtures.....	2,500.00
Art Metal Construction Co., on their contract of \$4,664.80 for steel filing cases for business offices; balance charged to special appropriation for completion of building..	1,742.30

Lewis & Proctor, installing gas plant for botanical department	325.00
Stenographic help in office of superintendent, at \$35 per month.....	420.00
Inspection for the year.....	515.80
Express, freight, drayage and testing cement.	9.78
Expenses of Trustee Letts visiting Chicago to consult contractor regarding options in contract	17.80
	\$102,405.94

Charged Central Building Additional Appropriation:

Paid H. W. Schlueter on contract of \$22,500 for restoring dome, attic story, east portico, four pilasters on the west side and the pediment over same.....	\$ 18,000.00
---	--------------

Paid for heating, lighting and plumbing and fixtures:

L. H. Kurtz on contract of \$26,800 for heating, ventilation and plumbing	\$13,675.04
Labor and material installing conduit system and wiring building	2,002.55
Three 15 k. w. transformers...	407.69
Miscellaneous bills on heating account	57.45
Telephone and Telegraph.....	1.60
	16,144.33

Paid for furnishings and fixtures:

L. Harbach on contracts of \$10,340.43 for filing cabinets, bookcases, tables, desks, and office fixtures, \$ 8,789.07
--

Des Moines Cabinet Co. on contract of \$10,835.75 for special furniture, including lockers, shelves, recitation room platforms, laboratory tables, cases and fixtures, counter for Treasurer's office, toilet racks, etc.....	5,832.51
---	----------

Art Metal Construction Co. on contract of \$4,664.80 for steel filing cases for business offices and for balcony and stairway in Treasurer's vault	2,922.50
--	----------

Grand Rapids School Furniture Co. for 1,140 Columbia tablet arm chairs for recitation rooms, in place at \$4.25 each, and 148 portable chairs at \$1.50 each, less deduction of \$2.25	5,064.75		
Yunker Brothers for 39 rugs and 84 mats	1,620.91		
Woods for botany cases	300.00		
Desk for Secretary's office ..	70.00		
Advertising for bids	28.92		
Express, freight, telephone and telegrams	16.78		
Expenses of committee of Board purchasing furniture	186.45		
Proudfoot & Bird, architects, 3 per cent on cost	926.80	\$25,768.69	\$59,913.02

Total expenditures on Central Building during the year. \$162,318.96

The following exhibit gives the total expenditures on account of this building to date, together with an estimate of the amount necessary to complete and furnish it:

Expended during the biennial period ending June 30, 1903, as shown on page 91, Twentieth Biennial Report of College	\$ 1,803.55
Expended during the biennial period ending June 30, 1905, as shown on pages 119 and 120 of the Twenty-first Biennial Report	190,628.99
Expended during fiscal year ending June 30, 1906, as shown above	162,318.96
Total expended prior to July 1, 1906	\$354,751.50

Estimate of expenditures necessary to complete and furnish the building:

Chargeable to Special Building Tax:

Balance due H. W. Schlueter:	
On contract	\$ 16,605.31
On extras	89.34
Balance due Holbrook Mantel & Tile Company on contract for toilet rooms	585.00
Balance due Mitchell-Vance Co. on contract for electric light fixtures	500.00
L. Harbach, extra on tables	232.00
Balance due Proudfoot & Bird, Architects	580.35
Yunker Brothers' contract for shades	358.00

Stoner Wallpaper Co. for tinting and decorating	3,300.00
Extras on contract	168.06
Lettering doors and finishing cases	116.60
Payment on Kurtz contract on plumbing ..	1,703.08
Additional plumbing, principally in the Botanical laboratory rooms	2,850.29
Base fixtures for electric lights on east portico	700.00
Minor items including office help and extras on heating and lighting	290.47
	<u>\$ 28,078.48</u>

Chargeable to Central Building Additional Appropriation:

H. W. Schlueter's contract for granite base ..	\$ 12,000.00
Balance of H. W. Schlueter's contract for dome	4,000.00
Balance of Des Moines Cabinet Co.'s contract for special furniture	4,897.24
Balance of L. Harbach's contract for office furniture	1,287.36
Balance of Kurtz contract on plumbing	6,140.48
Minor items	46.71
	<u>\$ 28,371.79</u>

Total cost of building, fixtures and furnishings. . . \$411,201.77

This exceeds the estimate on page 122 of the Twenty-first Biennial Report by some \$4,300. This excess is fully accounted for by the additional plumbing found necessary, especially in the botanical laboratory, the base fixtures for electric lights for the front portico and the additional expense of the better quality of tinting and decorating decided upon by the Board. It will be noticed that the furnishings for which a special appropriation was made by the legislature are included in the total given. Such total might therefore be divided as follows:

Buildings and fixtures	\$379,201.77
Furnishings	32,000.00
Total	<u>\$411,201.77</u>

An examination of the items making up the aggregate will show that they include the expense of moving the old heating plant which occupied the site of the present building, the cost of the heating, lighting and plumbing systems and all fixtures necessary to the complete equipment of the building.

DAIRY BUILDING, FARM AND EQUIPMENT.

The expenditures under this head, for the year amount to \$40,655.97 divided between funds as follows:

Charged to the Special Building Tax.....	\$10,773.97
Charged to the special State appropriation.....	29,882.00
Total	\$40,655.97

The following statement shows somewhat in detail the purposes for which these amounts were used.

Charged Special Building Tax:

Dairy Building and Equipment:

Extras on L. H. Kurtz Co.'s contract for plumbing	\$ 309.44
Westinghouse Elec. & Mfg. Co., 1 motor and 3 transformers.....	1,145.61
General Electric Co. for 11 small motors	619.86
The Bullock Elec. Mfg. Co. for 1 k. w. generator	945.52
Supplies and labor installing motors...	79.65
Supplies and labor connecting motors and machinery, belting included....	208.45
Electric lighting	44.14
Part of cost of foundations for ice machine	119.90
Kimball Bros. for elevator.....	1,100.00
Freight	4.24
Vermont Farm Machine Co. for 11 cheese and milk vats.....	228.00
Toledo Desk & Fixture Co., balance on contract of \$1,344 for 14 laboratory tables after deducting \$50 for painting same	644.00
Toledo Desk & Fixture Co., contract for special furniture, including lockers, desks, tables, shelving, etc.....	2,937.00
Labor putting up shelving at 30c per hour	34.50
Baker-Trisler Co.'s contract for filing cabinets, bookcases, and laboratory stools and chairs.....	1,448.29
Grand Rapids School Furniture Co., 108 Columbia tablet arm chairs.....	455.75
Architect, 3 per cent on furniture purchased	203.40
Robbins Mfg. Co. on contract of \$267 for window screens and screen door less \$20.78 deducted freight and work not completed	246.22
	\$ 10,773.97

Charged Special State Appropriation:

Dairy Building and Equipment:

Balance of Schlueter's contract of \$43,-	
192 for erection of building.....	\$ 3,050.00
Extras on Schlueter's contract.....	503.99
Toledo Desk & Fixture Co. on contract of \$1,344 for 14 laboratory tables.....	650.00
Installation of electric motors.....	266.29
Connecting apparatus	100.26
Ice machine foundations.....	382.48
Electric lighting	56.95
Door checks	62.18
Painting	8.50
Telephone and express.....	1.04
	\$ 5,081.69
Total expended during the year on building and equipment.....	\$ 15,855.66

Dairy Farm:

190 acres purchased by Trustees.....	\$ 19,258.74
10 acres condemned by Executive Council	2,160.15
Improvements made by former owners under agreement with College after contract for purchase was entered into	527.86
Paid for termination of lease.....	30.00
Recording deeds and continuing abstract	14.25
Locating corner stones.....	9.00
	\$ 22,000.00

Dairy Herd and Equipment of Dairy Farm:

Ditching, tilling, building fences, etc...\$	1,202.20
Machinery and harness	339.30
3 cows, 3 heifers, and 1 calf.....	580.00
Holstein bull	250.00
Shorthorn cow and calf.....	195.00
Seeds, grading, plowing, planting trees, etc.	127.32
Freight and telephone.....	45.13
Pasturage and feed for cattle	24.45
Surveying, plotting, etc.....	23.35
Prof. Kennedy's expenses purchasing cattle	13.56
	\$ 2,800.31
Total for Dairy Building, farm and equipment during the year	\$ 40,655.97

The total expenditures on account of the Dairy Building and its equipment to date, and the estimated cost of completing the building, are as follows:

Expended during the biennial period ending June 30, 1905, as shown on pages 124 and 125 of Twenty-first Biennial Report..	\$ 49,918.31
Expended during year ending June 30, 1906, as shown by this report.....	15,855.66
Estimate of unpaid bills:	
Balance of Kurtz Co. plumbing contract..	\$ 487.00
Extras on Kurtz contract.....	408.42
Additional plumbing, Kurtz Co.....	571.74
Vilter Mfg. Co., contract for refrigerator...	3,220.00
Harris-Emery contract for shades.....	274.00
Amount set aside for electric light fixtures, switchboard and meters.....	350.00
Amount set aside for laboratory tables....	50.00
Fitting up rooms for Agrl. Extension work	650.00
A. L. Potter, plumbing.....	72.05
Elevator gates.....	200.00
Rugs for five offices.....	128.70
	\$ 6,411.91
Total estimated cost of building and fixtures	\$ 72,185.88

This amount exceeds the estimate on page 126 of the Twenty-first Biennial Report by about \$1,000. This difference is due to the fitting up of rooms for college extension work and certain additional plumbing found necessary.

It will be noticed in the statement that the \$22,000 appropriated for the purchase of a dairy farm, which is the second item in this special appropriation, has been entirely expended. Of the appropriation of \$7,000 for dairy herd and equipment of farm, \$2,800.31 was expended, leaving a balance of \$4,199.69, which, under the orders of the Board, will be expended about as follows:

For herd	\$ 2,392.01
On farm cottage.....	1,052.01
Two silos and setting up same.....	478.14
Farm shed	231.82
Other improvements	45.71
Total	\$ 4,199.69

There have been no expenditures to date on the appropriation of \$500 for poultry buildings and equipment.

HORTICULTURAL COTTAGE.

The expenditures on this account, as shown in the statement, amount to \$5,018.68. The trustees gave careful consideration to the advisability of erecting this cottage. The advantage it offered in securing a desirable man for the head of the Horticultural Department and the benefit to the College in his residing near the department and station grounds decided them to build. In July, 1905, the sum of \$5,000 was appropriated from the millage tax for this purpose. The Building Committee was given power to secure bids and award contract. The contract was let to W. J. Gordon on his bid of \$4,130. This did not, however, provide for heating, lighting or plumbing. In final settlement, \$10.00 was reserved from the contract price for the work not completed, while extras to the amount of \$160.75 were allowed. Bills amounting to \$18.68 in excess of the sum first appropriated were allowed by the Board. The following is a summary of the expenditures to date on account of the Cottage:

Gordon contract for erection of cottage less \$10 reserved for work not completed.....	\$ 4,120.00
Extras on contract.....	160.75
Plumbing	277.88
Range boiler and laundry tub.....	39.14
Extension of water main.....	68.15
Electric lighting	92.50
Lenox furnace, including installation and piping	259.36
Telephone .....	.90
Total	\$ 5,018.68

Certain fixtures and plumbing items are to be taken care of, for which the Board has set aside \$500 from the repair and improvement fund.

HALL OF AGRICULTURE.

The General Assembly, at its last session, authorized the erection of this building from the proceeds of the Special Building Tax. The Legislative Act provided that the cost should not exceed \$250,000.00, including heating, lighting and plumbing. The Board employed Proudfoot & Bird as architects, fixing their compensation at 3 per cent of cost, for plans and specifications and superintendence, they agreeing to visit the College twice each month, or oftener at the request of the Building Committee.

The plans prepared by them were submitted to the Executive Council and approved. The Assembly room is not included. Bids were secured and opened by the Board at its meeting August 10, 1906.

The following are the bids on the building, exclusive of heating, lighting and plumbing. They are listed under the system of fireproofing, specified:

Expanded Metal:	
James Rowson & Sons, Iowa City, Iowa	\$274,200.00
Henry W. Schlueter, Chicago, Ill.	225,000.00
Chas. Weitz Sons, Des Moines, Iowa	225,621.90
Tri-City Construction Co., Davenport, Iowa	239,500.00
Fred Andres Company, Milwaukee, Wis.	227,357.00
Johnson Wide Span:	
H. Ellenberger & Company, Chicago, Ill.	249,333.00
Concrete:	
Lauritzen Brothers, Waterloo, Iowa	229,640.90
Twisted Steel:	
Bartlett & Kling, Cedar Rapids, Iowa	249,982.00

Sectional bids were also received, but the aggregate of the lowest of these bids exceeded the lowest bid on the building as a whole.

The Building Committee was authorized to make contract with Henry W. Schlueter, the lowest bidder, on the basis of such changes in the plans and specifications as would bring the aggregate cost within the limit of \$212,000.00. An agreement was reached with Mr. Schlueter under which deductions were made on those portions of the work on which lower sectional bids had been received, as follows:

Stone	\$ 1,860.00	
Steel	1,060.00	
Fireproofing	4,661.00	
Ornamental Iron	1,640.00	\$ 9,221.00

The following deductions were made because of changes in the plans:

Granite	\$ 200.00	
Reinforcement of terrazzo floor	460.00	
Omitting bookcases	250.00	
Changing border in terrazzo floors in ground story and second and third stories	690.00	
Reducing three-fourths columns to pilasters and change in masonry on account of said change	3,274.00	\$ 4,874.00
Total deductions		\$ 14,095.00

Subtracting these from Schlueter's bid of \$225,000.00, we have \$210,905.00 as the contract price for the building.

Bids were also taken on heating, lighting and plumbing. No contracts were entered into, but upon the basis of these bids, the cost of the building complete may be safely estimated as follows:

Schlueter's contract	\$210,905.00
Heating and ventilating	19,379.00
Plumbing	5,690.00
Electric wiring	2,300.00
Electric fixtures	2,000.00
Architects' fees	7,200.00
Supervision and minor expenses	1,500.00
Total	\$248,974.00

The bond of the contractor was fixed at \$52,750.00. Professors Marston and Curtiss were appointed local superintendents. The building was located on the east campus, one hundred feet east of the site recommended by the landscape gardeners, Olmsted Brothers, of Boston, Massachusetts; this change being made in deference to the general sentiment that the college buildings should not encroach upon the central campus.

The expenditures during the year in connection with this building amounted to only \$33.64, covering advertising for bids, surveying, telephone, express, and other minor items.

CENTRAL HEATING PLANT.

The Thirtieth General Assembly made an appropriation of \$54,500.00 for the erection and equipment of a central heating plant. After endeavoring in vain to secure bids for the work, which would come within the appropriation, the trustees gave up the idea of trying to erect the plant with the means at their command. They decided simply to make such temporary provisions at that time as seemed absolutely necessary. These included:

1. A tunnel from the present power station to the new Central Building and Morrill Hall.
2. The installing of two additional boilers in connection with the present plant and the erection of a temporary shed for their protection and for the storage of coal.
3. The installing of a pipe system and such additional power station equipment as this temporary plan necessitated.

It was estimated by Professor Bissell that it would cost \$21,200.00 to carry out this plan and that some \$16,000.00 of this amount would count toward the permanent plant, when erected. The following shows in detail the expenditures, under this plan, during the last fiscal year:

James Horrabin for constructing tunnel 6 ft. high by 5 ft. wide. First 500 ft. at \$6.90 per foot	\$ 3,450.00
336 ft. additional at \$6.00 per ft.	2,016.00
	\$ 5,466.00
Less amount reserved because of work not completed	100.00
	\$ 5,366.00
Labor and material equipping tunnel; labor \$ 343.14, including common labor at 15c per hour and plumbers at 20c to 27c per hour; material \$4,022.91, including pipe, racks, fitting, freight, etc.	4,366.05
Superintendence and inspection	266.51
2 Sterling Co. 260 H. P. boilers set in battery.	4,400.00
Foundation for boilers, setting new boilers and generator, and connecting plant with heating system	3,597.01
1 140-inch fan for boiler house	374.00
Castings for 2 Dorrance Smokeless furnaces, two sets of grates and two rocking grates.	625.00
Switchboard and installing same	434.46
1-pound 205 Oster power machine	171.00
Boiler and coal sheds 40x40x24 ft and 40x20x16 ft.	1,006.62
Telephone, telegrams, freight and express	12.50
Surveying and advertising for bids	21.96
Total	\$ 20,641.11

The expenditures prior to last year amounted to \$76.42, making the total to date, \$20,717.53. This leaves an unexpended balance on this appropriation of \$33,782.47.

The Thirty-first General Assembly, having failed to make an additional appropriation for the work, the Board found itself, last spring, forced to either continue the policy of making temporary provision for all the new demands upon the heating, lighting and power system, or else to use the funds available, in building and equipping in a permanent way, simply such portion of the plant as was most needed. The policy of permanent construction was decided upon and at the meeting of the Board in April, action was taken looking to the beginning of work at once upon the following:

1. The erection of that portion of the power plant designed to contain the engine room, the auxiliary and shop room and so much of the boiler room as could be erected with the funds available; this last room to be so planned as to admit readily of an addition.

2. The installation of an engine and boiler and such other equipment as will enable the plant to furnish light and motor service, leaving the heating arrangements as at present until additional funds are secured.

In pursuance of this policy, bids were obtained on the power station and opened by the Board at its meeting, June 5, 1906.

The bids were as follows:

H. W. Schlueter, Columbian fireproofing	\$ 32,969.00
Bartlett & Kling, twisted steel fireproofing	29,632.00
C. E. Atkinson, Approved fireproofing	36,747.00
James Rowson & Sons, Reinforced Concrete fireproofing ..	45,925.00

The contract was awarded to Bartlett & Kling on their bid of \$29,632.00.

Bids were also secured on a portion of the equipment, and contracts let to the lowest bidders. Taking into account these contracts, the probable cost of the remaining equipment and the cost of the power station, the following is a fair estimate of the amount required to carry out the plans of the Board as outlined:

Bartlett & Kling, contract on power station	\$ 29,632.00
Extras estimated	500.00
Allis-Chalmers Co., contract for one 150 k. w. generator and switchboard in place and connections made	4,225.00
Murray Iron Works, contract for one 18x36 250 h. p. Corliss engine, in place and connections made	2,985.00
Stirling Consolidated Boiler Co., contract for one 264 h. p. horizontal boiler, delivered, and superintendence of erection of steel work furnished	2,640.00
Westinghouse Machine Co., contract for one Roney Mechanical Stoker, f. o. b. factory	1,066.00
Engine foundations	1,200.00
Boiler foundations and connections and contingences	2,360.00
Induced draught apparatus	800.00
Feed water heater	500.00
Feed pumps	400.00
Piping and fitting	1,500.00
Tunnel construction	800.00
Architect's fee	1,000.00
Minor items	747
Total	\$ 49,615.47

To meet this expense, the Board appropriated the following:

Balance of special appropriation for Central Heating Plant. \$ 23,783.47
From Special Building Tax. 15,832.00

Total \$ 49,615.47

Professor Bissell estimates that to complete the boiler room, install the necessary boilers and construct tunnels to the College buildings upon the campus will necessitate an additional expenditure approximating \$100,000.00.

ADDITIONAL LAND.

The last Legislature appropriated \$11,000.00 for the purchase of land adjoining the College farm. Contracts were made as follows:

J. E. Campbell, 10 acres. \$ 600.00
Ellen Gilchrist, 27 acres. 2,500.00
E. E. Little and A. P. Whitmore, 20 acres. 1,300.00
J. L. Stevens, 80 acres. 6,000.00

Total—137 acres. \$ 10,400.00

The cost of certain improvements to be made under the direction of the College should be added to the above.

Payments amounting to \$5,500 were made on these contracts. This exhausted the portion of the appropriation available during the fiscal year. The balance of the contract price bears interest at 6 per cent. Payments will be made as the appropriation becomes available. The interest, and the cost of the improvements to be made by the present owners, will exhaust the appropriation.

ANNUAL REPAIR AND IMPROVEMENT FUND.

The annual fund for repairs and minor improvements is \$23,000.00. The following exhibit shows the expenditures for the year:

Part of the expense of remodeling boarding cottages. . . . \$ 2,824.37
Water main extension to old pumping station. 2,326.70
Moving and remodeling Custodian's cottage. 1,202.36
Repairs of heating, lighting and water plants. 5,874.52
Furniture for public rooms. 958.29
President and Professors' houses, repairs. 621.32
Margaret Hall, repairs. 629.50
Farm improvement and farm buildings. 544.82
Morrill Hall, repairs. 510.87

Soil laboratory gas machine.	461.92
Agricultural Hall, repairs.	609.25
Engineering building, repairs.	194.66
Chemistry Building, repairs.	166.05
Horticultural buildings, repairs.	153.11
Veterinary buildings, repairs.	43.09
Other departments buildings, repairs.	614.95
Sewage Disposal maintenance.	197.16
Sewer repairs.	308.43
Campus map.	114.78
Fence on west side of campus.	151.07
Wrecking old creamery.	156.06
Drain to hoghouse cistern.	186.08
Engine "Iowa"	179.00
Custodian's storeroom.	263.90
Grading around Dairy Building.	305.19
Contract book and ledger.	59.65
Surveying for highway and electric line.	91.90
Electric motors for Agricultural Hall.	57.89
Corn laboratory equipment.	287.27
Push buttons, President's and Secretary's offices.	41.19
Part of custodian's salary.	300.00
Part of carpenter's salary.	520.00
Part of second carpenter's salary.	333.36
Part of Treasurer's salary.	100.00
Part of engineer's salary.	200.00
Part of salary of superintendent of heating, lighting and plumbing.	200.00
Salary of Secretary of Building Committee and accountant.	350.00
Miscellaneous repairs.	533.10

Total \$22,676.81

This leaves a balance unexpended of \$323.19, which is needed to pay outstanding bills. To meet the fixed charges against this account and take care of the improvements ordered for the ensuing year, the following sums have been set aside:

Fixed Charges:	
One-fourth salary of custodian. \$	300.00
Two-thirds salary of carpenter.	520.00
Two-thirds salary of second carpenter.	400.00
Part salary of treasurer for handling funds.	100.00
Part salary of Supt. Bissell of heating, lighting and plumbing plant.	200.00
Part salary of Prof. Erwin, in charge of improvements on public grounds.	100.00
Salary of secretary of Building Committee and accountant.	350.00
Fires and lights repairs.	8,000.00
Part salary of college engineer.	200.00

Maintenance of sewage disposal system.....	350.00	
Seawage maintenance	50.00	
Ordinary minor repairs of buildings.....	600.00	
Emergencies, estimated	2,000.00	
Salary of painter.....	\$648.15	
Painters' supplies	131.85	780.00 \$ 8,950.00
Completion of improvements ordered last year:		
Campus lights	\$ 37.00	
Chapel chairs	184.20	
Defective electric wiring.....	36.00	
Cutters and conductors.....	51.28	
Chemical repairs	1.29	
Horticultural office furniture.....	54.55	
Domestic Economy dept. stoves, desks, etc.	27.45	
Grading around Dairy building.....	82.76	
Ornamental electric light poles.....	18.43	
Farm cottage	18.23	
Music Hall heating.....	139.41	
Chapel floors, etc.....	290.45	
Domestic Economy Gas Machine.....	25.00	
Margaret Hall rugs.....	350.00	
Engineering Library	517.50	
Agricultural Hall plumbing (sewing room)	35.88	
Electric motor for Agricultural Hall.....	117.34	
Custodian's house	51.15	\$ 2,037.92
New Appropriations:		
Botanical woods (additional).....	75.00	
Hinges for storm windows (Agrl. Hall) ..	10.00	
Repairing horse barn floor.....	150.00	
Building and repairing fences.....	300.00	
Tiling	50.00	
Bell tower repairs.....	25.00	
Margaret Hall fire escape.....	185.00	
Partition in Engineering Hall.....	200.00	
Mining Engineering lantern screen, etc...	30.00	
Pavilion	3,185.46	
Farm Crops Shed.....	190.00	
Beach House (extras), estimated.....	500.00	
Public grounds sign.....	117.00	
Professor Noble's house.....	103.30	
Cold Storage Dairy Building.....	130.00	
Silo for farm.....	200.00	
Doors, etc., Farm Mechanics.....	41.50	
Shop for carpenter.....	300.00	
Furnishing guest room (estimated).....	50.00	
Remodeling Horticultural Laboratory.....	214.00	
Veterinary repairs	250.55	
Repairing Summers' house.....	200.00	
Track for blueprint frame.....	25.00	

Ventilating Chemical Laboratory.....	240.00	
Speaking tubes, Chemistry.....	20.00	
Plumbing cement laboratory.....	25.00	
Borings for new well.....	250.00	
President and Music Hall heating.....	500.00	
Repairs Economic Department.....	20.00	
Domestic Economy lockers.....	30.00	
Music Hall repairs.....	115.00	
Rug and Inoleum for Music Hall.....	40.00	
Classification tables.....	24.00	
Agricultural Hall roof.....	100.00	
Noble's house (additional).....	10.00	
Soil bins, cases, etc., for Farm Crops green- house	150.00	
Sink in drawing room and cinder floor for machinery shed in Agrl. Eng. dept....	23.00	
Closet, Preceptress' room.....	65.00	
Revolving bookcases for Veterinary Dept..	15.00	
Additional for campus map	36.00	
Installing pump in well in pasture.....	100.00	
Agrl. Hall partitions Agronomy & An. Hush.	\$110.00	
Farm Crops	40.00	150.00
Partition in Soils Department.....	72.00	
Pipe to hoghouse cistern.....	30.29	
Central Building bulletin board.....	15.00	
Painters' supplies	200.00	
Gymnasium rooms and other repairs in Margaret Hall	100.00	
Chemical Laboratory locks.....	65.00	
Watermain extension	300.20	
Greenhouse repairs	6.25	
Fitting up sewing laboratory.....	93.16	\$ 9,326.91
Total		\$ 20,314.83

A large number of urgent demands are awaiting the action of the Building Committee.

This concludes the statement of the expenditures on account of the buildings and improvements constructed during the year. In connection therewith, a showing has been made of the probable cost of completing such improvements and the funds available for that purpose.

The portion of this estimated cost, not including the new Hall of Agriculture, chargeable to the Special Building Tax, is as follows:

Central Building	\$28,075.48
Dairy Building	6,411.91
Central Heating Plant	15,832.00
Total	\$50,322.39

The balance to the credit of this fund at the close of the year was \$38,039.11. The demands upon it mentioned above, will therefore exhaust the balance and trespass upon the receipts of the coming year by approximately \$12,300.00.

The remaining expenditures for the year represent the cost of maintaining the College in its numerous departments. They are presented in connection with a brief history of the financial operations of the year relating to the

III. SUPPORT FUNDS.

These funds may be classified, according to the purposes to which they are devoted, as follows:

1. Educational Support Funds.
2. Experiment Station Support Funds.
3. Highway Commission.

The following are the receipts charged against these funds for the fiscal year:

Educational Support Funds:

From National Government—

Interest on endowment fund.....	\$ 34,170.40	
Morrill Fund	25,000.00	\$ 59,170.40

From State—

Annual appropriation drawn from State Treasury	128,958.32	
Special fund for books and periodicals..	520.00	129,478.32

From students—

Janitor and laboratory fees.....	29,582.45	
Tuition of students outside of the State	1,308.00	
Diplomas	692.72	
Rent of pianos	194.00	
Rental of rooms in dormitories.....	1,856.96	
College Hospital fee of \$2.50 per term insuring hospital privileges free in case of sickness	3,535.50	37,169.63

From other sources—

Rental of donated land.....	37.20	
Clay Fund for support of Agricultural Journalism	1,000.00	
State Fair scholarship.....	200.00	\$ 1,237.20

Total educational support fund....	\$227,055.55
------------------------------------	--------------

Experiment Station Support Funds:

For Agriculture—

From National Government—

Hatch Appropriation Bill.....	\$ 15,000.00	
Adams Appropriation Bill	5,000.00	20,000.00

From State—

Balance on previous appropriation..	2,083.33	
Annual appropriation (1905-6).....	25,000.00	\$ 27,083.33

Total Agrl. Experiment Station..	\$ 47,083.33
----------------------------------	--------------

For Engineering—

From State—

Annual appropriation, old.....	\$ 3,000.00	
Part of annual appropriation, new.....	758.33	

Total for Engineering Experiment Station	3,758.33
--	----------

Total for experimental work	\$ 50,841.66
-----------------------------	--------------

Highway Commission Support Fund:

Annual appropriation, old.....	\$ 3,500.00	
Part of annual appropriation, new.....	1,083.33	

Total	\$ 4,583.33
-------------	-------------

SUMMARY OF SUPPORT FUND RECEIPTS.

Educational Support Funds	\$227,055.55
---------------------------------	--------------

Experiment Stations—

Agriculture	\$ 47,083.33	
Engineering	3,758.33	50,841.66

Highway Commission	4,583.33
--------------------------	----------

Total for all purposes.....	\$282,480.54
-----------------------------	--------------

The sales of departments, amounting to \$38,312.13, are not included in the above for the reason that the proceeds of such sales are immediately re-invested by the departments and thus constitute a revolving fund, representing as it goes and comes, simply a change in the form of department assets.

It may be said that some of the items remaining in the list are much the same in their nature. This is true. The laboratory fees, for instance, cover simply material used by the student in laboratory, shop and field. He might have bought such material

elsewhere, as he buys his books; he makes his purchases through the College because it is more convenient and saves him money.

The hospital fee does not go to the support of any educational department; it simply insures to the student the privileges of the hospital in case of sickness. These items are, however, included among the support fund receipts in order that there may be no question as to the statement being full and complete.

The following is a summary of the expenditures on account of these several support funds for the year:

For educational purposes.....		\$210,316.69	
For experimental work:			
Agriculture	\$ 41,314.74		
Engineering	3,344.55	44,659.29	
For highway commission		4,130.12	
Total		\$259,106.10	

The exhibit which follows gives these expenses more in detail:

EDUCATIONAL SUPPORT FUNDS.
EXPENDITURES.
1905-06.

	Paid from Student Fees	Paid from National and State Support Funds
1. Salaries:		
Professors, assistant professors and administrative officers		\$ 80,484.70
Instructors and assistants.....		32,334.26
2. Department expenses and equipment:		
Agricultural department.....		1,643.59
Agricultural dean's office.....		398.52
Agricultural engineering	\$ 779.40	613.86
Agronomy	958.50	1,101.24
Animal husbandry	2,181.50	1,076.26
Dairy department		872.00
Farm crops	765.00	279.24
Horticulture	162.90	1,255.11
Soils	311.00	369.77
Veterinary science	370.00	769.78
Civil Engineering	1,178.00	1,228.96
Electrical Engineering	954.00	1,286.38
Engineering, Dean's Office.....		351.09
Mechanical Engineering	2,819.29	1,858.65

Mining Engineering		909.93
Botany	\$36.10	688.62
Chemistry	2,884.71	817.56
Civics, including expenses of Entrance Requirements Committee		150.38
Domestic Economy	734.60	679.16
Economic Science		40.17
English Literature and Rhetoric.....	538.75	281.64
Geology		195.36
History		144.28
Library	176.00	2,127.67
Mathematics		180.88
Military Tactics		134.13
Modern Languages		21.34
Music		130.39
Zoology and Physiology	327.80	1,035.35
Public speaking	149.00	159.85
Books and Periodicals, special appropriation by the State.....		363.84

3. Administrative and general expenses:
 - Including clerk hire and other expenses of the executive and administrative offices, cost of catalogs, compendiums, advertising, telephone service, proctors, ringing chimes, commencement, Sabbath services, high school inspection work, etc.....
4. Maintenance of buildings and grounds:
 - Buildings; heat, light and janitor service
 - Grounds; labor and supplies.....
5. Special student funds:
 - Cost of diplomas and expense of keeping student records.....
 - Tuning pianos and part of purchase price of new one.....
 - Part of expense of repairing and furnishing student dormitories.....
 - Maintenance of College hospital.....
6. Special trust funds:
 - Clay - Robinson fellowship fund; paid graduate assistants in Animal Husbandry according to terms of trust
 - Iowa State Fair Scholarship; paid students per terms of scholarship

Clay Fund for support of Agricultural Journalism; paid Prof. W. H. Ogilvie as instructor	1,000.00		
Totals	\$1,625.00	\$35,714.00	\$173,552.57
Less—			
Dairy Farm credit.....	\$346.88		
Preceptress' fund credit.....	3.00		
Transfer from Public Speaking to salary account	225.00		574.88
			\$172,977.69
SUMMARY.			

Salaries	\$112,818.96
Department expenses and equipment.....	38,699.46
Administrative and general expenses.....	12,538.53
Maintenance of buildings and grounds.....	38,503.19
Special student funds.....	6,131.55
Special trust funds.....	1,625.00
Total	\$210,316.69

Charged against the following:

National and State Support Funds.....	\$172,977.69
Student fees	35,714.00
Special trust funds.....	1,625.00
Total	\$210,316.69

EXPERIMENT STATION SUPPORT FUNDS.

AGRICULTURAL STATION EXPENDITURES—1905-1906.

Salaries of Station staff.....	\$ 17,551.03
Salaries of Station Assistants.....	4,976.44
Labor	9,630.20
Publications	1,733.44
Postage and stationery.....	1,032.09
Freight and express.....	584.87
Heat, light, water and power.....	2,047.15
Chemical supplies	522.26
Seeds, plants and sundry supplies.....	2,223.38
Fertilizers	103.42
Feeding stuffs	4,734.71
Library	2.50
Tools, implements and machinery.....	592.26
Furniture and fixtures.....	409.80
Scientific apparatus	1,381.40
Live stock	4,147.01
Traveling expenses	594.06

Contingent expenses	20.60
Buildings and repairs.....	466.30
Total	\$ 52,752.32
Less sales, and transfers between sections.....	11,437.58
Net expenditures	\$ 41,314.74

The foregoing shows the net expenditures and represents the cost of maintenance. The books and vouchers of the station are examined annually by an expert accountant representing the National Government, and a report of the financial condition is made each year to the Department of Agriculture at Washington.

ENGINEERING EXPERIMENT STATION EXPENDITURES—1905-06.

Salaries:

A. Marston, part of annual salary.....	\$ 250.00
G. W. Bissell, part of annual salary.....	200.00
L. B. Spinney, part of annual salary.....	200.00
S. W. Beyer, part of annual salary.....	100.00
I. A. Williams, part of annual salary.....	100.00
M. J. Reinhart, part of annual salary.....	100.00
	\$ 950.00
Equipment	774.96
Miscellaneous supplies for research work.....	113.03
Labor collecting and completing data for bulletins including testing material of various kinds, installing testing apparatus, making drawings, etc.....	704.97
Lamp testing	84.59
Half-tones, photographs, etchings, negatives and engravings	68.48
Printing bulletins	299.25
Blanks, envelopes, postage, drayage and express	92.05
Paid J. Q. Wickham for inspecting and reporting upon sewage systems and conditions in Iowa.....	183.85
Traveling expenses of professors and students, testing gas engine at Algona.....	73.32
Total	\$ 3,344.55

HIGHWAY COMMISSION.
 EXPENDITURES.
 1905-06.

Salaries:		
Thos. H. MacDonald.....	\$ 1,200.00	
H. M. Balner, part time.....	199.91	
J. T. Hoover, part time.....	120.00	\$ 1,519.91
Equipment	1,243.54	
Publications	306.13	
Investigations	138.10	
Experimental work	120.11	
Office expenses	341.14	
Tabulating road census cards.....	211.51	
Expenses of Road School.....	255.65	
Total		\$ 4,130.12

A statement in detail of these expenditures will be found in the report of the College to the Executive Council. See Executive Council report, page 341.

For convenient and ready reference the receipts of the College for the past year *from all sources* and its expenditures *for all purposes* are given below in one exhibit.

RECEIPTS OF COLLEGE—1905-06.

Buildings and Improvements:		
Building tax	\$118,232.79	
Special Appropriations—		
Completion of Central Building.....	59,913.02	
Dairy Building, farm and equipment...	29,873.65	
Central heating plant.....	20,641.31	
Purchase of additional land.....	5,500.00	
Annual repair and improvement fund....	23,000.00	\$257,160.77
Support Funds:		
Educational—		
National	\$ 59,170.40	
State	129,478.32	
Students	37,169.63	
Special funds	1,237.20	\$227,055.55
Experiment Stations:		
Agriculture	\$ 47,083.33	
Engineering	3,758.33	50,841.66
Highway Commission	4,583.33	\$282,480.54
Total receipts		\$539,641.31

EXPENDITURES.

Buildings and Improvements:		
New Central Building.....	\$162,318.96	
Dairy Building, farm and equipment.....	40,655.97	
Horticultural Cottage	5,018.68	
Hall of Agriculture.....	33.64	
Central Heating Plant.....	20,641.11	
Purchase of additional land.....	5,500.00	
Repairs and Improvements.....	23,676.81	\$256,845.17
Support:		
Educational purposes	\$210,316.69	
Experimental work	44,659.29	
Highway Commission	4,130.12	259,106.10
Total expenditures		\$515,951.27

It will be noticed that the receipts for the year exceeded the expenditures by \$23,690.04, thus increasing the cash balance to \$36,839.02 divided among the funds as follows:

State Appropriations	\$ 323.95
Highway Commission	460.34
Educational support funds including special student and trust funds	24,483.97
Experiment Station	11,482.76
Railway Damages trust fund.....	88.00
Total	\$ 36,839.02

Annual appropriations are payable quarterly, at the *end* of each quarter. Those due June 30th were drawn promptly to prevent any legal question arising regarding their reverting with the close of the year. The money thus drawn constitutes the fund from which the expenses of the first quarter are largely paid. During the year the College Treasurer carries, in general, only a small working balance averaging, outside of student deposits, about \$11,000. It is the policy of the College to leave both the National and State funds in the State Treasury until needed.

COLLEGE RESOURCES AND AVAILABLE FUNDS.

As stated at the beginning of this report, it is one of its purposes to give an idea of the permanent financial investments made by the Nation and State in the College; and also a summary of the funds available for its maintenance and development during the fiscal year ending June 30, 1907.

THE COLLEGE INVESTMENT.

The nation endowed the college; the State furnished the buildings and grounds; together they purchased the department equipment. The books of the secretary give the financial value of the investment as follows:

Endowment Fund	\$ 683,708.52
College plant	1,656,751.48
Total	<u>\$2,340,460.00</u>

The following shows the condition of the endowment fund at the close of the fiscal year:

CONDITION OF COLLEGE ENDOWMENT FUND.

Polk county tract, rented at \$85 per annum	\$ 2,418.53
Farm mortgages bearing 7 per cent interest	3,600.00
Farm mortgages bearing 6 per cent interest	91,950.00
Farm mortgages bearing 5½ per cent interest	23,300.00
Farm mortgages bearing 5 per cent interest	561,650.00
Total	<u>\$682,918.55</u>
Cash balance	789.87
	<u>\$683,708.52</u>

The following is a summary of the college inventories:

SUMMARY OF COLLEGE INVENTORIES SHOWING VALUE OF COLLEGE PLANT.

Farm proper, 660.38 acres, at \$100	\$ 66,038.00
Dairy Farm, 200 acres	20,000.00
Experiment Station Grounds, 60 acres at \$100	6,000.00
Plots for Horticultural experiments, 13 acres at \$100	1,300.00
Orchard and Arboretum, 25 acres at \$100	2,500.00
Horticulture and Forestry, 55.50 acres at \$100	5,550.00
College campus, 125 acres at \$100	12,500.00
College park, 37 acres at \$60	2,220.00
Total for 1,175.88 acres	<u>\$116,108.00</u>

Buildings—

Central Building, including furnishings	\$410,000.00
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	8,200.00
Old Pumping Station Plant	1,075.00
Fire Department Building	400.00
Foundry Store House	75.00
Greenhouses	18,000.00
Horticultural Laboratory	8,000.00
Veterinary Hospital	8,000.00
Agricultural Hall	11,000.00
Dairy Building, including equipment	72,000.00
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	15,000.00
Hog House	1,500.00
Movable Hog Houses (fifteen)	150.00
Sheep Barn	1,400.00
North Hall	2,500.00

Residences occupied by—

President Storms	13,000.00
Professor Curtiss	5,000.00
Professor Beach	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	5,000.00
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

\$1,150,200.00

General Equipment—	
Waterworks, including water-tower, deep well, pumping machinery and piping system	\$ 36,500.00
Power Plant, including boilers, four high-speed engines, piping, boiler and engine-room appliances, etc.	17,600.00
Electric Light, including switchboard appliances, pole line and transformers	8,750.00
Heating tunnel	10,000.00
Sewage system	5,500.00
Sewage disposal system	3,000.00
Furniture of Public Rooms	3,289.59
College Hospital furniture	1,236.05
Fire Department	1,500.00
Total General Equipment	\$ 87,375.64
Experiment Station Equipment—	
Bulletin Rooms	\$ 484.00
Agronomy Section	1,505.84
Animal Husbandry Section	6,690.10
Horticultural Section	1,076.05
Chemical Section	4,673.59
Botanical Section	1,182.10
Dairy Section, including Bacteriology	562.43
Entomological Section	1,567.00
Veterinary Section	848.33
Photographic Section	1,563.10
Total Station Equipment	\$ 20,152.54
Department Equipment—	
Farm Department	\$ 28,465.96
Agronomy Department	567.50
Agricultural Engineering Department	9,047.32
Farm Crops Department	1,209.81
Soils Department	3,973.77
Animal Husbandry Department	1,249.89
Dairy	1,614.28
Horticultural Department	1,099.37
Veterinary Department	3,378.65
General Chemistry	15,581.72
Zoology	16,843.47
Botany	20,098.32
Physics and Electrical Engineering, including equipment and furniture	26,918.22
Civil Engineering, including equipment and furniture	15,952.42
Mechanical Engineering, including equipment and furniture	34,050.07
Mining Engineering and Geology, including equipment and furniture	12,631.47

Domestic Economy	1,789.16
Military Department	275.00
Public Grounds	93.40
Library	75,411.00
Music Department	1,914.50
Pipe Organ and Piano	1,750.00
Chimes and Clock	9,000.00
Total Department Equipment	\$282,915.30
Total value of College plant	\$1,656,751.48

FUNDS AVAILABLE FOR 1906-7.

The funds available for the fiscal year ending next June consist of the unexpended balance of improvement and support funds together with the estimated receipts for the year. The following is the showing:

BALANCES.	
Building and Improvement Funds:	
Central Building, completing and furnishing	\$ 28,371.79
Dairy Building, farm and equipment	4,699.69
First half of additional appropriation for buildings and equipment of dairy farm and poultry plant	5,000.00
Central Heating Plant	33,782.47
Building Tax	38,039.11
Annual repair and improvement fund	323.19
	\$110,216.25
Of the above \$323.95 is in the hands of the College treasurer; the balance is in the State treasury.	
Support and Trust Funds:	
Educational support funds, including special, student and trust funds	\$ 24,483.97
Experiment Stations—	
Agriculture	\$ 10,194.62
Engineering	1,288.14
	11,482.76
Railway damages, trust fund	88.00
Highway Commission	460.34
	36,515.07
Total of balances brought forward from previous year	\$146,731.32

ESTIMATED RECEIPTS.

Buildings and Improvements:

Second half of appropriation for buildings and equipment of Dairy Farm and Poultry Plant	\$ 5,000.00
Second half of appropriation for purchase of additional land.....	5,500.00
Annual repair and improvement fund.....	23,000.00
Building tax	125,000.00
	<hr/>
	\$158,500.00

Educational Support Funds:

From National Government.....	\$ 59,000.00
From State—	
Annual for general support.....	\$135,000.00
Annual purchase of books and periodicals.....	2,400.00
Annual for five years for cataloger	600.00
	<hr/>
	138,000.00
Special equipment of College departments.....	5,000.00
From Student Fees, including room rent and hospital insurance (estimated)....	37,000.00
From outside parties for special purposes.....	1,200.00
	<hr/>
	\$240,200.00

Experiment Stations:

Agriculture—	
From national government, annual	\$ 22,000.00
From State, annual.....	25,000.00
	<hr/>
	\$ 47,000.00
Engineering—	
From State, annual.....	3,500.00
	<hr/>
	\$ 50,500.00
Highway Commission—	
From State, annual.....	5,000.00
Agricultural Extension and Experiment Work—	
From State, special.....	15,000.00
	<hr/>
Total estimated receipts for the year, for all purposes, including annual and special appropriations and student fees	\$469,200.00

The purposes to which the building and improvement funds are to be devoted have been in most part already explained in this report. The balances brought forward will be required, in every case, to meet the contracts and other obligations incurred in connection with the work now in progress. The new amounts available in 1906-7 are to be used as follows:

1. The entire appropriation for dairy farm buildings and poultry plant, including the portion which became payable last year, will be needed for the dairy farm barn and poultry buildings planned by the architect under the direction of the board of trustees.

2. The balance of the appropriation for additional land will no more than complete the purchase of the 137 acres with the improvements contracted for.

3. The repair and improvement fund, minus a reasonable reserve for contingencies, has already been set aside for definite purposes, which are exceedingly urgent. These are given in detail in the discussion of this fund in an earlier part of this report.

4. Regarding the building tax, it was shown on page 90 that \$12,300 of the income of this fund for 1906-7 will be needed to complete improvements already under contract, exclusive of the new Hall of Agriculture. The demand upon the year's income will be about as follows:

Old improvements under contract.....	\$ 12,300.00
Amount set aside for forge shop.....	5,500.00
Hall of Agriculture—	
Amount of Schlueter's contract payable during the year.....	\$ 80,000.00
Architects' fee.....	4,000.00
Inspection, office help, advertising, and other minor items	1,200.00
	<hr/>
	85,200.00
Total	<hr/>
	\$103,000.00

Estimating the annual proceeds of the building tax at \$125,000, this would leave a balance at the end of the year of \$22,000 to the credit of the fund. The contract with Mr. Schlueter calls for the completion of the Hall of Agriculture August 1, 1908. The cost of the building, exclusive of furnishings, is limited by legislative act to \$250,000. Taking this sum as representing the cost and bearing in mind the dates of the semi-annual payment of taxes, the account at the time of the completion of the building will stand about as follows:

Balance of fund on hand July 1, 1907.....	\$ 22,000.00
Income during fiscal year ending June 30, 1908	125,000.00
	<hr/>
Total	\$147,000.00

Cost of building.....	\$250,000.00
Amount provided for, prior to July to July	
1, 1907	85,200.00

Balance	\$164,800.00
---------------	--------------

This will leave \$17,800 due on the Agricultural Hall contract. In the above, no account is taken of the furnishing of this building; nor, of course, is any provision made for continuing work on the central heating plant, erecting the much needed shops for the engineering departments, furnishing additional dormitory accommodations for women, or meeting in any way the other building needs of the college which in their urgency ask early attention.

The tax collections are considerably larger in the spring than in the fall. Judging by the past the tax collected in the second half of the calendar year of 1908 may be estimated at \$50,000. Deducting the \$17,800 needed to complete the payments on the Schlueter contract, there remains a balance of \$32,200. Aside from what direct aid may be granted by the next legislature, it constitutes the only fund that will be available for furnishing or erecting buildings prior to the meeting of the Thirty-third General Assembly in 1909.

In the annual division of the State support funds, which are payable in quarterly instalments, at the end of each quarter the Board of Trustees found it necessary to leave a considerable sum unappropriated in order to always have on hand a working balance sufficient to insure prompt payment of bills. The reserve considered necessary in the educational support funds was \$12,000. After reserving this amount, setting aside, for their special purposes, the trust funds received from outside parties, and assigning the fees paid by students to the departments on account of which they were collected, there remained of the educational support funds for appropriation the sum of \$214,483.97.

This amount was divided among the different sections of the work as follows:

EDUCATIONAL FUND BUDGET—1906-7.

1. Salaries—

Professors, assistant professors and administrative officers.....	\$ 86,858.66	
Instructors and assistants.....	41,031.90	
		\$127,890.56

Totals.

2. Department Expenses and Ordinary Additions to Equipment—

	Balances Reverting and Reappro.	Additional Appro. for Cur. Exp. and Equipment.	Totals.
Agricultural Department..	\$ 285.00	\$ 2,000.00	\$ 2,285.00
Agricultural Dean's Office.		500.00	500.00
Agricultural Engineering.	53.00	510.00	563.00
Animal Husbandry Dept..	297.00	1,200.00	1,497.00
Animal Husbandry Short Course	47.00	150.00	197.00
Dairy Farm	346.88	800.00	1,146.88
Poultry		100.00	100.00
Dairy	175.00	2,583.33	2,758.33
Farm Crops	83.00	700.00	783.00
Soils		550.00	550.00
Horticulture	42.00	1,400.00	1,442.00
Veterinary Science.....	22.00	1,022.75	1,044.75
Mechanical Engineering...	131.00	1,020.00	1,151.00
Civil Engineering.....	134.00	1,200.00	1,334.00
Electrical Engineering and Phy.	264.00	1,667.00	1,931.00
Mining Engineering and Geology	12.00	850.00	862.00
Engineering Dean's Office.		320.00	320.00
Botany		1,070.00	1,070.00
Chemistry	149.00	745.00	894.00
Civics, high school inspection and entrance information bureau		700.00	700.00
Domestic Science	133.00	450.00	583.00
Domestic Science Short course		300.00	300.00
Economic Science	15.00	150.00	165.00
English, Literature and Rhetoric	172.00	425.00	597.00
History	20.00	175.00	195.00
Library	269.00	575.00	844.00
Mathematics	49.00	202.00	251.00
Military Tactics	128.00	225.00	353.00
Modern Languages	3.00	35.00	38.00
Music	13.00	150.00	163.00
Zoology	25.00	800.00	825.00
Public Speaking	6.00	50.00	56.00

\$ 2,873.88 \$ 22,625.08

Total balances reappropriated

\$ 2,873.88

Total new appropriations..

22,625.08

Total of current expenses and ordinary equipment

\$ 25,498.96

3. Special Department Equipment:

	Appro. Direct by Board.	Apportioned by Deans.
From Support Fund—		
Agricultural Engineering..		\$ 169.55
Animal Husbandry.....		169.55
Botany	\$ 150.00	
Chemistry	500.00	
Civics	150.00	
Civil Engineering		500.00
Dairy		83.00
Domestic Economy	225.00	
Electrical Engineering....		500.00
Farm	350.00	
Farm Crops	350.00	158.35
Horticulture		169.55
Library books and depart- ments of History and English	200.00	
Mechanical Engineering ..		500.00
Mining Engineering		500.00
Public Speaking	100.00	
Veterinary Science	375.00	
Public Grounds	334.05	
	\$ 2,734.05	\$ 2,750.00
Total appropriation di- rect by board.....	\$ 2,734.05	
Apportioned by deans..		2,750.00
Total		\$ 5,484.05
From State, Special Appropriation—		
Botany	\$ 350.00	
Soils	350.00	
Agricultural Engineering..	350.00	
Dairy	350.00	
Animal Husbandry.....	350.00	
Horticulture	100.00	
Civil Engineering.....	500.00	
Mechanical Engineering...	900.00	
Electrical Engineering...	900.00	
Mining Engineering.....	475.00	
Agricultural Department..	375.00	
	\$ 5,000.00	
From State on account of annual appro- priation for library books and period- icals	\$ 2,556.16	
Total special equipment.....		\$ 13,040.21

4. Maintenance of Public Buildings and Grounds:

Heating, lighting and water supply.....	\$ 15,500.00
Janitor service and supplies.....	12,100.00
Care and improvement of public grounds, including special appropriation of \$1,000 for grading and side- walks	3,624.00
	\$ 31,224.00

5. Administrative and General Expenses:

President's office	\$ 2,607.00
Treasurer's office	1,570.50
Registrar and Recorder's office.....	700.00
Secretary's office	1,354.00
Purchasing Committee	1,652.00
Junior College Dean's office.....	1,000.00
Catalogs and compendiums.....	2,400.00
Advertising	650.00
Class Enrollment and Assignment Com- mittee	264.00
Harvest Home Excursion	340.50
Commencement week expenses.....	171.64
Telephone service	170.00
Address before College trustees.....	100.00
Ringling chimes	126.00
Preceptress' fund	215.00
Proctors	1,751.00
Annual fee of Agricultural College Asso- ciation	15.00
Graduate School of Agriculture.....	25.00
Sabbath services	531.00
Reserved for contingencies, subject to further order of the Board.....	671.00
	\$ 14,737.64
Total appropriations from educa- tional support funds.....	\$212,401.37

Summarizing the foregoing so as to give a clear idea of how the educational support funds for 1906-7 are to be used, and the probable expenditure along different lines, we have

1. Salaries of educational and administrative officers.....	\$127,890.56
2. Current expenses of departments and ordinary addi- tions to equipment	25,498.96
3. Special equipment	13,040.21
4. Maintenance of buildings and grounds (exclusive of repairs and improvements of buildings).....	31,224.00
5. Administrative and general expenses.....	14,737.64
Total	\$212,401.37

The principal item in the educational budget is, of course, the cost of instruction. In the exhibit which follows the total salaries of professors, assistant professors, members of the station staff and administrative officers are given. The salaries are at the same time divided so as to show the amount charged to the different funds, the division being based upon the service rendered each. The schedule covers the school year beginning September 1, 1907. This has been chosen because changes in salary have then gone into effect and the showing gives the running expense basis for the future.

SALARIES OF PROFESSORS, ASSISTANT PROFESSORS AND ADMINISTRATIVE OFFICERS, SEPTEMBER 1, 1906; SEPTEMBER 1, 1907.

	Support fund	Agriculture Experiment station	Other College funds	Totals
A. S. 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	5,000.00			5,000.00
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	2,300.00
A. Marston, civil engineering, dean of engineering, college engineer	2,350.00		† 200.00	2,550.00
Lizzie M. Allis, French and German	1,400.00		‡ 200.00	1,400.00
L. B. Spinney, physics and electrical engineering	1,500.00		* 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	1,500.00		* 100.00	2,000.00
A. E. Noble, rhetoric and English literature	1,800.00			1,800.00
H. E. Summers, zoology, station entomologist	1,600.00	300.00		1,900.00
A. M. Newens, public speaking	1,700.00			1,700.00
G. L. McKay, dairying	1,800.00	400.00		2,200.00
O. H. Cessna, history and ethics, college chaplain	2,300.00			2,300.00
J. H. McNeil, veterinary science, dean of veterinary division	1,700.00	300.00		2,000.00
R. C. Barrett, civics	2,000.00			2,000.00
Georgetta Wither, domestic science	1,500.00			1,500.00
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	1,700.00			1,700.00
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	1,350.00			1,350.00
Herman Knapp, treasurer, recorder and registrar (Receives in addition \$500 as superintendent of book department)	1,500.00	250.00	100.00	1,900.00
A. T. Erwin, horticulture	900.00	800.00	† 100.00	1,800.00
J. A. McLean, animal husbandry	850.00	750.00		1,600.00
L. C. Hodson, mining engineering	1,600.00			1,600.00
J. B. Davidson, agricultural engineering	850.00	850.00		1,700.00
W. H. Stevenson, soils	1,000.00	1,000.00		2,000.00
W. E. Stuhr, veterinary science	1,500.00	100.00		1,600.00
E. R. Dykstra, veterinary science	1,300.00			1,300.00
L. M. Hurt, veterinary science	1,300.00			1,300.00
E. H. Hibbard, economic science	1,700.00			1,700.00
Lola A. Placeway, chemistry	1,200.00			1,200.00

* Engineering Experiment Station.

† Repairs and Improvements.

‡ Good Roads.

SALARIES OF PROFESSORS AND ASSISTANTS—CONTINUED.

	Support fund	Agriculture Experiment station	Other college funds	Totals
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	1,400.00			1,400.00
I. A. Williams, mining engineering	1,400.00			1,400.00
Louis E. Schmidt, history	1,100.00		* 100.00	1,200.00
J. E. Guthrie, zoology	1,300.00			1,300.00
Fred Rasmussen, dairying	600.00	600.00		1,200.00
F. M. Bouska, bacteriology	1,000.00	500.00		1,500.00
Adolph Shane, electrical engineering	1,200.00			1,200.00
J. R. Watson, physical director (Receives in addition \$600 from Athletic Council)	900.00			900.00
W. F. Coover, chemistry	1,500.00			1,500.00
E. E. Little, horticulture		1,000.00		1,000.00
E. S. Gardner, station photographer		1,700.00		1,700.00
L. O. Schaub, soils		1,500.00		1,500.00
L. G. Michael, station chemist	100.00	1,500.00		1,600.00
Wayne Dinsmore, animal husbandry	1,700.00			1,700.00
M. P. Cleghorn, mechanical engineering	1,200.00			1,200.00
H. P. Baker, forestry	1,200.00			1,200.00
T. H. MacDonald, good roads (\$1,200 to Jan. 1, 1907; \$1,600 after Jan. 1, 1907)	425.00	25.00		850.00
M. L. Bowman, farm crops		11,600.00		11,600.00
H. G. Van Felt, farm dairying	750.00	750.00		1,500.00
F. G. Allen, mechanical engineering	750.00	750.00		1,500.00
R. E. Buchanan, botany	1,200.00			1,200.00
E. A. Pattengill, mathematics	1,200.00			1,200.00
Julia Colpitts, mathematics	1,000.00			1,000.00
Totals	\$87,908.00	\$18,345.00	\$ 3,050.00	\$109,303.00

* Engineering Experiment Station.

† Repairs and Improvements.

‡ Good Roads.

Houses on the college grounds are occupied by President Storms and Professors Curtiss, Noble, Summers, Stanton, Marston, Bissell, McKay and Beach.

The following is the list of instructors and assistants for the coming year with the salary of each and the fund to which it is chargeable:

SALARIES OF INSTRUCTORS AND ASSISTANTS, 1906-7.

	Support fund	Agriculture Experiment station	Other college funds	Totals
Geo. H. Mitchell, farm foreman	\$ 1,000.00			\$ 1,000.00
E. T. Robbins, animal husbandry		1,200.00		1,200.00
H. C. Pierce, poultry, 2 months	97.90			97.90
L. C. Opperman, poultry, 9 months	267.00			267.00
M. L. Gribben, assistant in poultry (Receives in addition \$200 from Clay-Robinson fellowship)	400.00			400.00
Eugene Humbert, farm crops	700.00			700.00
M. E. McCullough, farm crops (10 mo. @ \$100)	1,000.00			1,000.00
A. E. Miller, agricultural engineering	700.00		† 200.00	900.00
J. T. Hoover, agricultural engineering	600.00		† 120.00	720.00
E. B. Watson, soils	900.00			900.00
John Bower, dairying	600.00			600.00
V. H. Gardner, horticulture	700.00			700.00
E. Erdmann, horticulture	750.00			750.00
George Judisch, veterinary	50.00			50.00
J. G. Hummel, mechanical engineering	900.00			900.00
E. C. Potter, mechanical engineering	900.00			900.00
E. M. Spangler, mechanical engineering	450.00			450.00
R. H. Porter, mechanical engineering	700.00			700.00
H. H. Urnston, mechanical engineering	800.00			800.00
C. W. Clements, mechanical engineering	450.00			450.00
A. C. Gaugh, mechanical engineering	800.00			800.00
M. G. Lewis, mechanical engineering	600.00			600.00
Student assistants, mechanical engineering	135.00			135.00
John Berg, civil engineering	950.00			950.00
M. J. Reinhart, civil engineering	900.00		* 100.00	1,000.00
M. I. Evinger, civil engineering and engineering experiment station	320.00		† 400.00	720.00
C. E. Ellis, mining engineering	600.00			600.00
W. B. Anderson, electrical engineering	1,100.00			1,100.00
A. H. Hoffman, electrical engineering	1,000.00			1,000.00
G. E. Marsh, electrical engineering	800.00			800.00
Jeanette Bartholomew, chemistry	700.00			700.00
Lola Stevens, chemistry	700.00			700.00
Laura Taggart, chemistry	500.00			500.00
Melissa Flynn, chemistry	500.00			500.00
A. E. Bobst, chemistry	500.00			500.00
L. E. Carter, bulletin editor (Receives in addition \$83.32 from John Clay fund)	800.00		83.32	883.32
H. J. Quayle, entomology, 4 mo.		332.22		332.22
Assistant in entomology		800.00		800.00
C. E. Bartholomew, entomology (Part of year at \$900)	765.00			765.00
Henry Ness, zoology	500.00			500.00
Harriette Kellogg, botany	300.00	300.00		600.00
Estelle Fogel, botany	700.00			700.00
Charlotte King, artist, botany	750.00	720.00		1,470.00
Student assistants, botany	250.00			250.00
Elizabeth Moore, English	800.00			800.00
Dora Tompkins, English	800.00			800.00
Julia Vaulx, English	800.00			800.00
C. L. Mundhenk, military, band instructor	800.00			800.00
Clara Baker, English	600.00			600.00
Grace Norton, modern languages	800.00			800.00

SALARIES OF INSTRUCTORS AND ASSISTANTS—CONTINUED.

	Support fund	Agricultural Experiment- station	Other college funds	Total
Florence Lucas, modern languages	800.00			800.00
Lisie McCollom, modern languages	800.00			800.00
Grace Caldwell, modern languages	1,000.00			1,000.00
Nellie Ford, modern languages (part time)	200.00			200.00
Ethyl Cessna, history	600.00			600.00
Margaret Stanton, history	400.00			400.00
Ward Jones, mathematics	1,000.00			1,000.00
Anna Fleming, mathematics	800.00			800.00
Elizabeth Cronin, mathematics	600.00			600.00
Keo Anderson, mathematics	600.00			600.00
Student assistant, mathematics	100.00			100.00
Instructor of vacation classes, mathematics	100.00			100.00
Assistant, economic science	500.00			500.00
Sybil Lentner, public speaking	900.00			900.00
Winifred Tilden, public speaking	600.00			600.00
Heien Donovan, domestic science	950.00			950.00
Ruth Morrison, domestic science	750.00			750.00
Mabelle Campbell, domestic science	200.00			200.00
Mr. and Mrs. Rosier, music	500.00			500.00
Carolyn Gabrielsen, library	600.00			600.00
Margaret Forgeus, library			\$ 600.00	600.00
Student assistants, library	275.00			275.00
M. L. King, agricultural engineering		1,000.00		1,000.00
L. C. Burnett, farm crops		400.00		400.00
H. O. Buckman, chemistry		600.00		600.00
Supt. of field experiments (half year)		500.00		500.00
Student assistants, chemistry		900.00		900.00
Totals	\$41,051.90	\$ 7,501.54	\$ 1,900.00	\$50,453.44

* Engineering experiment station.

† Repairs and improvements.

‡ Good roads.

§ Special fund.

The totals of the foregoing exhibits differ somewhat from the amounts chargeable to the different funds during the coming fiscal year, for reasons already explained. The actual amounts payable during the year and therefore the amounts which appear in the support fund budget are as follows:

Educational support funds, including administrative officers	\$127,890.56
Agricultural Experiment funds	26,053.83
Engineering Experiment fund	1,770.00
Highway Commission	1,720.00
Repairs and improvements	720.00
Special State appropriation for cataloger	600.00
Total	\$158,754.39

As a matter of convenience, the salaries of the workers in the experiment stations have been given in connection with the educational salaries. A clear line of division should be drawn, however, between the two. The work of the station is quite distinct from that of the college. The law makes it so; and the government bureau having charge of the experiment stations sees to it that the law is enforced. The station fund is intended for experimental work and is so used.

Near the close of the last fiscal year Congress passed the Adams act granting an additional annual appropriation to the experiment stations. Beginning with \$5,000 the appropriation is increased each year in the sum of \$2,000 and finally by \$1,000, until the limit of \$15,000 is reached. The appropriation bill did not pass until late in June so that it was within a few days of the end of the fiscal year when the first annual instalment of \$5,000 was received by the college. This accounts in part for the large balance of \$10,194.62 with which the station closed the year. It is also necessary, as has been shown, to bring a considerable balance forward to the new year to meet the bills sure to be presented before the first instalment of the annual appropriation of the State becomes available, which is not until September 30. A working balance of \$3,500 is not too large. The remainder of the amount on hand, \$6,694.62, together with the income of \$47,000, gives, as the amount available for appropriation, \$53,694.62. The Board of Trustees made appropriations from this fund as follows:

AGRICULTURAL EXPERIMENT STATION BUDGET—1906-7.

Salaries of station staff and assistants as given in salary schedules for the year. \$ 26,053.83

Expenses of Sections:	
Bulletins and bulletin office	\$ 4,000.00
General expenses, including heat, water and janitor service	1,800.00
Director's office	1,500.00
Animal husbandry	3,750.00
Farm crops	2,600.00
Soils	2,500.00
Agricultural engineering	1,000.00
Horticulture and forestry	3,000.00
Dairying	1,083.33
Veterinary science	600.00
Chemistry	1,500.00
Botany	1,000.00
Entomology	1,000.00

Photographic supplies	600.00
Dairy farm	1,000.00
Poultry	600.00
	\$ 27,533.33
Total	\$ 53,587.16

The accounts of the station are subject to inspection by the United States Department of Agriculture and are examined, at least once each year, by an agent of that department.

The fund at the disposal of the Engineering Experiment Station for the year consists of its annual appropriation of \$3,500 and a balance brought over of \$1,288.14, making a total of \$4,788.14. A considerable portion of the balance is needed to meet old bills representing last year's expenses. The fund under the action of the board is appropriated as follows:

ENGINEERING EXPERIMENT STATION BUDGET—1906-7.

Salaries as shown in the salary exhibit.....	\$ 1,770.00
For equipment, research work, compiling data, fitting up rooms and installing apparatus, printing, office expenses, etc.	3,018.14
Total	\$ 4,788.14

The fund is a small one considering the work demanded of the station by the industries of the State and the provision for quarterly payments seems to be a special hardship in this case.

The college, under the law, acts as a highway commission for the State. The annual fund of \$5,000 for its support is appropriated by the Board of Trustees in the same way as other funds. Considerable leeway, however, is given the professors in charge as to the portions of the work they shall make most prominent. The following is the budget for the coming year:

HIGHWAY COMMISSION BUDGET—1906-7.

Salaries as stated in salary exhibit.....	\$ 1,720.00
For equipment, investigation, collection of data, tabulating road census cards, preparing plans, expenses of Good Roads School at College and demonstrations for instruction of county supervisors and township trustees, printing, etc.	3,280.00
Total	\$ 5,000.00

AGRICULTURAL EXTENSION DEPARTMENT.

The purposes for which the special appropriation of the last General Assembly for agricultural extension and experimental work by the college can be used is set forth in the following sections of chapter 185, laws of 1906:

Section 1. Agricultural Extension Work.—The Iowa State College of Agriculture and Mechanic Arts is hereby authorized to undertake and maintain a system of agricultural extension work. Under this system the said college shall be authorized to conduct experiments in the various portions of the State, and in giving instructions wherever, in the judgment of the college authorities, it shall be advisable, in reference to the various lines of agricultural work maintained upon the college grounds at Ames, Iowa. The college authorities are authorized to give instruction in corn and stock judging at agricultural fairs, institutes and clubs, and to aid in conducting short courses of instruction at suitable places throughout the State; to give lectures and demonstrations on the growing of crops and fruits, on stock raising, dairying, land drainage, and kindred subjects, including domestic science. This work shall be so planned as, in the judgment of the college authorities, is best calculated to carry to the communities remote from the college the benefits of the skilled instruction given by the teachers of said school and the results reached in the work of the experiment station.

Sec. 2. Experimental Work.—Especially shall this work include an analysis of soils and experiments in reference to the growing of crops upon the same, investigations relating to the improvement of corn, small grains and forage plants; the maintenance of the fertility of the soil; the breeding, feeding and management of live stock; investigations relating to animal diseases; the origination, introduction and management of fruits, the production and marketing of dairy and other farm products.

Section three provides that the \$15,000 appropriated by the act shall be expended according to plans agreed upon by the President, the Dean of Agriculture and the Board of Trustees of the college. The plans adopted are embodied in the following rules and regulations:

1. The Agricultural Extension Department shall sustain the same relation to the Division of Agriculture and to the institution as a whole as the other agricultural Departments.
2. The funds of the Agricultural Extension Department shall be used for disseminating information and for carrying instruction to parts of the State remote from the college, in the form of lectures and demonstrations, demonstrating experiments, assistance in short course and other forms of agricultural education.

3. The local expenses of all such lectures, demonstrations, short courses, and other forms of agricultural education shall be borne by the communities in which they are held, and so far as possible the traveling expenses of lecturers and workers in attending to such work shall be met by the communities or organizations served.

4. The Agricultural Extension funds shall not be used for supporting any feature of education or experimental work that is carried on at Ames, except such assistance as may be rendered in connection with the special two weeks short courses.

In accordance with these regulations the board made the following apportionment of the fund:

AGRICULTURAL EXTENSION BUDGET—1906-7.

Salaries—	
P. G. Holden, superintendent.....	\$ 3,200.00
A. W. Snyder, soils, 10 mo. @ \$1,400 per annum	1,166.60
R. K. Bliss, animal husbandry, 10 and 17-30 mo. @ \$1,200 per annum.....	1,069.71
Mary Rausch, domestic science, 10 1-2 mo. @ \$900 per annum.....	787.50
J. C. Guthrie, dairy, 8 mo. @ \$800 per annum	533.33
J. W. Jones, horticulture.....	1,500.00
M. L. Mosher, farm crops, 11 mo. @ \$1,000 per annum	933.33
G. E. Stayner, secretary.....	900.00
	\$ 10,090.47
General Expenses—	
Stenographic and other help.....	\$ 1,100.00
Furniture for offices.....	400.00
Maps, charts and supplies.....	600.00
Books	60.00
General expenses, stationery, printing, bulletins and traveling expenses.....	2,749.53
	\$ 4,909.53
Total	\$ 15,000.00

The foregoing exhibits make clear the purposes for which the funds of the college available for 1906-7 are to be used. A word of explanation as to the method of determining this apportionment and a brief sketch of the business system under which the expenditures are to be made, may not be out of place in closing this report.

BUSINESS METHODS.

The conduct of the business affairs of the college naturally includes the erection, repair and improvement of buildings and the maintenance and development of the various college departments. The funds for building purposes are provided by the General Assembly, in part by direct appropriation and in part through the law authorizing the levying of a one-fifth mill tax. In either case the particular buildings to be erected are approved by the legislature. Plans, specifications and estimates are submitted to and passed upon by that body before the construction is undertaken. Upon the basis of these approved plans, bids are secured by the Board of Trustees. These are carefully considered by the building committee and the architect employed by the board. If reported upon favorably the contract is let by the trustees to the lowest responsible bidder. If all the bids exceed the funds available the plans are modified and new bids advertised for. The building committee has general oversight of the contract when made. The work is inspected two or three times each month by the architect and oftener if necessary to fully protect the interests of the college. Prof. Marston, college engineer, generally acts as local superintendent in direct charge of the construction. Payments are made on the engineer's estimates.

This contract system of erecting large buildings is the one generally employed by the government, corporations and individuals. It is possible for bidders to combine, but if a competent and reliable architect is employed who is acquainted with the cost of buildings and has had experience in the making of estimates, the interests of the college are safeguarded against loss. It is doubtful, at least, whether the danger from such combination equals that which would attend an attempt upon the part of the institution to employ labor, purchase material, and oversee the details of the erection of a large building. In general there have been a number of bidders on each building with marked differences in the amount of the bids. The accepted bid, for instance, on the new central building was \$21,000 less than the next higher and \$40,000 less than the highest bid. The contract system would seem to be justified by results. It has given the college substantial buildings at a comparatively low cost. The trustees invite their most careful inspection. The original bids are entered of record; the plans, specifications, contracts, bonds and estimates are on file, while the vouchers of the treasurer show all expenses of whatever character, fully itemized.

The college plant is kept in repair and minor improvements made from the annual repair and improvement fund of \$23,000 provided by the State. The heads of the different departments report to the President, in writing, the repairs and improvements needed in connection with the department buildings. The President transmits these reports to the board with his recommendations. After investigation and report upon these askings by the department committees, the board passes upon the desirability of making these repairs or improvements. If it is considered best to undertake them, they are, in general, referred to the building committee for execution, for further examination and report, or with power to order if the State fund and the demands upon it make the work advisable. Ordinary emergency repairs are left to the judgment of the building committee. It is the policy of the committee before proceeding with any improvement to secure estimates of cost. These are made by the custodian of buildings, the college engineer, or, if heating, lighting and plumbing are in question, by Professor Bissell, professor of mechanical engineering, who has charge of this class of work. Bids are secured and contracts made when the character of the work is such as to make this method desirable.

It often happens, however, in these smaller jobs that the improvements can be made to better advantage by purchasing the material directly and having the work done under the supervision of the custodian, college engineer, or the superintendent of the construction and job department. The building committee has general oversight of all these matters and adopts the plan which seems, after investigation, to be the most economical. Material needed is purchased under the authority of the purchasing committee, all bills are approved by the local superintendent and the chairman of the building committee. They are then passed upon by the Board of Audit. The minutes of the building committee are submitted to the Board of Trustees for approval and the board is kept posted as to the condition of the fund, the work under way, and the character and amount of the improvements ordered. It is only by close economy that the board can keep the college plant in first class condition with the fund at its disposal.

In the matter of the support funds, a distinct line of division is drawn between those intended for educational purposes and those designed for experimentation, the State Highway Commission and the agricultural extension work. In making appropriations from the educational fund, the instructional needs are first considered. The personnel and salaries of the instructing force are

carefully considered by the President of the institution and the deans in charge of the different divisions of the work. The President then presents his recommendations to the faculty committee of the trustees, who after careful investigation report to the board, which body takes final action. In the experiment stations the heads of the various sections report to the director the number of assistants needed and the names of the parties recommended for these positions. The director submits to the board through the President of the college, his recommendations regarding such assistants and their salaries. Other employes in the college departments, the station sections and in the other lines of college work are in general employed and their compensation fixed by the heads of their respective departments or sections, after consultation with the President. All such salaries are, however, subject to revision by the board.

After deducting from the available funds an amount sufficient to cover the salaries and make provision for care of buildings and grounds, and general administrative expenses, the balance is divided among the departments and sections for their maintenance and upbuilding. The amount appropriated to each is determined by the board after careful investigation by its committees of the comparative importance and urgency of its needs. In the expenditure of these appropriations it is the idea of the board that the professor in charge is best fitted to determine the character of the purchases which are essential to the maintenance and development of his department. In a scientific and technical institution reaching out into experimental work this constructive and executive judgment is an absolute necessity. The building up of a department involves not only a knowledge of books but a knowledge of apparatus, shop and laboratory equipment and perhaps an expert acquaintance with soils, grains and cattle. It is, moreover, not ordinary but superior judgment that is required. The professor of physics must know more about the machines by which electricity is made to serve men than the ordinary electrician; the professor of mechanical engineering must have more than a commonplace knowledge of shop equipment; the professor of animal husbandry know more about the strong points of animals and their comparative values than stockmen in general, and the professor of dairying be better posted on the products of the dairy and the details of purchase, manufacture and sale than the ordinary dairyman. Building a department means building its theoretical and practical sides in unison and the man who does not possess the executive ability

and judgment to do this has no legitimate place in a college of agriculture and mechanic arts. Acting on this fundamental proposition the trustees place upon the heads of departments the responsibility of planning the expenditure of the limited sums which are placed at their disposal.

The problem of utilizing the expert knowledge of the heads of departments in connection with a businesslike system of joint purchase under which the college can realize the benefits of buying in large quantities and upon competitive bids has been worked out in a satisfactory manner. Some three years ago the trustees established a purchasing committee. It consists of the secretary of the board, the treasurer of the college, a member of the faculty and four 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 be 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 committee is in close touch with all lines of college work. It authorizes the heads of departments to make purchases where they can do it to better advantage than the committee; and it always stands ready to avail itself of the expert knowledge of these men who often know best where to buy the particular thing needed. The great bulk of college purchases are made, however, by the committee. 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 in the maintenance and support of the college. The prices obtained are believed to be as low as those which can be secured by any other method, while in the convenience and dispatch of business this plan is found to be in every way satisfactory. The records of the committee are open to inspection and the results of the system can readily be determined by the legislature or any committee desiring to make investigation. As stated in the last report to the Governor, 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 of the Board makes monthly settlement with the treasurer, and the accounts of his office are examined and reported upon each year by a committee of the Board of Trustees and biennially by the Board of Control.

It is the aim of the trustees to make full report to the legislature of all financial transactions and of the general method adopted in the conduct of college business. The foregoing is respectfully submitted as carrying out this policy.

E. W. STANTON,
Secretary.

INDEX.

	Page
Academic or Preparatory Course	10
Additional Land.....	86
Administration and Control of College Interests	11
Agriculture, Division of, Dean's Report	52-60
Agriculture, Hall of.....	81-83
Agricultural Building, New.....	81-83
Agricultural Engineering Department	58
Agricultural Experiment Station—	
Report of Director	60-65
Expenditures	94-95
Budget for 1906-07	113-114
Agricultural Extension Department	52-53, 115-116
Agricultural and Mechanical High Schools.....	19-21
Agricultural Fellowship Fund.....	93
Alumni Hall	29
Animal Husbandry Department.....	53
Armour Scholarship.....	54-58
Association Building, or Alumni Hall.....	29
Athletic Field	27
Attendance of Students, 1905-06.....	25
Attendance of Engineering Students.....	42
Available Funds.....	101-104
Board of Trustees—	
List of	70
Committees of.....	71
Buildings and Equipment	22-24
Building and Improvement Fund.....	73-90
Budgets for 1906-07—	
Educational Fund	104-108
Agricultural Experiment Station	113-114
Engineering Experiment Station	114
Highway Commission	115
Agricultural Extension	52-53, 115-116
Bulletins, Engineering Experiment Station	45
Business Methods	117-121
Campus.....	27
Campus, Improvement of	27

	Page
Cement walks, Grading, Etc.	27
Central Building	74-76
Central Heating and Power Plant	28, 83-86
Changes in Faculty	39-41
Civil Engineering Department	44
Clay Fund for Agricultural Journalism	94
Clerical Help	13
Clerks and Stenographers, List of	14-15
College Campus	27
College Departments Run on Educational Basis	15-16
College Education a Good Business Investment	17
College Investment	98-101
Committees, Membership	71
Control and Administration of College Interests	11
Correspondence Schools	22
Courses of Study in Land Grant College	6-9
Dairy Building	78-80
Dairy Building Farm and Equipment	78-80
Dairy Department	57
Dairy Farm, Needed Equipment	54-55
Deans' Reports—	
Division of Agriculture	52-60
Division of Engineering	42-47
Division of Science	37-38
Division of Veterinary Medicine	48-52
Department Funds	12-13
Diploma Fund	90
Division of Agriculture, Dean's Report	52-60
Division of Engineering, Dean's Report	42-47
Division of Science, Dean's Report	37-38
Division of Veterinary Medicine, Deans' Report	48-52
Educational Support Fund	92-94, 104-106
Electric Railway and Motor Line	27
Endowment Fund	72-73, 98
Engineering Division—	
Dean's Report	42-47
General Features of Work	46
Needs of	47
New Shops, Laboratories, Etc., needed	47
Engineering Experiment Station	45, 95, 114
Enrollment of Students, 1905-06	25
Entrance Requirements	9-10
Equipment	24
Estimated Receipts	102
Experiment Station Funds	68, 94-95
Faculty, Changes in	39-41
Farm Crops Department	55
Fees	90, 92, 102

	Page
Financial Policy—	
Clerical Help	13-15
Department Funds	12-13
Purchasing Committee	12
Funds Available	101-104
General Features of Work in Engineering Division	46
Grading, Cement Walks, Etc.	27
Hall of Agriculture	81-83
Highway Commission	46, 96, 114
Horticulture, Department of	56
Horticultural Cottage	81
Improvement of Campus	27
Influence of College	16-17
Inventories	98-101
Iowa Highway Commission	46, 96, 114
Iowa State Fair Scholarship	93
Land, Additional	86
Land Grant College, The	5-6
Courses of Study	6-9
Mechanical Engineering Department	43
Mechanical and Agricultural High Schools	19-21
Methods, Business	117-121
Mining Engineering Department	44
Motor Line and Electric Railway	27
Needs of the Engineering Division	47
Outside Work of Professors	30
Preparatory or Academic Course	10
President's Report	5-41
Power and Heating Plant	28, 83-86
Poultry Department, Needed Equipment	55
Purchasing Committee	12
Receipts and Disbursements	96-97
Repairs and Improvement Fund	86-90
Reports of Deans	52-60, 42-47, 37-38, 48-52
Report of Director	60-65
Report of President	5-41
Report of Secretary	70-121
Report of Treasurer	66-69
Resources and Available Funds	98-116
Salary Rolls	109-112
Sales	91
Science, Division of	37-38
Scientific Contributions	32-37
Secretary's Report	70-121
Shops Needed	47
Short Courses	59

	Page
Special Building Tax	71-76
Soils, Department of	56
Special State Appropriations	75, 77, 79, 83, 86
State Support	90
State Highway Commission	46, 96, 114
Student Enrollment, 1905-06	25
Student Enrollment, Veterinary Division	49
Summer Session	21
Support Funds	90-97
Treasurer's Report	66-69
Veterinary Division, Dean's Report	48-52
Veterinary Division, Student Enrollment	49
Walks	27
Water Supply	28
Women in the College	25
Y. M. C. Building or Alumni Hall	29