FIFTEENTH REPORT

(Seven annual, eight biennial.)

OF THE

BOARD OF TRUSTEES

OF THE

UNIVERSITY OF ILLINOIS,

URBANA, CHAMPAIGN COUNTY, ILLINOIS.

FOR THE TWO YEARS ENDING SEPTEMBER 30, 1890.

SPRINGFIELD, ILL.:
H. W. ROKKER, STATE PRINTER AND BINDER.
1890.

UNIVERSITY OF ILLINOIS,
URBANA, NOV. 1, 1890.

Honorable JOSEPH W. FIFER, *Governor of Illinois:*

SIR: I have the honor to submit to you herewith, in compliance with the law, the fifteenth report of the Trustees of the University of Illinois, for the two years ending September 30, 1890.

I am, very respectfully, your obedient servant,

WILLIAM L. PILLSBURY,
Corresponding Secretary.

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BOARD OF TRUSTEES.

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HON. JOSEPH W. FIFER, *Governor of the State of Illinois.*
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HON. RICHARD EDWARDS, *Superintendent of Public Instruction.*

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TERM EXPIRES 1893.

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TERM EXPIRES 1895.

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†Professor of English Language and Literature.

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Professor of Military Science and Tactics.

**JOHN C. JACKSON, E. M.,
Professor of Chemistry.

†S. ROBERTSON WINCHELL, A. M.,
Professor of Latin.

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*1888–9. †1889–90. **Fall term, 1888.

ARTHUR N. TALBOT, C. E.,
Assistant Professor of Engineering and Mathematics.

*WILLIAM H. GARMAN,
Assistant Professor of Zoölogy.

† ALBERT G. MANNS, PH. D.,
Assistant Professor of Chemistry.

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Instructor in Wood-work, and Foreman.

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Instructor in Modern Languages.

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MAUD KIMBALL,
Teacher of Vocal and Instrumental Music.

**SAMUEL W. STRATTON, B. S.,
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††LINCOLN BUSH, B. S.,
Instructor in Descriptive Geometry.

*ESSIE DANA,
Assistant in Drawing.

**ETTA L. BEACH,
Assistant in Drawing.

**CLEAVES BENNETT,
Assistant in Library.

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*1888–9. † Winter and Spring terms, 1889. **1889–90. †† Winter term, 1890.

STATE LABORATORY OF NATURAL HISTORY.

STEPHEN A. FORBES, PH. D., Director and State Entomologist.
THOMAS J. BURRILL, PH. D., Botanist.
*WILLIAM H. GARMAN, First Assistant.
CHARLES F. HART, Office Entomologist.
JOHN MARTEN, Field Entomologist.
MARY J. SNYDER, Stenographer.
*A. M. WESTERGREN, Artist.
†FREDERICK W. MALLY, M. Sc., Assistant Entomologist.

AGRICULTURAL EXPERIMENT STATION.

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THOMAS J. BURRILL, PH. D., Horticulturist and Botanist.
DONALD McINTOSH, V. S., Veterinarian.
THOMAS F. HUNT, B. S., Assistant Agriculturist.
GEORGE W. McCLUER, B. S., Assistant Horticulturist.
**ALBERT G. MANNS, PH. D., Assistant Chemist.
††EDWARD H. FARRINGTON, M. S. Assistant Chemist.
WILLIAM L. PILLSBURY, A. M., Champaign, Secretary.

*1888-9. †1889-90. **Until Jan. 1, 1890. ††From Jan. 1, 1890.

SUMMARY OF STUDENTS.

By Classes.	1888-9.			1889-90.		
	Gentlemen...	Ladies..	Total....	Gentlemen...	Ladies..	Total....
Resident graduates	3	1	4	3	3	6
Seniors	33	7	40	45	7	52
Juniors	39	9	48	45	14	59
Sophomores	61	15	76	95	12	107
Freshmen	80	18	98	101	18	119
Preparatory	107	14	121	93	20	113
Special	22	8	30	10	3	13
Total	345	72	417	392	77	469
By Courses.						
Agriculture	16	.....	16	14	.....	14
Mechanical engineering	74	.....	74	78	.....	78
Civil engineering	62	.....	62	71	.....	71
Mining engineering	6	.....	6	6	.....	6
Architecture	58	1	59	60	1	61
Chemistry	20	.....	20	40	.....	40
Natural history	30	23	53	37	16	53
Art and design	1	8	9	.....	3	3
English and modern languages	49	36	85	50	51	101
Ancient languages	11	3	14	12	3	15
Not specified	18	1	19	24	3	27
Total	345	72	417	392	77	469

The total number of matriculated students to June, 1890, is 2,486. The whole number of graduates is 619.

ABSTRACT OF OCCUPATION OF GRADUATES.

	Gentlemen.	Ladies.	Total.
Farmers	43	.....	43
Civil engineers	65	.....	65
Machinists	33	.....	33
Mining engineering	5	.....	5
Architects	31	1	32
Electricians	12	.....	12
Manufacturers	12	.....	12
Druggists and chemists	23	.....	23
Mercantile pursuits	50	.....	50
Teachers	51	27	78
Clergymen	4	.....	4
Lawyers	49	.....	49
Physicians	26	1	27
Editors	8	.....	8
Miscellaneous	45	6	51
Not specified	20	3	23
Women married	.....	60	60
Women at home	.....	24	24
Died	17	3	20
Total	494	125	619

PROCEEDINGS

OF THE

BOARD OF TRUSTEES

OF THE

UNIVERSITY OF ILLINOIS.

FOR THE YEAR ENDING AUGUST 31, 1889.

MEETING OF SEPTEMBER 11, 1888.

The Board of Trustees of the University of Illinois met in the University parlor, in Urbana, at 3 o'clock p. m., September 11, 1888; present, Messrs. Bennett, Edwards, Eisenmayer, McLean, Pullen, and Shawhan; absent, Governor Oglesby and Messrs. Cobb, Clemens, Dysart, McKay, and Millard.

In the absence of the President, Mr. Bennett was made chairman on motion of Dr. Edwards. There being no quorum present, the Board adjourned to meet at the same place at 8 o'clock a. m. the next day.

SECOND DAY—SEPTEMBER 12, 1888.

The Board met according to adjournment, the President, Mr. Millard, in the chair. Of the other members of the Board, the same gentlemen were present as the first day.

The records of the meeting of June 12, 1888, and of the adjourned session of the same, held in Chicago, June 26, 1888, were approved as printed without reading.

The Regent, Dr. Peabody, then read his report:

To the Trustees of the University of Illinois.

GENTLEMEN: The law under which this University was first organized ordered that "no degrees should be conferred nor diplomas awarded by authority of the Board of Trustees, or by the Faculty." It provided that students who should have been in attendance one year or more should be entitled to receive certificates which should set forth the attainments of the recipients in the various branches of learning which they have studied respectively during their attendance at the University.

In the discussions of this plan it was assumed that the certificates thus provided for would be more valuable to the holders than the diplomas and degrees which other institutions of learning had been accustomed to confer. It was said that these papers would show, *in extenso*, what the student had done, and how well he had done his work; not, simply, that he had passed certain minimum conditions of requirement. But the experience of the graduates soon proved that the credentials borne by them were not received by the public in the manner expected. In commercial phrase, this form of paper was neither current nor negotiable in the market.

Accordingly petitions were presented to the General Assembly at the session of 1877, asking that the University receive authority to confer degrees. This authority was granted, and the power was given "to issue diplomas," "conferring such literary and scientific degrees as are usually conferred by universities for similar or equivalent courses of studies," etc., etc. Degrees were first conferred at the commencement of 1878.

In preparing for this change of practice the Faculty and Trustees determined by regulation upon a series of courses of study, in the several departments, the completion of which should be the condition precedent to the reception of the respective honors.

But the old method of graduation by a so-called "full certificate" was continued. This certificate was to be given to any student of good behaviour who should have attended so long as to have acquired credits in thirty-six University studies, each term's work upon a given subject being counted as a study.

It may be questioned whether any such action was really contemplated in the original law. Certainly no such term as "graduation," "full certificate," or "certificate for a full course," there appears. The certificate which was provided for was to be given to any person who had satisfied his instructors during a single year's course.

When the first degrees were conferred, it was found that, under the vagaries of a purely elective system, no persons were ready to come to the standards which were set by the Faculty and Trustees. In each case some shifting and adjustment was necessary. As was expected, much of the irregularity passed away after a few years, until, as a rule, most students have taken courses in accordance with the recommendations of the Faculty, as set forth in the catalogue. It was urged, that the plan of graduating with a certificate would furnish an opportunity for those who wish to arrange courses of study for themselves, to do so. But it is the fact that the number of distinct courses offered already, with the varied options that they afford, provides for the wants of most students better than they can plan for themselves, and it is to be hoped, that, as the University continues to grow, this provision may be made still broader. But the case in which a student comes with a well digested and definite plan of his own, differing from any offered in the catalogue, is of rare occurrence, if it is found at all. The students who select studies which they think are "best fitted for them," do so under the vaguest conceptions, with indefinite and ever-shifting plans. They usually choose from term to term, and often are influenced to take those which require least effort, or which avoid some important topic that seems difficult and laborious.

Toward the close of residence, the tale of thirty-six studies is made up. The student begins to see that, while he would prefer a degree and a diploma, there are deficiencies which mistaken judgments have thrown in

his way, and he contents himself with graduation in the less dignified and desirable method. Frequently, the deficiency is caused by the failure of the student to pass his examinations in one or more studies which are deemed important elements of a proper course. An architect lacks some mathematics; an engineer some mechanics; a literary student some language; the subjects wanting are precisely those which the student should by all means have mastered. It would be easy to cite times and persons to illustrate these statements. With rare exceptions, the certificate, as a symbol of graduation, indicates that there was a deficiency which stood in the way of a degree.

Not unfrequently it happens that the list of thirty-six is completed by counting some number of terms of military class work. For various reasons, among which is the fact that fairly successful military work brings to each student who does it perseveringly, its own special and distinguished honor, this work ought not to be counted towards graduation. It is not so counted towards any degree, and no complaint is made as to this fact.

The subject of electives in college courses is one which has attracted much attention and discussion, and there is a decided reaction against the loose practices which obtain in some institutions as to the studies of undergraduates. The better opinion appears to be, that in every well arranged course of study, there are important elements which should be demanded; that, where a good number of courses of study are offered, the election should be between courses of study, and not between the specific subjects.

Radical measures should never be taken hastily. This subject has been studied in the light of the University practice of several years, and I am persuaded that the time is at hand when some progress should be made in this direction.

1. I would at once cut off the military studies from the number to be counted for a "full certificate." As before stated, military studies count towards no degree. Students who finish the military course secure the commission from the Governor.

2. After due notice, say of one year, cut off entirely graduation by certificate. The certificate contemplated in the law will continue to be given to any student who may wish to withdraw after one or more years' attendance. Students who receive diplomas are now permitted to have also certificates, and many such have been issued. In such cases there can be no question that the certificate should specify no studies not actually pursued at the University.

3. Should it be thought inexpedient to discontinue so soon this method of graduation, then careful regulations should be drawn limiting the character and number of studies which should be counted towards the certificate of graduation. For example, the regulation should determine that not less than so many, nor more than so many, studies in mathematics, language, science, etc., shall be counted. But, should this be done, why not call the honor conferred a degree, and give the same credential which pertains to other degrees?

Professor William McMurtrie declines a re-election to the chair of chemistry. I have to present the names of Dr. John C. Jackson and Dr. Arthur W. Palmer, as candidates for election to this very important position. Professor McMurtrie has served the University with great fidelity and with distinguished success for the last six years, and his withdrawal to undertake charge of more remunerative business interests, is to us a source of unfeigned regret.

The work of fitting up the metallurgical laboratory has been carried so far forward as to bring the machinery for the concentration of ores nearly ready for use. The sum assigned for use in the last year is not all exhausted. I recommend that the committee which has this matter in charge be authorized to continue the work, and to expend farther, $1,000 of the appropriation available during the current year.

Professor Forbes asks the following assignments from the state appropriation for cabinets, in which requests I concur:

For work and material mounting birds	$150 11
For wax models—comparative anatomy	200 00
For glass jars and alcoholic preparations	50 00
For labor in museum	50 00
	$450 11

Professor Forbes, as Director of the State Laboratory of Natural History, presents a communication touching the needs of that department.

I have to request that authority be given to the usual committee to expend the state appropriation for books and publications, for the current year.

Also, from the state appropriation for apparatus and material,

For a typewriter for the Regent's office	$100 00
For tools for architectural shop	150 00
For set of reloading tools for military department	40 00
Also from current funds,	
For repairs of rifle range	25 00

Authority was given at the March meeting for the purchase of chemical supplies for the ensuing year. This preliminary action is necessary, as most of these supplies are purchased abroad, and are imported for the University duty free. No assignment has been made for payment for this purchase.

I recommend the appropriation for this purpose,

From current funds (balance turned over by chemical department)	$400 00
From state appropriation, apparatus and material	250 00
	$650 00

I present the quarterly report of the Board of Direction of the Experiment Station.

I present also the quarterly report of the Professor of Agriculture.

Respectfully submitted,

SELIM H. PEABODY, Regent.

PAPERS PRESENTED WITH THE REGENT'S REPORT.

STATE LABORATORY OF NATURAL HISTORY.

To the Board of Trustees of the University of Illinois:

GENTLEMEN: I have to request at the present time the following routine action with respect to the State Laboratory of Natural History:

1. That I be authorized to pay Professor Burrill $200 for his services as botanist to the Laboratory of Natural History during the current year.

2. That the following assignments of the state appropriation for the Laboratory be made for the year ending June 30, 1889:

For the field work and the office and incidental expenses, $1,000; for the improvement of the library, $1,000; for the pay of assistants, $3,000; and for the publication of bulletins, $300.

Respectfully submitted,

S. A. FORBES, Director of Laboratory.

AGRICULTURAL EXPERIMENT STATION.

To the Trustees of the University of Illinois.

GENTLEMEN: The Board of Direction of the Experiment Station respectfully reports:

The work of the Station is now well organized, and most of the experiments authorized are in successful prosecution. The season is not yet so far advanced that many of these experiments are ready for report.

As to the financial operations of the year ending June 30, 1888, the Board begs leave to reserve its final report for the next quarterly meeting.

The following statements are herewith presented:

Exhibit A. Appropriation, expenditures and balances for the quarter ending September 30, 1888.

Exhibit B. Estimates for quarter ending December 31, 1888, with request that the necessary authority for making such expenditures should be granted. The aggregate of this estimate is more than the exact pro rata due to the quarter so ending; but, counting the balances which will remain from the current quarter, the total estimates for the half year ending December 31st, will not exceed the pro rata for half year.

Exhibit C. List of warrants paid, and vouchers for same, Nos. 14, 74 to 86, and 96 to 182.

The Board of Direction recommends that Mr. Albert G. Manns be appointed first assistant chemist, *vice* John A. Miller, who has resigned, and that he receive the same salary assigned to Mr. Miller, twelve hundred dollars per annum.

Also, that Professor Donald McIntosh be appointed veterinarian to the Station, without salary.

Also, that Harry S. Grindley be appointed second assistant chemist, with a salary of six hundred dollars per annum.

The Board of Direction of the Experiment Station desires to undertake, with the approval of the Board of Trustees, the following experiments:

1. *Ensilage:* Investigations of ensilage biology.

2. *Fruit Preservation:* An experiment in relation to the preservation of apples and other fruits.

The Board of Direction has received a communication from Professor S. A. Forbes, State Entomologist, presented herewith:

STATE OF ILLINOIS,
OFFICE OF THE STATE ENTOMOLOGIST,
CHAMPAIGN, Sept. 4, 1888.

To the Board of Direction of the Agricultural Experiment Station.

GENTLEMEN: I beg leave respectfully to call your attention to a line of agricultural experimentation for which there is now an extraordinary opportunity in Illinois, and results in which will, in my opinion, be extremely valuable to a large part of our population, especially in the southern part of the state. I refer to field experiments with measures for the protection of the principal farm crops against injury by chinch bugs.

The measures which I shall suggest have all been used to some extent either on the small scale of office experiment, or in a somewhat desultory way by farmers in the field. The following seven I consider the most important to the agriculture of the southern part of the state, taking into consideration the present condition of affairs in that region.

1. Experiment with fertilizers applied to wheat in fall or spring, to determine more precisely and throughly than has hitherto been done, the possibility of sustaining the plant against the attacks of chinch bugs. For

this purpose measured plots should be treated in fall with barn-yard manure and with one or two combinations of commercial fertilizers which my own preliminary experiments have shown to be best adapted to the soil of that region; and application should be made in spring of the soluble commercial fertilizers to plots heavily attacked by the chinch bug at that season.

2. It is desirable that selected thickets, headlands, and the like, where chinch bugs are known to be hibernating in large numbers, be burned over in fall and spring, with a view to determining the conditions under which such burning may be depended on to destroy the hibernating insects.

3. Lures to hibernating should be arranged—belts of straw, piles of corn-stalks and the like, scattered about infested fields with a view to furnishing the chinch bugs attractive winter quarters within which they may afterwards be destroyed by burning.

4. Plots and strips of the favorite food plants of the chinch bug should be sown at a time and in situations to attract them as they emerge from their winter quarters in search of food and suitable places for oviposition: the object being to concentrate the eggs and young in these selected spots, destroying them later by plowing them up, or otherwise, when the eggs are practically all laid and before the first to hatch have reached an age sufficient to enable them to escape.

5. Where plots or fields of wheat or other grain have become infested in spring, we need to demonstrate the practicability of so surrounding such areas with coal tar or other barriers to migration, that the chinch bugs shall be prevented from escaping from these plots or fields, or killed as they pass.

6. Similar measures might be tried to advantage to protect fields of corn subject to invasion from without.

7. I should be glad to see additional experiments made with the kerosene emulsion, tobacco water, and other insecticide applications to the outer rows of fields of corn, as they become stocked with chinch bugs making their way in from without.

It is of course impossible to estimate precisely the cost of such a line of experiments; but using my best judgment according to the experience I have already had in this direction, I conclude that this entire series could probably be conducted for not to exceed two hundred dollars. None of the experiments would require to be made in more than one place except the first and, possibly, the second. Fertilizers might be used to advantage on various soils, and it would be desirable that places of application should be separated widely enough to make unlikely failure through loss of grain, by winter-killing.

If these experiments, or any part of them, are decided upon, it will give me pleasure to aid in their planning and management in any way I can.

Very respectfully.

S. A. FORBES, State Entomologist.

With reference to this communication the Board of Direction adopted the following resolution:

Resolved, That this Board recognizes the importance to agricultural industry of the subject for experiment presented in the communication of the State Entomologist, and respectfully requests that authority be given, and necessary appropriations made, for carrying on such experiments.

Respectfully submitted on behalf of the Board of Direction of the Experiment Station.

SELIM H. PEABODY, President.

W. L. PILLSBURY, Secretary.

Exhibit A—Appropriations, expenditures and balances for the quarter ending Sept. 30, 1888:

Account.	Appropriations.	Expenditures.	Balance.
Books and periodicals	$75 00	$4 10	$70 90
Buildings	275 00		275 00
Bulletins	125 00	25 26	99 74
Expenses Board of Direction	100 00		100 00
Incidental expenses	50 00	37 31	12 69
Printing, stationery and postage	75 00	5 50	69 50
Salaries	2,050 00	1,035 00	1,015 00
Tools	50 00		50 00
Wages and teams	850 00	461 79	388 21
Wheat culture	100 00		100 00
Total	$3,750 00	$1,568 96	$2,181 04

Exhibit B—Estimates for the quarter ending December 31, 1888:

Account.	Amount.
Books and periodicals	$ 25 00
Buildings and repairs	200 00
Bulletins	125 00
Chemical apparatus and material	50 00
Expenses of Board of Direction	75 00
Fuel and lights	100 00
Incidental expenses	50 00
Printing, stationery and postage	50 00
Salaries	1,950 00
Seeds and trees	50 00
Tools	50 00
Wages and teams	800 00
Wheat culture	50 00
Stock feeding	200 00
Biology of ensilage	50 00
Fruit preservation	50 00
Preservation of field crops from chinch bugs	100 00
Total	$3,975 00

FARM REPORT.

Dr. S. H. Peabody, Regent.

The farm receipts for the three months ending Sept. 1st were..$ 380 50
The expenses for same quarter were..... 1,030 18

The receipts were exceptionally small, while the harvest work made the expenditures large. The work is, in general, well up for the season. We harvested about 2,500 bushels of oats, and 250 tons of hay. The oats were badly "lodged" by wind and rain, and not all were secured. We have threshed a little over 2,400 bushels and have some in shock. We have also threshed about 210 bushels of timothy seed.

Our corn promises a good yield. Pastures are now suffering from the dry weather.

The farm stock has kept in good health and, generally, in good condition. The continued depression in the improved cattle interest and the little demand for such cattle are the most discouraging circumstances we have to meet.

Respectfully submitted,
G. E. MORROW, Professor of Agriculture.

The vouchers of the Experiment Station were referred to the Auditing Committee.

The Treasurer, Mr. John W. Bunn, read his report, and it was referred to the Auditing Committee:

JOHN W. BUNN, TREASURER, IN ACCOUNT WITH THE UNIVERSITY OF ILLINOIS.—*Dr.*

1888.				
June	12	To balance		$4 20
	15	To interest on Morgan Co. bonds	$1,400 00	
		" " " Urbana school bonds	577 50	
		" " " Montgomery school bonds	540 00	
				2,517 50
July	2	To interest on Champaign Co. bonds	$4,500 00	
		" " " Pike Co. bonds	2,100 00	
		" " " Sangamon Co. bonds	880 00	
		" " " Macoupin Co. bonds	660 00	
		" " " Chicago water bonds	875 00	
		" " " Pittsfield school bonds	630 00	
		" " " Litchfield school bonds	440 00	
		" " " Christian Co. school bonds	300 00	
		" " " Kankakee school bonds	120 00	
		" " " " " " 1887	180 00	
		" " " Montgomery Co. school bonds	249 20	
		" " " Sangamon Co. school bonds	105 00	
		" " " " " " "	77 00	
		" " " Kankakee Co. bonds	1,500 00	
				12,616 20
		To interest on Kankakee Co. bonds		900 00
July	9	" Am't rec'd from State for taxes on lands in Nebraska and Minnesota	$1,667 16	
		To am't rec'd on account buildings and grounds	2,000 00	
		" " " " " laboratories	1,500 00	
		" " " " " mechanical shops	1,500 00	
		" " " " " library	1,500 00	
		" " " " " specimens for cabinets	1,000 00	
		" " " " " expenses of instruction	16,000 00	
July	23	" " " " " mining engineering	2,000 00	
				27,167 16
	9	To am't rec'd on account State Laboratory of Natural History;		
		" " " " " field work, office and incidental expenses	$1,000 00	
		" " " " " library	1,000 00	
		" " " " " pay of assistants	3,000 00	
		" " " " " publication of bulletins	300 00	
				5,300 00
		To am't rec'd of Burnham, Trevett & Mattis on acc't Nebraska lands		58 02
	14	To interest on land contract No. 49, V. Hnizda		31 25
August	31	To am't rec'd on account mechanical department	$224 57	
		" " " " " architectural department	701 51	
		" " " " " agricultural department	381 50	
		" " " " " horticultural department	221 81	
		" " " " " laboratories	269 06	
		" " " " " library and apparatus	4 11	
		" " " " " buildings and grounds	69 62	
		" " " " " Griggs farm	303 70	
		" " " " " agricultural experiment station	500 00	
		" " " " " University students' fees	651 25	
		" " " " " Minnesota lands	10 00	
				3,337 13
				$51,931 46

Cr.

August	31	By amount paid on account Board expenses	$169 17	
		" " " salaries	7,499 51	
		" " " buildings and grounds	69 46	
		" " " fuel and lights	641 50	
		" " " stationery and printing	915 20	
		" " " preparatory year	60 00	
		" " " mechanical department	221 92	
		" " " architectural department	1,181 72	
		" " " agricultural department	1,161 47	
		" " " horticultural department	86 20	
		" " " military department	26 72	
		" " " laboratories	191 68	
		" " " library and apparatus	22 57	
		" " " incidental expenses	149 17	
				12,396 29

Treasurer's Report—*Continued.*

1888.		*Cr.*		
August	31	By amount paid on account fixtures and furniture....	$9 20	
		" " water supply.....	200 00	
		" " anniversary expenses.....	15 29	
		" " commencement expenses...	147 72	
		" " high school certificates.....	100 00	
		" " attorney's fees.....	30 00	
				$502 21
		State appropriations—		
		By amount paid on account taxes on lands in Nebraska and Minnesota.....	$1,667 16	
		" " buildings and grounds.	780 24	
		" " mechanical and arch'l. shops	424 50	
		" " books and publications.....	580 26	
		" " cabinets.....	339 87	
		" " expenses of instruction	2,558 27	
		" " apparatus and material.....	256 26	
		" " metallurgical laboratory....	584 69	
		" " fire walls and ventilation...	8 44	
		" " Laboratory of Natural Hist.	1,481 21	
				8,680 90
		Balance :.....		30,352 06
				$51,931 46

Urbana, Ill.. September 11, 1888. JOHN W. BUNN, Treasurer.

The business agent, Professor S. W. Shattuck, presented his report, and it was referred to the Auditing Committee:

September 11, 1888.

S. M. Millard, Pres. Board of Trustees, Univ. of Illinois.

SIR; I have the honor to hand you herewith my report, as business agent, for the quarter ending August 31, 1888.

Paper A is a statement of the current appropriations and receipts.

Paper B is a statement of the state appropriations.

Paper C is a list of vouchers presented for audit, 676 to 900, inclusive.

Paper D is an estimate of receipts and expenses for the twelve months ending September, 1889.

Paper E is an estimate of receipts and expenses for six months ending March 1, 1889.

The Board is requested to appropriate the last named amounts for the said six months. Respectfully submitted,

S. W. SHATTUCK, Business Agent.

CURRENT APPROPRIATIONS.

Six months ending August 31, 1888.	Appropriated.	Receipts also appropriated.	Expended.	Balance.
Board expenses.....	$400 00	.....	$302 79	$97 21
Salaries for instruction {State / Current}	21,150 00	.....	3,203 74 / 16,730 27	1,215 99
Salaries for services.....	1,300 00	.....	1,224 03	75 07
Buildings and grounds.....	50 00	$171 62	93 36	128 26
Mechanical department.....	200 00	239 52	438 52	1 00
Architectural "	200 00	730 96	1,538 06	.....
Agricultural "	200 00	2,251 50	1,786 12	665 37
Horticultural "	200 00	404 46	191 09	413 37
Military "	50 00	.....	47 22	2 78
Laboratories.....	200 00	425 88	191 93	433 95
Fuel and lights.....	1,000 00	103 70	805 85	297 85
Stationery and printing.....	1,000 00	.....	970 50	29 50
Library and apparatus.....	50 00	54 11	23 05	81 06
Incidental expenses.....	322 11	.....	219 98	102 13

Current Appropriations—*Continued.*

Six months ending August 31, 1888.	Appropriated	Receipts also appropriated.	Expended.	Balance.
Sundries—				
Furniture and fixtures	$50 00		$9 20	$40 80
Water supply	200 00		200 00	
Anniversary expenses	50 00		46 55	3 45
Commencement expenses	150 00		147 72	2 28
Certificates for accred'd high schools	100 00		100 00	
Preparatory year		$497 50	549 99	
Music fees		22 00	22 00	
University students' fees		2,895 25		2,895 25
Minnesota lands		20 00		20 00
Griggs farm		303 70		303 70
Agricultural Experiment Station		500 00		500 00
Attorney's fees	30 00		30 00	

STATE APPROPRIATIONS.

	Appropriated.	Received.	Expended	Balance.
Taxes on land (½ per annum)	$3,500 00	$3,128 85	$3,128 85	
Buildings and grounds (½ per annum)	4,000 00	4,000 00	2,766 65	$1,233 35
Mechanical and arch'l. shops (½ per annum)	3,000 00	3,000 00	1,890 00	1,110 00
Books and publications (½ per annum)	3,000 00	3,000 00	1,488 69	1,511 31
Cabinets (½ per annum)	2,000 00	2,000 00	1,000 00	1,000 00
Expenses of instruction (½ per annum)	32,000 00	32,000 00	18,558 27	13,441 73
Apparatus and material (½ per annum)	3,000 00	3,000 00	1,500 60	1,499 40
Metallurgical laboratory (½ per annum)	4,000 00	4,000 00	1,779 79	2,220 21
Fire walls and ventilation	4,500 00	4,500 00	4,500 00	
Total	$59,000 00	$58,628 85	$36,612 85	$22,016 00
Illinois State Laboratory of Natural History.	16,325 00	14,690 71	7,489 86	7,200 85

The Board then took up the recommendations of the Regent's report.

In relation to the matter of certificates, on motion of Mr. McLean, it was

Resolved, That the Regent and Dr. Edwards be added to the special committee on the question of certificates, appointed at the June meeting, and that that portion of the Regent's report touching the same matter be referred to the committee.

Concerning Dr. William McMurtrie's withdrawal from the University, Dr. Edwards offered the following resolution, which was adopted:

WHEREAS, Professor McMurtrie, in order to enter another field of labor, has declined a re-election to the Chair of Chemistry and Mineralogy in the University;

Resolved, That Professor McMurtrie has served the University faithfully and successfully; that we lose him with great regret, and that we tender him our best wishes for his success and prosperity.

The secretary was directed to send Professor McMurtrie a copy of this resolution.

The committee in charge of the work of fitting up the metallurgical laboratory was authorized, on motion of Dr. Edwards, to expend therefor the further sum of one thousand dollars from the state appropriation for that purpose.

From the state appropriation for cabinets four hundred and fifty dollars and eleven cents was assigned, on motion of Mr. Pullen, as follows:

For work and material mounting birds	$150 11
For wax models—comparative anatomy	200 00
For glass jars and alcoholic preparations	50 00
For labor in museum	50 00

On motion of Mr. McLean, it was ordered that the expenditure of the state appropriation for books and publications for the current year be referred to a committee consisting of the Regent, the Business Agent and the Librarian; and that the list of books and the bids obtained therefor be referred to the Executive Committee of the Board for its approval.

On motion of Mr. McLean, the Board authorized the use of one hundred dollars from the state appropriation for apparatus and material in the purchase of a type-writer for the Regent's office.

The use of one hundred and fifty dollars from the same fund, for the purchase of tools for the architectural shop, was authorized on motion of Mr. Eisenmayer.

On motion of Mr. McLean, there was appropriated for the purchase of chemical supplies six hundred and fifty dollars—four hundred dollars from current funds and two hundred and fifty dollars from the state appropriation for apparatus and material.

On motion of Mr. Eisenmayer, forty dollars for a set of reloading tools for the military department, was appropriated from the state appropriation for apparatus and material.

Twenty-five dollars was appropriated from current funds, on motion of Mr. McLean, for the repair of the rifle range.

The Director of the State Laboratory of Natural History was authorized, on motion of Mr. Eisenmayer, to pay Professor Burrill two hundred dollars for his services as the botanist of the Laboratory for the current year.

On motion of Mr. McLean, assignments were made for the half-year ending December 31, 1888, from the state appropriations for the Laboratory, to the amount of two thousand six hundred and fifty dollars, as follows:

For the field work and the office and incidental expenses	$ 500 00
For the improvement of the library	500 00
For the pay of assistants	1,500 00
For the publication of bulletins	150 00

The matter of employing a professor of chemistry was referred to the Executive Committee, with power to act.

The request of the Board of Direction of the Experiment Station for authority to expend Station funds during the quarter ending Dec. 31, 1888, according to *Exhibit B*, was granted.

The recommendations of the Board of Direction, that Albert G. Manns be appointed first assistant chemist for the Experiment Station, with a salary of twelve hundred dollars a year, and Harry S. Grindley second assistant chemist, with a salary of six hundred dollars a year, and that Professor Donald McIntosh be appointed veterinarian of the Station, without salary, were approved.

The Board of Direction was also granted power to conduct experiments in respect to ensilage, the preservation of fruits, and the protection of field crops from chinch bugs, as by it requested.

On motion of Mr. Bennett, a committee on legislation was constituted, to consist of the President of the Board, the Regent and two members of the Board to be appointed by the President. Messrs. Bennett and McLean were appointed.

The Regent presented a request from Professor Burrill that he be permitted by the Board to undertake, upon the invitation and at the expense of the United States Department of Agriculture, some investigations of the disease of the peach known as "the yellows," and permission was given.

The Auditing Committee reported as follows:

We, your committee, respectfully report that we have examined the vouchers on which Experiment Station warrants Nos. 14, 74 to 86 inclusive, and 96 to 182 inclusive have been drawn and find them correct as presented in the report of the Station.

GEO. C. EISENMAYER, }
G. R. SHAWHAN, } Auditing Committee.

We, your committee, respectfully report that we have examined the vouchers on which University warrants Nos. 676 to 900 inclusive have been drawn, and find them correct as reported by the Business Agent.

We have also examined the Treasurer's report, and find that it is correct and shows a balance of thirty thousand, three hundred and fifty-two dollars and six cents.

GEO. C. EISENMAYER, }
G. R. SHAWHAN, } Auditing Committee.

The Secretary's bill for expenses in going to the meeting of the Board at Chicago, June 26th, was approved on motion of Mr. Pullen, and eight dollars and thirteen cents was appropriated from current funds for its payment.

On motion of Mr. Pullen, twenty-six thousand three hundred and six dollars and fifty cents was appropriated from current funds for University purposes for the six months ending February 28, 1889, as follows:

Board expenses	$300 00	
Salaries for instruction	20,456 00	
" services	1,610 00	
Buildings and grounds	25 00	
Fuel and lights	2,000 00	
Stationery and printing	350 00	
Mechanical department	200 00	
Architectural "	200 00	
Agricultural "	200 00	
Horticultural "	200 00	
Military "	50 00	
Laboratories	200 00	
Library and apparatus	50 00	
Incidentals	200 00	
		$26,041 00
Sundries—		
Furniture and fixtures	$50 00	
Water supply	200 00	
Commencement expenses, '88	15 50	
		265 50
Total		$26,306 50

On motion of Mr. Pullen, the Board adjourned.

W. L. PILLSBURY,
Secretary.

S. M. MILLARD,
President.

MEETING OF DECEMBER 11, 1888.

The Board of Trustees of the University of Illinois met in the University parlor, in Urbana, at 3 o'clock p. m., December 11, 1888: Present, Messrs. Bennett, Cobb, Eisenmayer, McLean, Millard, Pullen, and Shawhan; absent, Governor Oglesby, and Messrs. Clemens, Edwards, Dysart, and McKay.

The minutes of the last meeting were approved.

The standing committees were then called and they had no reports to make.

The Regent was then invited to read his report.

REGENT'S REPORT.

To the Trustees of the University of Illinois.

GENTLEMEN: The present year opens favorably, the number of students enrolled is 387. There has been a steady increase in attendance during the last three years, and the present enrollment is larger than at any one time in the history of the University. There is little doubt but that the year's enrollment will be larger than in any previous year. What, however, is deemed of more vital consequence, is the marked improvement in the character and scholarship of those who have been admitted this fall. Both of these items indicate a healthy condition of the University and are guarantees of still greater progress. While this advance is due partially to the general prosperity of the country which sends many students to institutions of higher education, it is also very largely the consequence of the work done throughout the State by the professors and the Regent of the University in attending gatherings of teachers and farmers, visiting schools, giving lectures, etc., etc. The service is laborious, but the good results are apparent.

THE EXPERIMENT STATION

has taken much time and attention. It is now fully organized, and the preliminary work is completed. The warehouse, in the midst of the experimental grounds, is finished and occupied. It is a plain, convenient wooden structure, over a brick cellar, plastered in the cellar and the first story. It has cost $2,260.02, against an estimate of $3,000.00. A small

building has been erected for storage and handling of fertilizers at a cost of $90.07. Improvements have been made in the upper story of the chemical building, in fitting up the office, library, chemical laboratory, putting in blinds, reconstructing skylights to allow of better ventilation, etc., etc., at a cost of $632.57. The total expenditures for buildings and repairs on the Station account has been $2,982.66.

Other expenditures for books, chemical and botanical apparatus, furniture, salaries, labor, seeds, tools, etc., etc., have been made, as authorized, and the whole amount of $15,000, the congressional appropriation for the year ending June 30, 1888, is exactly accounted for, as will appear by exhibits and vouchers, which will be presented by the Board of Direction. The Board of Direction will also present for your approval its accounts for the last quarter, the current quarter, and its plans and estimates for the next quarter.

THE ANNUAL FARM REPORT OF THE PROFESSOR OF AGRICULTURE

is herewith presented. This report appears to have been carefully and conscientiously made. While the inventory shows a growing amount of stock, it has been valued in accordance with the descending scale of prices which even the best blooded stock commands, and for that reason no material increase appears in the inventory.

SWINE PLAGUE.

Professor Burrill has been complimented by the United States Commissioner of Agriculture by an appointment upon an important commission connected with that department. The appointment is but for a temporary purpose, and it is believed that its duties may be performed without interfering seriously with his work in the University and Experiment Station. The subject to be investigated is the disease known as *Swine Plague*. It is one in which agricultural science and the University has a large interest, and I trust that authority may be given to Professor Burrill to give the necessary time and attention to its discussion.

KNOXVILLE MEETING.

An important meeting of those connected with the agricultural experiment stations will be held at Knoxville, Tenn., beginning on New Year's Day. This University will be entitled to two delegates, one to represent the Agricultural College and one the Experiment Station. I recommend that the delegates be appointed and that a suitable sum be appropriated toward the payment of their expenses.

THE PARIS EXPOSITION.

Communications have been received from the United States Commissioner of Agriculture and his subordinates, asking the aid of the University in making a suitable representation of the educational facilities of this country, particularly as to agriculture, at the Exposition to be held at Paris, during the next season. It seems hardly advisable that the University should undertake a distinct exhibit, so far from home, as it has done in several instances nearer by. A collection of photographs of its buildings and work rooms, with statements of courses of study, etc., etc., might be made at a moderate cost, which might be worth the doing. Leave to expend in this way from $50 to $100, as you may think wise, is respectfully asked.

ASSIGNMENTS AND APPROPRIATIONS.

The following are asked, from special or general funds, as indicated:

From state appropriation for cabinets:	
For collection of bryozoans for geological museum	$100 00
For collection of fungi for botanical museum	104 78
For expenses of Professor Rolfe in procuring material from Springfield	16 40
	$221 18
From state appropriation for building and grounds:	
For boiler repairs, grate-bars, tubes, etc	160 00
For care of grounds, cleaning, etc	100 00
For repair of walk to north barn	50 00
	$310 00
From state appropriation for mechanical shops:	
For power, etc., in shops (quarterly assignment)	150 00
From state appropriation for apparatus and material:	
For dynamometers, etc., for mechanical department	173 00
For models and repairs of apparatus in drawing room	90 00
For field transit for civil engineering department	250 00
For continuing collection of designs, etc., architectural drawing-room	100 00
	$613 00
From current funds,	
For furniture	53 15
On account of appropriation for fuel and lights,	
For applying smoke consuming apparatus to furnaces in boiler house	125 00

Mr. Kimball's request for gas in the machine shop is herewith presented.

The usual quarterly assignments to the State Laboratory of Natural History should be made.

Respectfully submitted,

SELIM H. PEABODY, Regent.

PAPERS PRESENTED WITH THE REGENT'S REPORT.

AGRICULTURAL EXPERIMENT STATION.

To the Board of Trustees of the University of Illinois.

GENTLEMEN: The Board of Direction asks authority to undertake the following named stock-feeding, dairying, and horticultural experiments. These experiments are all within the lines of work already approved by Board of Trustees:

Stock Feeding—

Pigs, age of, as affecting cost of meat production.
Pigs, effect of weather and shelter upon their growth and condition.
Pigs, value of wheat as a food for.
Pigs, value for, of the undigested food they get from cattle when following them.
Ensilage, value of, for horses, steers, and young cattle.

Dairying Experiments—

Ensilage, its value for milch cows in comparison with dry foods.
Ensilage, its effect upon the quality of milk and butter.
Milk, tests to ascertain its butter value.
Milch cows, effects of warming water for.

Tree Culture—

Trees, testing time and methods of transplanting.
Orchard fruits, production of new varieties.
Orchard fruits, testing the effects of stock on cion and cion on stock.
Native fruits, testing and improving.
Fruits, testing methods of preservation.

Greenhouse Experiments—

Coleuses, testing and identifying varieties.
Geraniums, testing and identifying varieties.

The Board of Direction asks authority to expend during this quarter for furniture (stoves and chairs) for chemical laboratory and warehouse, $100; and an additional sum of $50 for fuel and lights.

To carry on the operations of the Experiment Station for the quarter ending March 31, 1889, authority is asked to make the following expenditures:

Board expense	$ 50 00
Books and periodicals	150 00
Binding same	200 00
Building and repairs	50 00
Bulletins and reports	350 00
Chemical apparatus and material	50 00
Fuel and lights	100 00
Printing, stationery, and postage	25 00
Salaries	1,950 00
Seeds and trees	100 00
Tools	50 00
Wages	700 00
Stock feeding and dairying experiments	100 00
Prevention of chinch bugs	75 00
Total	$3,950 00

The Board of Direction presents this completed

Statement of Expenditures for the year ending June 30, 1888.

Books and publications	$3,241 83
Botanical apparatus, supplies, and fixtures	752 46
Buildings and repairs	2,982 66
Bulletins	130 69
Chemical apparatus, supplies, and fixtures	3,159 12
Expenses of Board	128 58
Fertilizers	191 30
Furniture and fittings for office and library	885 61
Incidentals	106 56
Meteorological apparatus	221 90
Printing, stationery, and postage	243 45
Salaries	1,525 00
Seeds and trees	226 25
Tools	302 80
Wages and teams	901 79
Total	$15,000 00

The following exhibits are presented:

Exhibit A. Completed list of expenditures for the quarter ending September 30, 1888.

Exhibit B. Statement of appropriations for the current quarter and of expenditures to November 30, 1888.

Exhibit C. List of warrants with vouchers to November 30, 1888.

Respectfully submitted,

W. L. PILLSBURY, Secretary. SELIM H. PEABODY, President.

FARM REPORT.

UNIVERSITY, DECEMBER 8, 1888.

Dr. S. H. Peabody, Regent.

DEAR SIR: The financial operations of the University farms for the year ending December 1, 1888, may be summarized as follows:

Receipts for the year	$4,416 91	
Expenditures for the year	3,788 99	
Excess of receipts		$627 92
Inventory of personal property, December 1, 1888	$15,530 00	
Inventory of personal property, December 1, 1887	15,430 00	
Increase during year		$100,00
Balance to credit of farms		$727 92

A classified list of receipts, expenditures, and property inventoried accompanies this.

The receipts and expenditures are considerably smaller than in former years. The latter have been reduced because less stock has been purchased, and it has been possible to lessen the cost of labor. The receipts have been lessened chiefly because less stock has been sold.

The season has been favorable; the crops have been above the average; the live stock on the farm is, as a whole, more in number and better than ever before, yet the total valuation of this property is almost exactly what it was one year ago. The explanation is in the steady depreciation in the value of cattle, especially pure bred cattle. If valued at the rate of even one year ago, the total would be increased at least $2,000.00; if at the rate that would have been proper three years ago, the inventory would be some $5,000.00 greater than it now is.

The farm work is in good condition, except that not all the corn has been harvested. The weather has been more than usually favorable for stock, and with very few exceptions our animals are in good health and condition. Should there be any improvement in the market for pure bred cattle, we shall be in better condition to supply it than ever before.

Financial Statement for 1888.

Receipts—Live stock—			
Cattle		$1,280 32	
Hogs		770 75	
Ho ses		410 00	
Poultry		20 50	
			$2,481 57
Field products—			
Hay		$878 89	
Corn		188 55	
Wheat		453 00	
Oats		19 80	
Seeds		39 46	
Feed and pasture		71 25	
			1,650 95
Work of teams			177 :9
Rent			89 00
Miscellaneous			18 30
Total			$4,416 91
Expenses—Labor		$1,498 90	
Live Stock—			
Cattle	$623 85		
Hogs	71 00		
Horses	148 00		
		842 85	
Feed—			
Corn	$499 14		
Oats	96 83		
Bran, etc	121 10		
		717 07	
Machinery		412 57	
Building, repairs, hardware		141 88	
Seeds		68 60	
Miscellaneous		107 12	
Total			3,788 99
Credit balance			$627 92
Inventory, December 1, 1888.			
Live Stock—			
Horses, 11—8 mares all bred, 3 geldings			$1,750 00
4 colts—2 yearlings, 2 weanlings			325 00
Cattle, 69 Shorthorns @ $75		5,175 00	
7 Holsteins @ $100		700 00	
6 Herefords @ $150		900 00	
6 Jerseys @ $50		300 00	
			7,075 00
Grade cattle—9 yearling steers		$250 00	
5—a cow, 2 heifers, 2 calves		75 00	
			325 00
Hogs, 80			615 00
Poultry			25 00
Total live stock			$10,115 00
Field Products—			
Hay, 170 tons		$1,300 00	
Corn, 4,500 bushels @ 27 cents		1,215 00	
Oats, 1,750 bushels @ 23 cents		400 00	
Timothy seed, 200 bushels @ $1.50		300 00	
Ensilage, straw, fodder		400 00	
Total grains, seeds, and feed			3,615 00
Implements and machinery			1,800 00
Total 1888			$15,530 00
Total 1887			15,430 00
Gain			$100 00

As requests that I attend and address Farmers' Institutes and other agricultural meetings are coming to me in considerable numbers, I respectfully ask an expression from the Board of Trustees as to their wish in this matter. In so far as such work can be done without injury to the work at the University, I believe it desirable, and I am willing to do all that is practicable. With the additional work caused by the Agricultural Experiment Station, and the fact that the time of Mr. Hunt, who last winter very satisfactorily conducted my class-work during my absence at institutes, is now fully occupied in Station work, it will be impossible for me to do so much as I did one year ago.

Respectfully submitted,

G. E. MORROW, Professor of Agriculture.

The vouchers of the Experiment Station were referred to the Auditing Committee; the farm report, to the Farm Committee.

Professor Shattuck presented his report as Business Agent:

DECEMBER 11, 1888.

S. M. Millard, Esq., Pres. of the Board of Trustees, University of Illinois.

SIR: I have the honor to hand you herewith the usual financial statements due from me for the three months ending November 30, 1888.

Paper A shows the condition November 30th, of the current appropriations for the six months ending February 28, 1889.

Paper B gives the condition of the state appropriations November 30th.

Paper C is a list of vouchers presented for audit, being 901-925 old series, and 1-175 new series.

Paper D is an estimate of current funds and receipts for the nine months ending September 30, 1889.

Respectfully submitted,

S. W. SHATTUCK, Business Agent.

Paper C and the vouchers were referred to the Auditing Committee.

Papers A and B are as follows:

CURRENT APPROPRIATIONS.

Six months ending Feb. 28, 1889.	Appropriated.	Receipts also appropriated	Expended.	Balance.
Board expenses	$300 00	.....	$178 71	$121 29
Salaries for instruction { State	20,456 00	.....	6,899 82	10,780 69
Salaries for instruction { Current...		$444 45	3,219 94	
" " services	1,610 00	.....	723 77	886 23
Buildings and grounds	25 00	84 00	103 39	5 61
Fuel and lights	2,000 00	100 76	633 03	1,467 73
Stationery and printing	350 00	.....	130 53	219 47
Mechanical department	200 00	60 00	449 54	.....
Architectural "	200 00	114 82	1,660 61	.....
Agricultural "	200 00	1,240 14	1,116 94	323 20
Horticultural "	200 00	107 15	135 73	171 42
Military "	50 00	.....	26 50	23 50
Laboratories	600 00	11 00	524 40	86 60
Library and apparatus	50 00	30 00	22 67	57 33
Incidentals	208 13	.....	28 40	179 73
Sundries—				
Furniture and fixtures	50 00	.....	8 77	41 23
Water supply	200 00	.....	200 00	.....
Commencement expenses	15 50	.....	15 50	.....
Rifle range	25 00	.....	18 24	6 76
Preparatory year	.....	625 00	399 99	225 01
University students' fees	.....	3,507 25	.....	3,507 25

STATE APPROPRIATIONS.

	Appropriated.	Received.	Expended.	Balance.
Taxes on lands (½ per annum)	$3,500 00	$3,128 85	$3,128 85	.....
Buildings and grounds (½ per annum)	4,000 00	4,000 00	3,103 97	$896 03
Mechanical and arch't'l shops (½ per annum)	3,000 00	3,000 00	2,235 00	765 00
Books and publications (½ per annum)	3,000 00	3,000 00	1,590 67	1,409 33
Cabinets (½ per annum)	2,000 00	2,000 00	1,403 14	596 86
Expenses of instruction (½ per annum)	32,000 00	32,000 00	25,458 09	6,541 91
Apparatus and material (½ per annum)	3,000 00	3,000 00	2,144 31	855 69
Metallurgical laboratory	4,000 00	4,000 00	2,001 33	1,998 67
	$54,500 00	$54,128 85	$41,065 36	$13,063 49
Illinois State Laboratory of Natural History	16,325 00	14,690 71	8,747 18	5,943 53

The recommendations of the Regent were then taken up.

On motion of Mr. Cobb there was assigned

From the state appropriation for cabinets:	
For collection of bryozoans for zoological museum	$100 00
For collection of fungi for botanical museum	104 78
For expenses of Professor Rolfe in procuring material from Springfield	16 40
Total	$221 18

On motion of Mr. McLean there was assigned

From the state appropriation for building and grounds:	
For boiler repairs, grate-bars, tubes, etc	$160 00
For care of grounds, cleaning, etc	100 00
For repair of walk to north barn	50 00
Total	$310 00

On motion of Mr. Cobb there was assigned

From the state appropriation for mechanical shops:	
For power, etc., in shops	$150 00

On motion of Mr. Cobb there was assigned

From the state appropriation for apparatus and material:	
For dynamometers and other apparatus for the mechanical shops	$173 00
For models and repairs of apparatus in drawing room	90 00
For field transit for civil engineering department	250 00
For continuing collection of designs, etc., in architectural drawing room	100 00
For furniture	53 15
Total	$666 15

The recommendation of the Regent that there be used

From the assignment for fuel and lights:	
For applying smoke-consuming apparatus to furnaces in boiler house	$125 00

was approved.

The communication from Mr. Kimball was, on motion of Mr. McLean, referred to the executive committee.

Mr. McLean offered the following motion, which was adopted:

Resolved, That the following appropriations from the state appropriations for the Laboratory of Natural History be made for the quarter ending March 31, 1889:

For the field work and the office incidental expenses	$250 00
For the improvement of the library	250 00
For the pay of assistants	750 00
For the publication of bulletins	75 00

And that the President and Secretary be directed to draw the necessary requisition for the sum of thirteen hundred and twenty-five dollars from the proper fund to pay the above named appropriations.

On motion of Mr. Cobb, authority was granted the Board of Direction of the Experiment Station to undertake experiments as set forth in the report made by the President of that Board.

On motion of Mr. McLean, the Board of Direction was authorized to expend moneys in carrying on the operations of the Station according to the requests and estimates presented in the same report.

Professor Burrill's request, presented in the Regent's report, was referred to the Executive Committee.

The Regent and Professor Morrow were appointed to represent the Agricultural Experiment Station and the Agricultural College at the meeting of persons connected with agricultural experiment stations to be held at Knoxville, Tenn., beginning New Year's day, and $100, or so much of it as may be needed, was assigned from the funds of the Experiment Station to defray their expenses.

On motion of Mr. McLean, $50 was appropriated from current funds to be used in making an exhibit at the Paris Exposition of next year.

The special committee on legislation reported as follows, and the report was approved on motion of Mr. Cobb:

REPORT ON LEGISLATION.

To the Trustees of the University of Illinois.

GENTLEMEN: Your committee upon Legislation respectfully reports:

That it has carefully considered the needs of the University for the next two fiscal years, 1889-90 and 1890-91, and it recommends that the following sums be asked of the General Assembly:

For taxes on lands in Minnesota and Nebraska	$1,700	per annum
For buildings and grounds	3,000	"
For machine shops	2,000	"
For apparatus and material	1,500	"
For books and publications	1,500	"
For collections of natural history	1,000	"
For current expenses of instruction	25,000	"
Per annum	$35,700	
Also, for building a drill hall	15,000	
For removing the boiler from chemical building to boiler house, enlarging same and adding necessary steam pipes and fittings, and for new boiler for machine shops	2,500	
Total appropriation for two years		$88,900

The following recommendations of the Director of the State Laboratory of Natural History are approved, and should be presented to the legislature.

For the two years ending June 30, 1891:

For field, office and incidental expenses	$1,000	per annum
For improvement of library	1,000	"
For salaries of assistants	4,000	"
For publication of bulletins	500	"
For illustration of Entomological Report	250	"
Total	$6,750	"
For entomological laboratory and breeding room		$1,000
Total appropriation for two years,		$14,500

The above report is respectfully submitted,

S. M. MILLARD,
CHAS. BENNETT,
ALEX. MCLEAN,
S. H. PEABODY,
} Committee.

The Board then adjourned to meet at the Doane House, in Champaign, at 7:30 o'clock p. m.

EVENING SESSION.

The Board met pursuant to adjournment, the same members being present as in the afternoon.

The treasurer, Mr. J. W. Bunn, presented the following report, and it was referred to the Auditing Committee.

JOHN W. BUNN, TREASURER, IN ACCOUNT WITH THE UNIVERSITY OF ILLINOIS.—*Dr.*

1888.				
Sept.	11	To balance		$30,352 06
		" interest on land contract No. 37, W. T. Gore, assignee.		263 00
Sept.	29	" amount received on acc't buildings and grounds	$27 00	
		" " " " laboratories	5 00	
		" " " " preparatory year	625 00	
		" " " " University students' fees	3,027 50	
				3,684 50
Nov.	30	To amount received on account Agricultural Experiment Station	$444 45	
		" " " " buildings and grounds	57 00	
		" " " " fuel and lights	100 76	
		" " " " mechanical department	60 00	
		" " " " architectural "	114 82	
		" " " " agricultural "	1,240 14	
		" " " " horticultural "	107 15	
		" " " " laboratories	6 00	
		" " " " library and apparatus	30 00	
		" " " " University students' fees	479 75	
				2,640 07
				$36,939 63
		Cr.		
Nov.	30	By amount paid on account board expense	$178 71	
		" " " " salaries	3,943 71	
		" " " " buildings and grounds	103 39	
		" " " " fuel and lights	633 03	
		" " " " stationery and printing	130 53	
		" " " " preparatory year	399 99	
		" " " " mechanical department	449 54	
		" " " " architectural department	1,660 61	
		" " " " agricultural department	1,116 94	
		" " " " horticultural department	135 73	
		" " " " military department	26 50	
		" " " " laboratories	524 40	
		" " " " library and apparatus	22 67	
		" " " " incidental expense	28 40	
				$9,354 45

Nov.	30	By amount paid on account furniture and fixtures.....	$8 77	
		" " " " water supply.....	200 00	
		" " " " commencement expenses...	15 50	
		" " " " rifle range.....	18 24	
				$242 51
		By amount paid on account buildings and grounds.....	$337 32	
		" " " " mechanical & arch'l shops..	345 00	
		" " " " books and publications.....	101 98	
		" " " " cabinets.....	403 14	
		" " " " expenses of instruction.....	6,899 82	
		" " " " apparatus and material.....	643 71	
		" " " " metallurgical laboratory....	221 54	
		" " " " State Labora'y Nat. Hist...	1,257 32	
				10,209 83
		Balance.....		17,133 14
				$36,939 63

Urbana, December 11, 1888. JOHN W. BUNN, Treasurer.

The Auditing Committee made the following report, which was approved on motion of Mr. McLean:

We, your committee, respectfully report that we have examined the Business Agent's report and the vouchers accompanying the same, on which University warrants Nos. 901 to 925 inclusive, and Nos. 1 ot 175 inclusive, have been drawn and find them correct as reported.

We have also examined the vouchers on which Experiment Station warrants Nos. 87 to 90 inclusive, and Nos. 183 to 241 inclusive, have been drawn and find them correct as presented.

A statement of the entire expenditures of the Experiment Station for the year ending June 30, 1888, referred to us, we have examined and recommend its approval.

We have also examined the Treasurer's report and find it correct, and that it shows a balance of seventeen thousand one hundred and thirty-three dollars and fourteen cents.

G. R. SHAWHAN,
GEO. C. EISENMAYER, } Auditing Committee.

The following report of the Farm Committee was, on motion of Mr. McLean, approved:

The Farm Committee to whom was referred the report of Professor Morrow, professor of agriculture, respectfully reports that it has examined said report and finds the same satisfactory. In relation to Professor Morrow's attending institutes, the committee reports that, owing to the fact that the University has no funds to employ an assistant professor in agriculture, the interests of the agricultural classes will not permit him to attend institutes as extensively as would otherwise be desirable. The committee, however, recommends that permission be given Professor Morrow to attend six representative agricultural institutes during the present season, the same to be without expense to the University.

C. W. BENNETT,
EMORY COBB,
B. PULLEN, } Farm Committee.

Judge Bennett stated that the special committee on certificates could not report at this time, giving reasons therefor; and leave was granted the committee to take further time for the consideration of the subject.

Dr. Peabody's bill for $41.85, for expenses in attending meetings of the Board and Executive Committee and in examining schools, was ordered paid from current funds.

The Executive Committee made the following report of its action since the last meeting of the Board, which was, on motion of Mr. McLean, approved:

To the Trustees of the University of Illinois.

GENTLEMEN: The Executive Committee respectfully reports the transaction of the following items of business since the last regular meeting of the Board:

Sept. 12, 1888. Appointment of John C. Jackson to be Professor of Chemistry for the year ending Sept. 1, 1889, at a salary of $2,000 per annum.

Oct. 27, 1888. Leave given to the Regent to put water supply into the carpenter's shop and the gymnasium, at a cost not to exceed $50.00, from state appropriation for buildings and grounds.

Nov. 27, 1888. Leave given to Committee on Library to purchase list of periodicals for the year 1889 of A. H. Roffe & Co., of Boston, at $273.81, from state appropriation for books and periodicals.

Dec. 8, 1888. Leave given to Committee on Library to purchase odd numbers of periodicals to fill sets, at cost not to exceed $15.00, from state appropriation for books and periodicals.

S. M. MILLARD,
EMORY COBB,
C. W. BENNETT,
} Executive Committee.

Mr. Bennett moved that a committee of six be appointed, of which the President of the Board and the Regent shall be members, the President being chairman, which committee shall prepare a codification of the laws relating to the University, and shall have authority, at its discretion to present the same to the legislature and seek its passage.

The motion was adopted, and the chair appointed on the committee Messrs. Shawhan, Cobb, McLean, and Bennett.

Adjourned.

W. L. PILLSBURY,
Secretary.

S. M. MILLARD,
President.

MEETING OF MARCH 12, 1889.

The Board of Trustees of the University of Illinois met in the University parlor, in Urbana, at 4:30 o'clock p. m., March 12, 1889, and, in the absence of the President, was called to order by the Secretary. Mr. Cobb was made President, *pro tempore.*

The call of the roll showed Messrs. Bennett, Bullard, Cobb, Harker, Haskell, McKay, and McLean present; absent, Governor Fifer, Superintendent Edwards, and Messrs. Clemens, Millard, and Shawhan.

The members recently elected, Samuel A. Bullard, Oliver A. Harker, Francis M. McKay, and Alexander McLean, had taken the oath of office before the meeting was called to order.

The minutes of the preceding meeting were approved.

The election of officers was put over until the next morning.

Upon invitation the Regent, Dr. Peabody, then presented his report, as follows:

REGENT'S RFPORT.

To the Trustees of the University of Illinois.

GENTLEMEN: The year now ending has not been marked by any notable changes in the plans or practice of the University. As has already been reported, the attendance of University students is larger than in any previous year, and the whole number is equal to that of any former year. Most of these students are here with an earnest purpose to make the best use of their time and opportunities. Good order and faithful scholarship are the rule. The time never will come when to such a rule there will not be some exception.

At the end of the fall term, Professor John C. Jackson tendered his resignation, which was accepted by the Executive Committee. With the approval of the same authority arrangement was made with Mr. Albert G. Manns, Ph. D., to carry the work of the chair of chemistry to the end of the year. Mr. Manns is a graduate from our own school of chemistry, and has taken his degree of Doctor of Philosophy under Hoffman and other noted chemists at the University of Berlin. He entered upon

an engagement as first assistant chemist of the Experiment Station in September last. He has thus far acquitted himself well both as an investigator and as an instructor.

No other changes have occurred in the working force of the University.

FINANCIAL REPORTS.

I present herewith the usual report of the work of the University in its business departments during the year now closing. It will be seen that in each of these departments, except the machine shop, there is a small balance on the credit side of the account, and that the aggregate also shows a credit balance. The machine shop does very little of what has been styled commercial work, and most of that has been in the nature of repairs on University property. No profit can be charged upon such work, yet it is a convenience and a saving to have the work so done. But while the activity of the department is confined to such work and to instruction, it is hardly possible that it shall be even self-supporting.

The much larger volume of work shown by the carpenter shop appears from the fact that the building on account of the Experiment Station has all been done through this department. This is reported as "work for other parties," because the accounts of the University and of the Experiment Station are carefully kept distinct.

It is hoped that improving seasons and markets for farm products, will hereafter enable us to show a better report from the farm, in as much as the stock-farm is no longer required to carry the expenses of agricultural experiment, except as all farm work is an experiment. Some confusion of thought has grown in the public mind out of the fact that this institution has managed two distinct farms. The one, a very considerable body of land, has been used chiefly for experimental work, which is always costly and seldom remunerative. The other farm, a valuable property, has been managed as a business operation, but has always had to carry the losses of the experimental farm, and has therefore never been able to present a full account of its real service to the University.

In regard to the horticultural department, mention should be made of the fact that it has annually furnished a stock of plants for bedding in the grounds, which, if quoted at even wholesale market prices, would materially enlarge the credit to that account. It is, however, not probable that the plants would be bought if they had to be paid for in cash.

FINANCIAL REPORT.

The Department of Agriculture.

The University farm contains	610 acres
Occupied in public grounds, etc	100 "
The Experiment Station has occupied during the last year	100 "
The department of agriculture has used about	410 "
In meadow was	105 "
In pasture	110 "
In tillage	195 "
The products in 1888, farm and Station, were—corn, bushels	6,000
Oats	2,550
Seeds and ensilage	$700 00
Value of grain and forage produced	2,900 00
Hay, 240 tons	1,840 00

Balance Sheet of the Agricultural Department.

Inventory, Dec. 1, 1888—		
Live stock	$10,115 00	
Farm products	3,615 00	
Machinery and tools	1,800 00	
		$15,530 00
Sales—		
Live stock	$2,481 57	
Field products	1,650 95	
Miscellaneous	284 39	4,416 91
		$19,946 91
Inventory, Dec. 1, 1887—		
Live stock	$10,650 00	
Farm products	2,880 00	
Machinery and tools	1,800 00	
Notes and credits	100 00	
		15,430 00
Expenses—		
Labor	$1,499 90	
Live stock	842 85	
Miscellaneous items	1,447 24	
		3,788 99
		$19,218 99
Balance		727 92
		$19,946 91

The Griggs Farm.

Rent received	$503 70	
Expenses		
Balance		$503 70
	$ 03 70	$503 70

The Horticultural Department,

Cr.		
Cash from greenhouse	$192 30	
Nursery	26 90	
Small fruit	175 06	
Orchards	169 10	
Forest	19 70	
Garden	4 70	
		$587 76
Trees for public grounds		9 00
		$596 76

	Material.	Labor.	Total.	
Dr.				
Greenhouse	$136 51	$92 70	$229 21	
Nursery		5 99	5 99	
Small fruits	10 70	48 30	59 00	
Orchards	13 30	91 10	104 40	
Forest		50	50	
Use of farm teams			7 00	
				$406 10
Balance				190 66
				$596 76

The Chemical Laboratory.

Cr.		
From state appropriation	$275 00	
Received from students	1,017 17	
		$1,292 17
Dr.		
Apparatus and materials	$726 64	
Repairs, freight, etc	96 39	
Gas	320 00	
		$1,143 03
Balance		149 14
		$1,292 17
Inventory, March 1, 1887	$15,457 83	
Transferred to mining department	546 75	
		$14,911 08
Inventory, March 1889		14,574 56

The Machine and Carpenter Shops.

	Machine shop.		Carpenter shop.	
Cr.				
Work for University	$588 87		$1,156 84	
Work for other parties	376 10		2,976 72	
State appropriations	1,019 62		744 67	
		$1,984 59		$4,878 23
Deficit		677 21		
		$2,661 80		$4,878 23
Dr.				
Materials and tools	$690 54		$1,693 94	
Labor	226 74		1,651 68	
Power	244 52		244 52	
Instruction	1,500 00		1,080 00	
		$2,661 80		$4,670 14
Balance				208 09
		$2,661 80		$4,878 23
Inventory, Feb. 29, 1888	$343 58		$1,043 10	
Inventory, Feb. 28, 1889	321 69		873 21	

General Balance Sheet.

	Loss.	Gain.
Agricultural department		$727 92
Griggs farm		503 70
Horticultural department		190 66
Chemical laboratory		149 14
Machine shop	$677 21	
Carpenter shop		208 09
Total	$677 21	$1,779 51
Net gain	1,102 30	
	$1,779 51	$1,779 51

The report of Professor Morrow concerning the farm for the last quarter is herewith presented:

FARM REPORT.

UNIVERSITY, URBANA, March 11, 1889.

Dr. S. H. Peabody, Regent,

SIR: The receipts from the University farms were as follows:

Receipts for the quarter ending March 1, 1889, have aggregated	$916 52
The expenses have been	367 05

The receipts may be classified as follows:

Hay	$615 05
Cattle	53 00
Hogs	199 60
Labor	16 50
Timothy seed	21 00
Miscellaneous	11 37

The expenses were:

Labor	$274 13
Feed	51 20
Lumber and repairs	36 07
Postage and petty expenses	5 65

Respectfully submitted,
G. E. MORROW, Professor of Agriculture.

The report of the Board of Direction of the Experiment Station, is herewith presented:

REPORT OF EXPERIMENT STATION.

To the Regent of the University.

SIR: The Board of Direction of the Experiment Station, at the end of the first year of Station work, respectfully reports as follows:

Exhibit A is a statement of the experiments which have been undertaken; of those which are still in progress; of those which have been brought to a conclusion; those which have been reported in bulletins; and those which are already for such report.

Exhibit A—Record of Experiments undertaken by the Experiment Station for the year ending March 12, 1889:

No. of Experiment.	Subject of Experiment.	Still in progress.	Finished.	Reported in bulletin	Ready for report.
	Field Experiments—				
1	Corn, testing varieties	..	+	No. 4	..
2	Corn, testing varieties for ensilage	..	+	"	..
3	Corn, time of planting	..	+	"	..
4	Corn, depth of planting	..	+	"	..
5	Corn, thickness of planting	..	+	"	..
6	Corn, planting in hills or drills	..	+	"	..
7	Corn, effect of depth and time of plowing	..	*	.....	..
8	Corn, frequency of cultivation	..	+	No. 4	..
9	Corn, depth of cultivation	..	+	"	..
10	Corn, effect of root-pruning	..	+	"	..
11	Corn, effect of fertilizers	..	+	"	..
12	Oats, quantity of seed per acre	..	+	No. 3	..
13	Oats, compact or loose seed bed	..	+	"	..
14	Oats, time of sowing	..	+	"	..
15	Oats, depth of sowing	..	+	"	..
16	Grasses, comparison of varieties	..	*	.....	..
17	Clovers, comparison of varieties	..	*	.....	..
18	Grasses and clovers sown with or without grain	+	..	.....	..
19	Grasses, field tests of varieties	+	..	.....	..
20	Clover, field tests of varieties	+	..	.....	..
21	Grasses and clovers, field tests of mix ures	+	..	.....	..
22	Weeds, numbers and kinds on given areas	+	..	.....	..
23	Ro ati n, University experiments continued	+	..	.....	..
24	Fertilizers, comparison of	..	+	No. 4	..
50	Grasses and clovers, effect of ripeness on yield and chemical qualities	..	+	.....	+
53	Wheat, effect of time and manner of harvesting	..	+	.....	+
54	Corn, root growth	..	+	No. 4	..
61	Wheat, effect of fertilizers [wheat sown in 1887]	..	+	.....	+
62	Wheat, effect of fertilizers	+	..	.....	..
63	Wheat, methods of soil preparation	+	..	.....	..
64	Wheat, large or small seed	+	..	.....	..
65	Wheat, quantity of seed per acre	+	..	.....	..
66	Wheat, time of sowing	+	..	.....	..
67	Wheat, depth of sowing	+	..	.....	..
68	Wheat, its rela ion to chess	+	..	.....	..
69	Wheat, its protection from chinch bugs; effect of fertilizers upon. [Experiment at Flora, Clay county.]	+	..	.....	..
70	Corn fodder, translocation after cutting	..	+	.....	+
71	Corn fodder, effect of ripeness	..	+	.....	+
	Feeding Experiments—				
25	Feeding ensilage to growing cattle	..	+	No. 2	..
26	Feeding cattle of different breeds	+	..	.....	..
27	Cost of production of young steers	+	..	.....	..
28	Cost of production of young colts	+	..	.....	..
29	Cost of production of young calves	+	..	.....	..
30	Effect of ash constituents upon pigs	..	+	.....	+
58	Record of milk product, milk measured in experiment No. 29	+	..	.....	..
59	Cost of production of young heifers	..	+	.....	+
60	Pigs, comparison between corn, grass, and corn and grass in feeding	..	+	.....	+

*Failed.

No. of Experiment.	Subject of Experiment.	Still in progress.	Finished.	Reported in Bulletin	Ready for Report.
	Feeding Experiments—Continued,				
72	Comparative value of new and old corn in feeding steers	..	*	.....	..
74	Comparative value of corn and pumpkins, of corn, and of corn and apples in feeding pigs	..	+	.....	+
81	Value of offal fed to pigs	+	..	.....	..
82	Feeding ensilage to colts	+	..	.....	..
83	Comparison of corn meal, and of corn meal and wheat meal fed to pigs	+	..	.....	..
	Tree Culture—				
31	Orchard, soil cultivation and management	+	..	.....	..
32	Orchard, soil fertilization	+	..	.....	..
33	Apples, testing new varieties by planting	+	..	.....	..
34	Apples, testing new varieties by top-grafting	+	..	.....	..
35	Apples, testing hardiness of root-grafted and double-worked trees	+	..	.....	..
36	Pears, testing new varieties	+	..	.....	..
37	Plums, testing new varieties	+	..	.....	..
38	Cherries, testing new varieties	+	..	.....	..
39	Forest trees, growing of	+	..	.....	..
57	Trees, use of insecticides on	..	+	.....	+
78	Testing time and methods of transplanting trees	+	..	.....	..
79	Testing and improving native fruits	+	..	.....	..
80	Testing the effects of stock and cion upon each other	+	..	.....	..
	Vine Culture.				
40	Grapes, testing new varieties	+	..	.....	..
41	Grapes, methods of training	+	..	.....	..
42	Grapes, soil treatment	+	..	.....	..
	Small Fruit Culture.				
43	Blackberries, testing varieties	+	..	.....	..
44	Raspberries, testing varieties	+	..	.....	..
45	Strawberries, testing varieties	+	..	.....	..
46	Strawberries, method of management	+	..	.....	..
51	Strawberries, raising seedlings	+	..	.....	..
52	Raspberries, soil management	+	..	.....	..
	Gardening.				
47	Tomatoes, effect of artificial fertilization upon earliness of product	..	*	.....	..
48	Beans testing varieties	..	+	.....	+
49	Sweet corn, testing varieties	..	+	No. 4	..
56	Potatoes, investigation of scab	..	+	.....	+
	Tree and Vine Culture.				
55	Fungicides, use of	..	+	.....	+
	Miscellaneous.				
73	Record of soil temperature	+	..	.....	..
75	Soil moisture, evaporation of water from the surface of water, of uncultivated soil, of cultivated soil, of a corn plant, and of grass	..	+	.....	+
76	Meteorological record from August 17, 1888	+	..	.....	..
77	Biology of ensilage	+	..	.....	..

*Failed.

Exhibit B is a statement of the expenditures for the year by quarters. Discrimination is made between those expenditures which were incidental to the organization of a new enterprise and those which may be compared with the usual current expenses of a regular working year. This discrimination seems to be desirable in order that the proper authorities may know how to apportion funds for the coming year's work.

Exhibit C is a statement of the sums appropriated and expended during the current quarter. In this quarter the expenditures in certain particulars, especially in the publication of bulletins, have been much more than

had been anticipated. The aggregate of expenditures has been only slightly above the sums allowed, and has not passed the pro rata to this point in the year. The balances of moneys not used amount to $335.15, and the amounts overdrawn are $380.00, which you are asked to examine and approve.

Exhibit C—Appropriations, expenditures, deficits, balances, current quarter ending March 31, 1889:

	Appropriated.	Expenses.	Deficits.	Balances.
Buildings and repairs	$50 00			$50 00
Board expenses	50 00	$23 70		26 30
Books and publications	350 00	375 00	$25 00	
Bulletins and reports	350 00	585 00	235 00	
Chemical apparatus, etc	50 00	80 00	30 00	
Fuel and lights	100 00	120 00	20 00	
Incidental expenses		10 00	10 00	
Printing, stationery and postage	25 00	15 00		10 00
Salaries	1,950 00	1,910 00		40 00
Seeds and trees	100 00	100 00		
Tools	50 00	44 65		5 35
Wages	700 00	760 00	60 00	
Prevention of chinch bug ravages	75 00			75 00
Stock feeding and dairying expenditures	100 00			100 00
Expenses delegates to Knoxville	100 00	71 50		28 50
Total	$4,050 00	$4,094 85	$380 00	$335 15

Balance of government appropriation, March 31, 1889, $4,070.52.

Exhibit D is the estimate for the fourth quarter of the year, ending June 30, 1889.

Exhibit D.—Estimates for fourth quarter ending June 30, 1889:

Buildings and repairs	$100 00
Board expense	40 00
Books and publications	100 00
Botanical apparatus	30 00
Bulletins	250 00
Chemical apparatus, etc	75 00
Fertilizers	60 00
Fuel and lights	100 00
Incidental expenses	40 00
Printing, stationery and postage	25 00
Salaries	1,950 00
Seeds and trees	20 00
Tools	30 00
Wages	1,100 00
Prevention of chinch bug ravages	25 00
Fencing for experiments	50 00
Experiment with fertilizers on corn in southern Illinois	75 00
Total	$4,070 00

Exhibit E is a list of the vouchers and warrants, Nos. 91-95 and 242-326 inclusive.

Exhibit F is a statement of the recommendations of the Board of Direction as to experiments to be undertaken for the coming year; of the appointments of assistants; and of moneys to be appropriated, and lands to be used for the purposes of the Station.

Exhibit F. Recommendations of the Board of Direction.

The Board of Direction of the Agricultural Experiment Station asks of the Trustees of the University permission to undertake the following experiments, in addition to carrying forward those already authorized.

1. Oats, testing varieties.

2. Oats and wheat, a trial of the plan of growing them together.

3. Sugar beets and mangel-wurzels, cost of raising them, and value of the crop.

4. Corn, the effect of fertilizers upon. The purpose is to conduct this experiment upon a light soil at some convenient point in southern Illinois.

5. Grass lands [meadow and pasture], tests of the use of fertilizers upon.

6. Pigs, cost of production, and rate of growth from birth.

7. Cross fertilization of plants, testing the effects of.

8. Fruits, production of new varieties from seeds.

Authority is also asked to determine the percentage of water in such samples of corn raised in Illinois as may be sent to the Station by persons who make entry for a premium in the Prize Crop Competition conducted by the *American Agriculturist.*

The Board of Direction recommends to the Trustees of the University the reappointment of

Thos. F. Hunt, assistant agriculturist.

George W. McCluer, assistant horticulturist.

Albert G. Manns, first assistant chemist, and

Harry S. Grindley, second assistant chemist of the Station, for the ensuing year, beginning April 1, 1889.

To carry on the operations of the Station, appropriations of Station funds are asked to the amount of three hundred and eighty dollars ($380.00) for the current quarter, and to the amount of four thousand and seventy dollars ($4,070.00) for the fourth quarter of the year, as set forth in detail in the financial statement for this quarter and the estimates for the next quarter presented herewith as exhibits C and D.

The lands desired are:

1. Those in use last year.

2. About 10 acres on experimental farm, and the grass land in the forest plantation.

3. One or two acres on the northwest portion of the stock farm for trial of fertilizers on grass.

Authority is asked to purchase chemical apparatus and supplies for the next year to the amount of $250. In order to secure these supplies free of duty charges, they must be procured abroad, and they must be ordered soon if they are to be imported before autumn. It will probably be well to get these supplies at the same time when the University supplies are bought.

All of which is respectfully submitted on behalf of the Board of Direction.

S. H. PEABODY, President of the Board.

The report of sales of Nebraska lands is herewith presented.

NEBRASKA LANDS.

The sales of Nebraska lands since the last annual report are as follows:

	Price.	Cash paid.
58. Eilert Mulhausen, NE ¼ 3-2-8, 149.29 a	$1,866 12	$466 53
59. Frank Havlina, N ½ SE ¼ 26 3 8, 80 a	1,000 00	400 00
60. James Havlina, S ½ SE ¼ 26-3-8, 80 a	1,000 00	400 00
61. Adolph Marquandt, NE ¼ 3-2-8, 147, 91 a	1,848 88	548 88
	$5,715 00	$1,815 41

The whole number of acres in Nebraska offered for sale was	9,340.09
The number of acres sold to date is	9,182.60
Unsold, one quarter section	157.49
The total price of land sold is	$119,433 94

Up to the present time twelve of the sales have been perfected by the payment in full of principal and interest, and deeds have been given. In most cases the buyers have been prompt in the payment of installments as they have fallen due, and in no case has it yet been necessary to resort to any harsh measures to enforce collections.

RECOMMENDATIONS.

I beg leave to recommend appropriations from various funds as follows:

1. The usual current appropriations for next six months as presented by the Business Agent.

2. From state appropriations for buildings and grounds:

For repairs of walks and drives	$100 00
For care of lawn, etc., to July 1st	200 00

3. From state appropriations for cabinets:

For cases in natural history museum	$45 00
For labor, mounting fossils, and for tablets	45 00
For current expenses, zoological laboratory	60 00
For earthquake model	24 30

4. From state appropriations for apparatus and material:

For additional desks for architectural drawing-room	$30 00
For carpet for reception room	75 00

5. I ask authority to obtain bids and to contract for chemical apparatus and supplies to the amount of $650.00.

6. Also authority to print 5,000 copies of the University catalogue at cost not to exceed $350.00.

7. Also to expend a suitable sum for commencement exercises.

Respectfully submitted,

SELIM H. PEABODY,

Regent.

About six o'clock the reading of the report was interrupted with a motion for an adjournment till evening; but before the motion was put, the report of the Business Agent, Professor Shattuck, was received as follows, and was referred to the Auditing Committee.

MARCH 12, 1889.

S. M. Millard, Esq., Pres. Board of Trustees, University of Illinois,

SIR: I have the honor to hand you herewith the financial statements due from me at this time.

Paper A is that of current expenses and receipts for the six months ending February 28, 1889.

Paper B shows the condition of the State appropriations February 28, 1889.

Paper C is a list of vouchers presented for audit, being 176-400 inclusive.

Paper D is an estimate of current receipts and expenses for the six months ending September 1, 1889.

The Board is requested to appropriate the estimated amount for expenses, $24,835.66.

Respectfully submitted,

S. W. SHATTUCK, Business Agent.

Papers A and B are as follows:

STATE APPROPRIATIONS.

	Appropriated.	Received.	Expended	Balance.
Taxes on lands (½ per annum)	$3,500 00	$3,128 85	$3,128 85	.....
Buildings and grounds (½ per annum)	4,000 00	4,000 00	3,522 16	$477 84
Mechanical and arch'l. shops (½ per annum)	3,000 00	3,000 00	2,610 00	390 00
Books and publications (½ per annum)	3,000 00	3,000 00	2,130 07	869 93
Cabinets ½ per annum)	2,000 00	2,000 00	1,644 60	355 40
Expenses of instruction (½ per annum)	32,000 00	32,000 00	32,000 00	.....
Apparatus and material (½ per annum)	3,000 00	3,000 00	2,587 49	412 51
Metallurgical laboratory	4,000 00	4,000 00	2,569 81	1,430 19
	$54,500 00	$54,128 85	$50,192 98	$3,935 87
Illinois State Laboratory of Natural History	16,325 00	14,690 71	10,041 77	4,648 94

CURRENT APPROPRIATIONS.

Of Sept. 11, and Dec. 11, 1888.	Appropriated	Receipts also Appropriated	Expended.	Balance.
Board expenses	$300 00	.....	$283 53	$16 47
Salaries for instruction { State	20,456 00	.....	13,441 73	1,122 58
Salaries for instruction { Current.		$777 78	6,669 47	
" " services	1,610 00	.....	1,554 90	55 10
Buildings and grounds	25 00	128 00	146 50	6 50
Fuel and lights	2,000 00	142 36	1,637 87	504 49
Stationery and printing	3 0 00	.....	210 38	109 62
M chanical department	200 00	725 45	798 66	126 79
Architectural "	200 00	3,402 60	2,282 41	1,320 19
Agricultural "	200 00	2,156 66	1,483 99	872 67
Horticultural "	200 00	192 90	208 01	184 89
Military "	50 00	.....	48 63	1 37
Laboratories	600 00	627 57	729 69	497 88
Library and apparatus	50 00	30 25	62 79	17 46
Incidentals	241 85	.....	142 66	99 19
Sundries—				
Furniture and fixtures	50 00	.....	37 21	12 79
Water supply	200 00	.....	200 00	.....
Commencement expenses	15 50	.....	15 50	.....
Rifle range	25 00	.....	18 24	6 76
Preparatory year	.....	1,287 50	799 98	487 52
University students' fees	.....	6,297 25	.....	6,297 25
Music fees	.....	73 00	73 00	.....
Griggs farm	.....	200 00	.....	200 00
Paris Exposition	50 00	.....	14 52	35 48

The Board then adjourned to meet in the parlor of the Doane House, in Champaign, at 7:30 o'clock, p. m.

Evening Session.

The Board met in the evening pursuant to adjournment, the same members being present as in the afternoon.

The reading of the regent's report was completed, and the order was made that it be recorded.

The treasurer, John W. Bunn, then presented his report, and it was referred to the Finance Committee.

John W. Bunn, Treasurer, in Account with the University of Illinois, Dr.

1888.				
Dec.	11	To balance		$17,133 14
Dec.	15	Amount received on account of architectural department	$2,494 15	
		" " " mechanical department..	340 80	
				2,834 95
1889.		Amount received for interest on Sangamon school bonds		168 00
Jan.	2	" " " on Chicago water bonds.	$875 00	
		" " " from Treasurer.....	2,200 00	
				3,075 00
Jan.	3	Amount received of Agricultural Experiment Station.		333 33
Jan.	12	" " on account of chemical laboratory.....	$46 00	
		" " " fuel and lights	41 60	
				87 60
Jan.	15	Amount received for interest on Champaign school b'nds		360 00
Jan.	22	To interest on land contract No. 2, J. T. Applegate.....	$26 88	
		" " " " " 3, J. H. Cummings, assignee,.....	29 36	
		" " " " " 5, D. C. Bachor and A. Ault, assignee.....	92 00	
		" " " " " 6, J. G. Ladd, assignee.	60 35	
		" " " " " 9. C. M. Dawson.....	80 00	
		" " " " " 10. J. W. Herbert.....	144 00	
		" " " " " 11. J. Stambaugh, assignee.....	120 00	
		" " " " " 13. H. T. Willis and A. W. Mills.....	120 00	
		" " " " " 14. W. L. Collins.....	120 00	
		" " " " " 15. P. A. Moore, assignee	137 80	
		" " " " " 16, R. L. Gumaer.....	24 00	
		" " " " " 17. R. L. Gumaer.....	48 00	
		" " " " " 18, D. A. Young, assignee	96 00	
		" " " " " 19. L. Larsen.....	144 00	
		" " " " " 21, Dennis Magner.....	72 15	
		" " " " " 22. H. H. Snyder and J. F. Latin.....	64 00	
		" " " " " 24, Peter Mooney, assignee.....	279 55	
		" " " " " 25, Peter Mooney, assignee.....	279 55	
		" " " " " 26, H. A. Greenwood, assignee.....	84 00	
		" " " " " 27, A. L. Wright.....	120 00	
		" " " " " 28, A. L. Wright.....	121 15	
		" " " " " 30, E. L. Baughman, assignee.....	80 00	
		" " " " " 31, J. A. Hansen.....	120 00	
		" " " " " 32, P. C. O'Brien.....	160 00	
		" " " " " 33, C. Hesse.....	100 80	
		" " " " " 34. J. & H. J. Swoboda..	96 00	
		" " " " " 35, J. & W. Losey.....	96 00	
		" " " " " 36, W. H. Ruyle, assignee	120 00	
		" " " " " 38, N. R. Simpson.....	120 00	
		" " " " " 39, J. E. Blickenstaff...	120 65	
		" " " " " 40, Joseph Dezort.....	180 00	
		" " " " " 41, A. L. French, and T. D. Slosson.....	120 00	
		" " " " " 42, W. L. Morton and F. L. Marrs.....	120 00	
		" " " " " 43, Samuel Cox.....	67 20	
		" " " " " 44, Chas. E. Baker.....	67 20	
		" " " " " 45, Blevins & Miller....	124 48	
		" " " " " 47, M. Hubka.....	50 00	
		" " " " " 48, J. K. Cullen.....	96 00	
		" " " " " 50, R. F. Hnizda.....	104 00	
		" " " " " 51, J. Skubal and J. W. Hnizda.....	112 00	

		Dr.		
1889.				
Jan.	22	To interest on land contract No. 52, J. W. Hnizda,.....	$72 00	
		" " " " " 53, T. W. Novotny, assignee.....	80 00	
		" " " " " 54, B. F. Leiby.....	128 15	
		" " " " " 55, L. L. Ruyle.....	64 00	
		" " " " " 56, L. L. Ruyle.....	80 00	
		" " " " " 57, C. Anderson.....	144 00	
		" " " " " 58, E. Mulhausen.....	32 65	
		" " " " " 59, Frank Havlina.....	4 00	
		" " " " " 60. James Havlina.....	4 00	
				$4,925 92
Feb.	28	To amount received on account buildings and grounds.	$44 00	
		" " " " mechanical department	321 65	
		" " " " architectural "	793 63	
		" " " " agricultural "	916 52	
		" " " " horticultural "	85 75	
		" " " " laboratories.....	570 57	
		" " " " library and apparatus..	25	
		" " " " preparatory year.....	662 50	
		" " " " Univer'y students' fees.	2,790 00	
		" " " " music fees.....	73 00	
		" " " " Griggs farm.....	200 00	
				6,460 87
				$35,378 81
		Cr.		
		By amount paid on account board expenses.....	$104 82	
		" " " " salaries.....	4,280 66	
		" " " " buildings and grounds....	43 11	
		" " " " fuel and lights.....	1,004 84	
		" " " " stationery and printing...	109 85	
		" " " " preparatory year.....	399 99	
		" " " " mechanical department...	349 12	
		" " " " architectural department.	621 80	
		" " " " agricultural department..	367 05	
		" " " " horticultural department..	72 28	
		" " " " military department.....	22 13	
		" " " " laboratories.....	205 29	
		" " " " library and apparatus	40 12	
		" " " " incidental expenses.....	114 26	
				$7,735 32
		By amount paid on account furniture and fixtures.....	$28 44	
		" " " " music fees.....	73 00	
		" " " " Paris Exposition.....	14 52	
				115 96
		State appropriations—		
		By amount paid on account buildings and grounds....	418 19	
		" " " " mech'l and arch'l. shops..	375 00	
		" " " " books and publication....	539 40	
		" " " " cabinets.....	241 46	
		" " " " expenses of instruction..	6,541 91	
		" " " " apparatus and material...	443 18	
		" " " " metallurgical laboratory..	568 48	
		" " " " State Laboratory of Natural History.....	1,294 59	
				10,422 21
		Balance.....		17,105 32
				$35,378 81

Urbana, February 12, 1889. JOHN W. BUNN, Treasurer.

The Executive Committee handed in the following report of its acts, and on motion of Mr. McKay the report was accepted and the acts of the committee confirmed.

REPORT OF THE EXECUTIVE COMMITTEE.

To the Trustees of the University of Illinois.

GENTLEMEN: The Executive Committee respectfully reports that since the last meeting of the Board it has transacted the following business:

Deoember 31, 1888. Accepted the resignation of Professor John C. Jackson. Authorized the employment of Mr. A. G. Manns in the department of chemistry for the remainder of the current college year, and the payment to him for such service fifty dollars per month until the first day of July in addition to the pay which he now receives from the Experiment Station.

Jan. 16, 1889. Authorized payment of $31.20 for binding twelve volumes of Patent Office Reports.

Jan. 22. Authorized the payment of $60 per month to G. B. McHugh, assistant in chemistry, until the end of the current college year.

Jan. 26. Authorized the acceptance of the bid of A. C. McClurg & Co., for books and the purchase of books of them to the amount of $545.88; and farther authorized the Regent "to purchase the necessary books not included in the above list at the best terms possible and to report the same to the Board."

The following item was omitted from the last report:

Sept. 24, 1888. Authorized purchase of books of E. Steiger & Co., of New York, to amount of $28.20.

Respectfully submitted,

S. M. MILLARD,
EMORY COBB,
CHAS. BENNETT,
} Executive Committee.

Mr. Bennett, chairman of the special committee previously appointed to consider and report upon the matter of certificates and upon "graduation with a certificate," presented the following report:

REPORT OF THE COMMITTEE ON GRADUATION WITH A CERTIFICATE, ETC.

This Committee has been instructed to consider and report upon the recommendations of the Regent concerning the general subject of "Graduation with a Certificate" made to the Trustees at their meeting in September last, which subject also includes the question asked by the Faculty at the last June meeting, concerning the scope of the certificate itself.

Your committee finds the law concerning the issuance of certificates to be as follows: "The Trustees, on recommendation of a majority of the Faculty, may authorize the Regent of the University to issue certificates of scholarship under the seal of the University, to any student of good moral character, who shall have been in attendance not less than one year, and shall have completed satisfactorily the studies of the year, which certificate shall set forth the precise attainments, as ascertained by special examinations, in the several branches of learning studied by such student during his attendance in the University." [*Law of 1867, Sec. 10.*] The conditions on which a certificate may be granted are, at least one year's residence at the University, the one year being reasonably presumed to mean the recognized collegiate year; good moral character, and satisfactory scholarship; the latter to be set forth by grades upon the subjects studied, as found by examinations. The law gives no authority for issuing any form of certificate other than this; nor does it authorize the certification of attainment in any subject studied by the student while he was not in attendance at the University. It may be urged that the law does not forbid either of these things. But the same law did not forbid the conferring of degrees. Yet it was properly held that the government of the University had, under this law, no authority to confer degrees, and legislative sanction was invoked and obtained before either the Faculty or the Trustees assumed that power. In this respect, at least, it was conceded that the law did not permit what it did not specify.

In 1872 the custom was introduced of "graduating" such students as could show a satisfactory record in any thirty-six terms of University work, and the custom has been continued to the present time. It soon appeared that there was a degree of contradiction in terms in "graduating" persons who did not receive "degrees." It was also found, as is well known, that the scholarly public did not recognize this form of graduation as the equivalent of that customary in other American colleges. A brief experience led the friends of the University to seek legislative authority to confer degrees, and that authority was granted.

When the University assumes to confer the honors of scholarship upon its graduates, it may and should determine the conditions upon which those honors should be received and the significance they should bear before the public. As the University has established within itself a variety of schools—which variety will doubtless be considerably enlarged as the growth of the institution progresses—it is necessary that the requirements for graduation in the several schools should be made to vary to correspond with the distinctive characters of those schools. In each course there is found a line of work which those best qualified to judge deem so essential that no person can claim to be learned in that department, who has not acquired a fair proficiency in the subjects included therein. To these subjects others, important for general discipline, are added, but so as to allow a wider latitude of choice, always within well considered and approved limits. There are now some fifteen or more distinct courses leading to degrees, thus affording to the student a large latitude of choice. This method of offering "options" to students admits of large extension, and the Trustees and Faculty will doubtless make such extensions as rapidly as the growth of the University will permit.

The honors of the University should be granted only upon conditions determined by itself, and should be restricted to the degrees which are offered for proficiency in the courses of study prescribed in the different schools.

While, in a few cases, the work which has hitherto been accepted as the reason for giving a full certificate, has been the equivalent of that required for a degree, as a rule this is found not to be the case during the time since the degrees have been given. The Regent reports that an examination of the list of graduates for several years past shows that most of those who have taken the certificate during that time, did so because in each case there was some deficiency, and that usually an important one, which forbade the reception of a degree, but which would not have existed had not the certificate offered an easier route to graduation. It would be easy to specify various ways in which the system of giving the full certificate as a method of graduation may serve as a detriment both to good discipline and to sound scholarship.

Among the inequalities of the case may be cited the counting of the military work towards the requirements for a certificate. The military work is not counted towards any degree. It has its own peculiar and very attractive reward in the commission which the governor has given, one which is ample distinction for those who have done good work in this department. It is not intended that a man shall get his commission until he has completed honorably a full course of study; and yet it has happened that a student who was three steps short of graduation with a degree, on account of real deficiencies on his part, has nevertheless counted in his military work, received his certficate, and obtained his commission, in accordance with regulations, but really before he was entitled to such marks of distinction.

An examination of the law upon this subject shows your committee that no form of graduation was contemplated by it. It was intended that each student, as he leaves the University, after a residence of one year or more, having maintained a creditable character for good life and scholarship, might bear with him a statement in detail of the facts in his case, which statement should be of such value to him in the community as its face should indicate. Such a statement is the right of every student, whether he has the diploma of a degree or not. Your committee recognizes this

as the meaning of the law, and sees no reason for wishing the law to be changed. Your committee farther believes that under the law this certificate should include a record of the several branches of learning studied by such student during his residence at the University, and of no others.

As the custom of granting full certificates as a form of graduation upon commencement day has stood for a considerable time, and as some of the students now of the University may have, in good faith directed their studies in accordance with this custom, it might work an unfairness to such to have the custom summarily abolished. Your committee believes that the custom should be terminated as soon as it may be done without working injustice.

Your committee therefore recommends,

1. That the form of graduating the students of the University of Illinois, by granting so-called "Full Certificates," terminate with the commencement of 1891, and that no such form of graduation be permited after that time.

2. That the subjects and standings engrossed upon any certificate be restricted to those pursued by the student during his residence at the University.

3. That the record of military studies be not counted as part of the thirty-six studies for which full certificates may be given up to the time fixed above for their final discontinuance.

As the question of receiving credits from other institutions of collegiate grade, as a basis of advanced standing in the University is closely germane to those discussed in this report, your committee has considered the same and offers these opinions:

The customs of most first-class institutions permit such admission to advanced standing. The claim of the student for such admission should be made by him, and be considered by the Faculty, to be allowed or rejected as that body may determine, when the student is admitted to membership in the University, or as soon after as may be practicable. Admission to advanced standing may be allowed, if the Faculty shall find, by examination or otherwise, as shall be deemed expedient, that the work done by the student is a fair equivalent for that usually done in the University in the subject or subjects under consideration. The standings in such subjects so accepted by the Faculty may be taken as part of the record on which the degree may subsequently be given, provided that at least the work of one full year must have been done at the University of Illinois. All of which is respectfully submitted.

CHAS. BENNETT.
ALEX MCLEAN.
F. M. MCKAY.
S. H. PEABODY.

The report was adopted upon motion of Mr. McLean.

Upon motion of Mr. McLean the following appropriations were made for the State Laboratory of Natural History for the quarter ending June 30, 1889:

For the field work and the office incidental expenses	$250 00
For the improvement of the library	250 00
For the pay of assistants	750 00
For the publication of bulletins	75 00

On motion of Mr. McLean there was assigned

From state appropria ion for buildings and grounds—	
For repairs of walks and drives	$100 00
For care of lawn, etc., to July 1st	200 00

On motion of Mr. Bennett there was assigned

From state appropriation for cabinets—	
For cases in natu al history museum	$45 00
For labor, mounting fossils, and for tablets	45 00
For current expenses of zoölogical laboratory	60 00
For earthquake model	24 30

On motion of Mr. Bullard there was assigned

From state appropriation for apparatus and material—	
For additional desks for architectural drawing	$30 00
From current funds—	
For carpet for reception room	75 00

On motion of Mr. Haskell, the Regent was given authority to obtain bids and contract for chemical supplies on University account to the amount of six hundred and fifty dollars.

On motion of Mr. McLean, he was also given authority to print five thousand copies of the University catalogue at an expense of not to exceed three hundred and fifty dollars, to be paid from current funds.

And on motion of Mr. Bennett, he was authorized to spend from the current funds not to exceed two hundred dollars for commencement expenses.

The general appropriations for the next six months, as asked for by the Business Agent, were then made on motion of Mr. Bennett, as follows:

Board expense	$300 00
Salaries for instruction	19,835 66
Salaries for services	1,400 00
Buildings and grounds	50 00
Fuel and lights	1,000 00
Stationery and printing, catalogues, etc	700 00
Library and apparatus	50 00
Incidental expenses	200 00
Mech nical department	200 00
Archi ectural department	200 00
Agricultural "	200 00
Horticultural "	200 00
Mi itary "	50 00
Laboratories	200 00
Water su ply	200 00
Furniture and fixtures	50 00
Total amount appropriated	$24,835 66

The Board adjourned to meet at the University parlor, in Urbana, at 9 o'clock, a. m. the next day.

Second Day's Session.

The Board met Wednesday, March 13, 1889, pursuant to adjournment, the same members being present as on the preceding day.

The Regent presented the following petition, with the state-

ment that the Faculty, to whom it was addressed, respectfully referred it to the Board of Trustees:

To the Faculty.

We, the young ladies of the University of Illinois, respectfully solicit the use of a room for a gymnasium and an instructor in calisthenics.
[Signed by forty-seven young ladies, students of the University.]

On motion of Mr. McKay, the petition was referred to the Committee on Buildings and Grounds with instructions to consult with the Faculty in relation to the matter and report at the next meeting.

The further appropriation of Experiment Station funds for the current quarter, as asked by the Board of Direction of the Station, and shown in exhibit D accompanying its report, was made on motion of Mr. Haskell.

On motion of Mr. McLean, an appropriation of Station funds was made for the quarter ending June 30, 1889, according to exhibit C of the report from the Station.

On motion of Mr. Bennett, authority was given the Board of Direction to repeat or continue experiments already authorized, as it should deem best, and to undertake the additional experiments detailed in its report.

The Board of Direction was, on motion of Mr. Bennett, authorized to act in its discretion with regard to the *American Agriculturist's* Prize Crop Competition.

The request of the Board of Direction for lands to be used in its operations was granted on motion of Mr. McLean.

The Board of Direction was also authorized to contract for chemical apparatus and supplies for next year to the amount of two hundred and fifty dollars.

The Trustees then took a recess of half an hour, so that they might attend the chapel services.

After the recess, on motion of Mr. Bennett, Professor Burrill was appointed horticulturist and botanist of the Experiment Station for one year from April 1, 1889, and Professor Morrow, agriculturist for the same term; and it was ordered that each should receive a salary of fifty dollars a month for services so rendered, and that, while in receipt of such compensation, his pay as a University professor should be at the rate of seventeen hundred dollars per annum.

Appointments of Station assistants for one year from April 1, 1889, were made as follows:

On motion of Mr. Bennett,

Thomas J. Hunt, assistant agriculturist, salary..... $1,500 00

On motion of Mr. Haskell,

George W. McCluer, assistant horticulturist, salary... 1,200 00

On motion of Mr. Bennett,

Albert G. Manns, first assistant chemist, salary.....$ 1,200 00

On motion of Mr. Haskell,

Harry S. Grindley, second assistant chemist, salary.. 720 00

On motion of Mr. Bennett, W. L. Pillsbury was appointed Experiment Station secretary for one year from April 1, 1889, at a salary of two thousand dollars.

The Board of Direction of the Agricultural Experiment Station was constituted as follows for the ensuing year:

E. E. Chester, Champaign, representative of the State Board of Agriculture.

Henry M. Dunlap, Savoy, representative of the Illinois State Horticultural Society.

H. B. Gurler, DeKalb, representative of the Illinois State Dairymen's Association.

Dr. S. H. Peabody and Professors Burrill and Morrow, from the Faculty of the University, and Messrs. Cobb, Bennett and Haskell from the Board of Trustees.

Messrs. Chester, Dunlap, and Gurler were nominated to be members of the Board of Direction by the Societies which they represent respectively.

On motion of Mr. McKay, Dr. Peabody was made President of the Board of Direction.

On motion of Mr. Bennett, the Executive Committee of the Board of Direction of this year, Messrs. Peabody, Cobb, and Chester, was continued for next year.

On motion of Mr. McKay, Mr. McLean was chosen President of the Board of Trustees to serve one year.

On motion of Mr. Haskell, Mr. John W. Bunn was re-elected Treasurer to serve two years. He was directed to execute and deliver to the Executive Committee a satisfactory bond.

The President of the Board was instructed to make an examination of the bonds and other securities held by the Treasurer as an officer of the Board, and to report thereon at the June meeting.

Messrs. Cobb and Bennett were chosen to be two members for the ensuing year of the Executive Committee of which the President of the Board is by law a member and the chairman.

Dr. Selim H. Peabody, was elected Regent of the University for two years, at a salary of four thousand dollars per annum.

W. L. Pillsbury was elected Corresponding Secretary and Recording Secretary of the Board of Trustees for one year.

The following resolution presented by Mr. Bennett was adopted:

Resolved, That the Treasurer of the Board of Trustees of the University of Illinois is hereby authorized to receive and receipt for all moneys and

to endorse all orders, drafts and checks due and payable to the said Board of Trustees or to the said University of Illinois, and especially all drafts drawn by the Treasurer of the United States payable to said Board of Trustees or to said University of Illinois on account of the Agricultural Experiment Station of the said University.

The bill of Geo. M. Brinkerhoff for $674.10, premium on ten thousand dollars of six per cent. bonds sold the Treasurer for the endowment fund, was ordered paid from current funds on motion of Mr. Bullard. Paying this premium made the bonds equivalent to five per cent. bonds at par.

The following reports were received for record:

To the Board of Trustees of the University of Illinois.

We, your Auditing Committee, have examined the Business Agent's report and the vouchers accompanying the same on which University warrants have been drawn, Nos. 176 to 400 inclusive, and find them correct. We have also examined the vouchers on which Experiment Station warrants, Nos. 91 to 95, and 242 to 326 inclusive, have been drawn and find them correct as reported.

F. M. McKAY,
S. A. BULLARD,
Alex. McLEAN,
} Auditing Committee.

To the Board of Trustees of the University of Illinois.

The undersigned, your Finance Committee, would respectfully report that we have examined the report of J. W. Bunn, Treasurer of the University, and find that the receipts from all sources have amounted to the sum of $35,378.81; and the disbursements to $18,373.49, leaving a balance on hand of $17,105.32. Details accompanying the report verify the above statement.

ALEX. McLEAN
CHAS. BENNETT,
EMORY COBB,
} Finance Committee.

Professor Morrow's request for leave of absence for the summer vacation was granted on motion of Mr. Bullard.

Mr. Bennett moved that for the ensuing year the standing committees of the Board be as follows: On Farms, on Buildings and Grounds, on Finance (to include Auditing), on Instruction, and on Publications, and the motion was adopted.

The President, Mr. McLean, announced the committees as follows:

Farms—Shawhan, Cobb, Haskell.
Buildings and Grounds—Bullard, Shawhan, Harker.
Finance—McKay, Millard, Bullard.
Instruction—Bennett, Cobb, Millard.
Publications—President, Regent, Corresponding Secretary.

On motion of Mr. Bullard, the bill of twenty-five dollars of the Association of American Agricultural Colleges and Experiment Stations against the University, was ordered paid from current funds; and a bill for the same amount against the Experiment Station was ordered paid from the Station funds.

The Board adjourned.

W. L. PILLSBURY,
Secretary.

EMORY COBB,
President, *pro tempore*.

MEETING OF JUNE 11, 1889.

The Board of Trustees of the University of Illinois met in the University parlor, in Urbana, at 3:30 o'clock p. m., June 11, 1889.

The members present were Messrs. Bennett, Bullard, Cobb, Harker, McKay, McLean, and Shawhan; absent Governor Fifer, Superintendent Edwards, President Haskell, and Messrs. Clemens and Millard. A letter received by the Secretary from Mr. Haskell stated that he was unable to attend this meeting of the Board.

The minutes of the last meeting were approved.

The Regent's report was then read.

REGENT'S REPORT.

To the Trustees of the University of Illinois.

GENTLEMEN: The season of the annual commencement is at hand. The graduating class numbers twenty-seven, with two candidates for the Master's Degree. Two persons only have been recommended to the Governor for commissions in the state militia, as the reward for faithful service in the battalion. The reasons for this are, first, that the junior military class of last year was very small, so that officers had to be drawn from the class below, of persons not yet ready to graduate; second, that of the class some had so far anticipated their work as to graduate last year. No person eligible to this distinction from the present class has been prevented from receiving it.

The lists for graduation are as follows:

LISTS FOR GRADUATION.

The Faculty respectfully recommends that degrees be conferred and certificates be awarded to the persons whose names are set forth in the following lists:

College of Agriculture. Degree of B. S.

Chas. A. Bopes.

College of Engineering. Degree of B. S.

School of Mechanical Engineering.

Robert B. McConney. John V. E. Schaefer.

Philip Steele.

School of Civil Engineering.

Horace Dunaway.

School of Architecture.

Rolla W. Evans. C. Almon Lewis.

College of Natural Science. Degree of B. S.

School of Natural History.

Albert Carver. Lewis S. Daugherty.

Luther S. Ross.

College of Literature and Science.

School of English and Modern Languages. Degree of B. L.

Frederick M. Bennett. David R. Kinder.
C. Wesley Briggs. James R. Lewis.
Blanche A. Church. Leanah J. Paine.
Amy Coffeen. Oliver S. Moles.
Harry F. Kimball. Nathan A. Weston.

Margaret Weston.

School of Ancient Languages. Degree of B. A.

Myrtle E. Sparks.

The following are recommended for the degree of Mechanical Engineer in the school of Mechanical Engineering.

Abia J. Sharp, Class of 1882.

F. E. Herdman, Class of 1884.

Certificates for course of thirty-six studies.

Cleaves Bennett. David R. Kinkead.
Lilly O. Bronson. Edward F. Ligare.

Herman L. Weis.

The following have been recommended to the Governor for commissions in the Illinois National Guard.

Albert Carver. James L. Lewis.

THE STATE APPROPRIATIONS.

During the session of the General Assembly lately closed, the following list of appropriations has been passed, which, with the other items of income within the control of the Board, will furnish the means for carrying forward the work of the University for the next two college years.

The appropriations are:

Per annum—	
For taxes on lands in Nebraska and Minnesota	$1,700 00
For repairs and improvements of buildings and grounds	2,500 00
For the machine shops	1,500 00
For apparatus and material	1,500 00
For books and publications	1,000 00
For collections of natural history	500 00
For current expenses of instruction	20,000 00
Not per annum—	
For new boiler in machine shop	1,250 00
For building new drill hall	10,000 00

NEW DRILL HALL.

The chief reason which prevailed upon the legislature to make appropriation for building a drill hall, was to give the mechanical departments a room for needed expansion in the old mechanical building. The details for the re-arrangement of that building need not now be presented, but the general plan should be as follows: The mechanical department should

take the upper floor, or so much as may be needed, beginning at the west end. At present I am not prepared to recommend any plan of dividing up the room by partitions.

On the first floor I would remove the partition between the pattern shop and the testing laboratory, and give the space of the pattern shop for the steam testing laboratory, and such other forms of mechanical laboratory work as may be developed. I would take out the boiler room, remove the brick partition on the west and north sides, and raise the floor to the level of the rest of the apartment to which it will be added. Into that department I would remove the blacksmith's shop, giving to it somewhat more room, as well as to the foundry. The foundry could take the chimney now used by the boiler.

The new boiler I would put into the present blacksmith's shop, which is admirably suited for the purpose. The iron chimney now used by the blacksmith's shop, will serve for the boiler. This will save the necessity for putting the new boiler into a small house to be built for it in the yard, as I supposed would have to be done before it was known that these changes could be made.

The changes suggested involve comparatively small expense. The largest item will be the hanging of a new main shaft in the upper story, and the moving of the tools and the over-head gear, most of which will be just as good there as where it now is. I would not make any of these changes during the present vacation, but would proceed in this order: I would first build the new drill hall and get it ready for use as soon as may be practicable. It may be some time in the fall before it is finished. When the military department has vacated the present drill hall, the work of preparing it for its new use may go forward. Meanwhile the year's work in blacksmithing will mostly have been finished in the present shop, and the new boiler may be set there, say in the latter part of the fall term or in the Christmas vacation, or even afterwards. We can utilize the work for the advanced classes, as a practical lesson in watching and aiding the fitting up of such a shop. It may take the better part of the year before these changes can be completed, and some, indeed, may have to wait over for want of funds.

THE SITE OF THE DRILL HALL.

After much reflection and examination of grounds, I am prepared to recommend that the new building be placed in the old campus, or parade ground, near the southeast corner. I would have the length of the building, lie east and west, fronting the south. The center of this front to be opposite the center of the main building, looking into the north end of the avenue which leads from that building through the park and the arboretum. I would put the front, say 20 or 25 feet from the south line of the campus—no more than would be needful to give room for an audience to move in case the hall should be emptied of people on an occasion of commencement and the like. Proper exits should be to the street at side and end and into the campus.

In this place, it will be easy to convey steam thither from the boilers in the present blacksmith's shop, if that should seem desirable. I have not found any other site which seems in all respects so desirable, or free from objections.

THE PLAN OF THE DRILL HALL.

I present sketches of fronts and ends by Professor Ricker. The hope has been to secure a large area, not less than 100x150 ft. from outside to outside. The walls to be of brick, 16 feet high, with large windows placed high. The roof to show a steep, or mansard side, with a deck of low slope covering the remaining area. The most important item is the roof, which should be so trussed as to need no interior support. A design has been made for a steel-trussed framework which, it is thought, at the present low prices of metal, may be had, giving strength, lightness and symmetry.

The plan involves partitioning off a narrow room along one side, with an armorer's room in the center, and places to put the rifles in rooms where they can be under lock and key. But these can be omitted at present. The effort now should be simply to get up the walls, cover with a substantial roof, and lay a good solid, floor. Such details as we have been able to prepare will be laid before you.

OTHER IMPROVEMENTS.

I desire to call attention to the needs of the school of architecture. Professor Ricker now occupies for lecture and drawing rooms two apartments on the third floor in the northeast corner of the main building. The growth of the classes has been such as to fill these rooms too full for convenience, and for best results. There is now no department in the University which so imperatively needs relief.

I beg leave to present this solution of the difficulty, and ask your approval thereof:

The upper mansard of the east wing is one large room about 58 by 78 feet. It is now used by the classes in projection drawing, but so large a room is not necessary for that purpose; and if the room were filled, the class would be much too large for one teacher to instruct.

I would divide the room into three; first cut off from the south end about 30 feet for the use of the projection drawing; cut off a suitable passage on the west side leading to that room; then divide the remainder into two rooms which would each be about 25x52 feet in area. These rooms I would connect by large sliding doors, and give them to Professor Ricker for his classes. They would afford him nearly twice the floor space he now has; would make the work in them much more controllable, and give him great and needed relief.

To make the light satisfactory, it would be necessary to put in each room a sky-light. But this is no objection; the best eastern institutions have their drawing-rooms so constructed by preference. I have had the cost of this improvement carefully estimated, and find that it may be completed for the sum of $430—which may be taken from the state appropriations for buildings and grounds.

THE CHEMICAL BUILDING

Should have a thorough renovating in the interior. Nothing has been done here in the way of painting and calcimining since the house was erected in 1878. The wood-work in first and second stories, and in halls of basement and mansard, should be well painted with two coats, and the walls and ceilings calcimined. For this purpose I ask an appropriation from state funds, buildings and grounds, of $400.

THE NORTH CAMPUS.

The fence about this plat of land has been a subject of much question already. The nature of the problem has changed since the two adjacent cities have passed ordinances restricting the freedom of cattle. This tract is 1,260 feet long by 450 feet wide. It lies across and closes three streets. If all fencing is removed it will be very difficult, if not impossible, to prevent teams and carriages from crossing it, particularly as it lies in its present position between the two cities. I wish to propose as the cheapest and best solution that I can devise, other than the absolute removal of all fencing and the throwing the tract open to the public, that a low fence be made, thus: place a single line of, say 1½-inch iron pipe, at 18 inches from the ground, supported by 6x6 inch oak posts, cut four feet long, and projecting out of the ground, say 20 inches. I think that the whole will cost, say 220 rods at $2 a rod, or $440. This fence need not surround the drill hall, and the saving will be enough to pay for taking

up the present fence, 1,400 feet of which is nearly new and could be serviceable elsewhere. This also would come from the state fund for buildings and grounds.

The three items named already are—

For partitions in drawing-room	$430 00
For renovating chemical building	400 00
For fence about north campus	440 00
	$1,270 00
From the same fund—	
For cleaning and minor repairs, vacation	300 00
	$1,570 00
This will leave for other purposes and contingencies during the year	930 00
Total appropriation	$2,500 00

STATE APPROPRIATIONS OF 1888-9.

The balance on account of buildings and grounds—$203—is needed for care of lawn at main building, and should be so assigned.

The balance on account of books and publications is in the hands of the committee appointed for the purpose. Authority is asked to use $100 for binding. Estimates for this purpose have been obtained and will be presented.

Authority is asked for expending the balance remaining on account of cabinets, $178.58, for filling up the collection of the birds of Illinois.

Professor Forbes asks for means to buy five microscopes for the department of zoölogy, at cost of $45 each, and a microtome at cost of $40. I recommend that the balance, $185.97, of appropriation for apparatus and material for the year now closing be used for this purpose, and that $90 be appropriated from the similar fund of next year.

A balance remains from the fund for metallurgical laboratory of $1,415.69. This has been reserved for building furnaces for metallurgical processes, in the hope that the legislature would appropriate funds to remove the heating boiler from the chemical building into the boiler house at the main building, and give the room where the boiler now stands for the furnaces. This hope is disappointed, and the committee having the matter in charge is not prepared to recommend any farther steps, before the next meeting of the board.

At the March meeting authority was given to purchase chemical material and apparatus for importation. Bids were obtained and the purchase awarded to Eimer and Amend, of New York city. The goods will arrive in August, and an appropriation of $625 from state fund for apparatus and material is asked to be used in payment therefor.

THE FACULTY.

The state appropriation for the next year will permit some needed advances of salary, and it is hoped that some necessary additional force may be secured.

I had hoped that the time would be opportune for the appointment of a professor of physics, but the needs of the mining department do not indicate that that work should be taken out of present hands.

The most serious need is now for assistance in the school of architecture. The needs of that school have already been discussed, when speaking of the apartments occupied and needed. Professor Ricker has been industrious and uncomplaining. His school is one of the first in the land. He is overworked, and should have aid.

I recommend that an assistant in architecture be appointed, and that such other drawing as may be germane be added to fill up this work. This will allow longer time for instruction in mathematics, which the increasing number of engineers requires.

I recommend, also, that authority be given for the appointment of an assistant librarian. The growth of the library, and the large number of students that frequent the library as a reading room, make it desirable that such an assistant be appointed, for work in the library under the direction of the librarian, and to maintain proper order in this department. Most of the work, hitherto, done here by students, and that very inefficiently, should be discontinued.

Authority was given last year for the employment of an assistant in the machine shop, and such employment was made. When the term opened, it was found that the number of students in that shop was not so great as had been anticipated, and that it was possible to get along without this aid. By mutual agreement with the person engaged the contract was cancelled. Authority is again asked for the employment of such help, if it should be found necessary.

A list of the Faculty as engaged last year, with salaries, etc., is herewith furnished.

A communication from Professor Forbes is herewith presented.

It concerns particularly the construction of a new building, as authorized by the legislature, to be used in conducting entomological research. I have examined Professor Forbes's suggestions and concur in them, and recommend that leave be given to place the building in the rear of the plant house, and that authority be given for its construction, within the limits of the appropriation.

THE STATE LABORATORY OF NATURAL HISTORY.

To the Trustees of the University.

GENTLEMEN: The full report which I rendered to you for publication last October will make unnecessary any detailed account of our work at the present time, and I will limit this report to matters requiring attention and action.

The appropriations made to the State Laboratory of Natural History by the legislature at its recent session are the same in amount as those made two years ago, but differ in distribution,—a sum of $1,000 appropriated to the building of a new entomological laboratory and breeding room having been taken from the allowance to the library, which was reduced one-half.

An advance of $1,000 per annum asked on the allowance for the pay of assistants, was refused in committee. It will nevertheless be necessary to increase the salaries of some of my force, and some changes are impending which have prevented my making definite arrangments with all. The salary list, so far as I am now prepared to make recommendations, is as follows:

Jonn Marten, field entomologist	$900 per annum
Charles A. Hart, office entomologist	600 per annum
Mary J. Snyder, amanuensis	600 per annum

For the remaining assistants, I shall have to ask authority to make provisional arrangements, to be reported to you hereafter; as it is not now possible to plan even the distribution of the work in full.

It is very important to us that the zoölogical work of the natural history survey should have greater and more continuous attention during the next two years than it has lately received; and more of the appropriation for assistance should consequently be turned in this direction, if suitable help can be found. The botanical work now most needed is closely related to our entomological and zoölogical operations, and whatever we find ourselves able to set aside for botany, I shall wish to apply in this direction.

I have not yet secured detailed estimates for the entomological laboratory, and have at present only to ask that a place be assigned for it within convenient reach of my office. It will be essentially a small conservatory—about forty by sixteen feet—the walls of wood and the roof of glass, with an office or work-room at the north end. A place near the University greenhouse would be satisfactory.

Respectfully submitted,

S. A. FORBES, Director of Laboratory.

I present the quarterly report of Professor Morrow on the condition of the farm:

FARM REPORT.

UNIVERSITY, CHAMPAIGN, ILL., May 29, 1889.

Dr. S. H. Peabody, Regent.

SIR: The receipts of the farms for the three months ending June 1st, have been $669.89; the expenditures, $670.76. The work is well advanced for the season, and it is believed the farms in general, the stock and the crops are in rather better than the usual condition.

F. D. Gardner, a student, has been engaged to work on the farm as foreman during my absence. He has been employed during two summers by us and has also worked for the Experiment Station.

Respectfully submitted,

G. E. MORROW, Professor of Agriculture.

I present also the recommendations of the Board of Direction of the Experiment Station, with estimates, and ask your approval.

AGRICULTURAL EXPERIMENT STATION.

The Board of Direction of the Agricultural Experiment Station asks authority of the Trustees of the University to undertake the following experiments and investigations:

1. An experiment to test the vitality of blue grass, red top, and timothy seeds.

2. An experiment to test the value of "second-cropping" by planting the experimental wheat plats, after the wheat has been harvested, part with corn and part with millet.

3. An experiment to determine the effect upon the corn of sowing rye in it at the last ordinary plowing, and at a later special seeding.

4. An experiment to determine the best method of eradicating the Canada thistle—the experiment to be tried at Mattoon.

5. An investigation of the "slobbers" in horses.

6. A limited series of digestion experiments with poultry.

The Board of Direction asks authority to use for such purposes as may best subserve the interests of the Station, any unexpended balances of the Station funds appropriated for this fiscal year; and it also asks that the Trustees appropriate and authorize it to expend during the first quarter of the fiscal year, beginning July 1, 1889, Station funds in amounts and for the purposes named below:

Buildings and repairs	$25 00
Board xpense	40 00
Books and publications	50 00
Botanical apparatus	100 00
Bulletins	350 00
Chemical apparatus	300 00
Fuel and lights	50 00
Printing, stationery and postage	25 00
Salaries	1,960 00
Tools	60 00
Wages and teams	950 00
Wheat and corn experiments [at Flora]	25 00
Dairying experiment [at DeKalb]	100 00
Biology of ensilage	10 00
Eradication of Canada thistles [at Mattoon]	15 00
Total	$4,060 00

Mr. F. G. Jaques, of Urbana, has asked my attention to the division fence between his land and the north line of the Griggs farm. Mr. Jaques has rebuilt one-half the fence, and asks the University to build the other half, 80 rods. I have conferred with Professor Morrow on the matter, and ask leave to make the repair, at a cost not to exceed $30, to be charged against the income of the Griggs farm.

I have to report that 5,000 copies of the annual catalogue have been issued, making a pamphlet of 118 pages. Bids were obtained—and are presented herewith. The work was done by H. J. Dunlap, of Champaign.

I ask that authority be given to expend six hundred dollars for the summer advertising.

The Faculty directs me to ask that leave be given the Regent to inspect the Chicago Manual Training School and that, if it be found satisfactory, it be placed upon the accredited list.

All of which is respectfully submitted,

SELIM H. PEABODY, Regent.

On motion of Mr. Cobb, all matters in the Regent's report relating to the location, plans, and construction of the new drill hall, the entomological laboratory and breeding room, and the proposed changes in the mechanical building and in the main building, were referred to the Committee on Buildings and Grounds, to which was added, for the purposes of this motion, the President of the Board and the Regent. The committee was given power to proceed with the erection of the buildings named, but was instructed not to make expenditures or incur liabilities in excess of the appropriations made by the legislature for said buildings; viz., one thousand dollars for the entomological building, and ten thousand dollars for the drill hall. The committee was also empowered to make the changes suggested in the drawing room of the main building, expending therefor not to exceed $430 from the state appropriations for buildings and grounds.

On motion of Mr. Bennett, the Board of Trustees authorized the conferring degrees and granting certificates as recommended by the Faculty of the University, and approved the recommendations for commissions. [For lists, see Regent's report.]

The committee on Nebraska lands reported as follows:

REPORT OF THE COMMITTEE ON THE SALE OF THE NEBRASKA LANDS.

The lands in the State of Nebraska, belonging to the University, having been sold, the committee which has had the matter in charge begs leave to make the following report as a full account of the transaction, and to preface the same with a brief statement of the steps taken by the Board leading to the appointment and instruction of this committee.

It was known that the lands of the University lying in Gage county, Nebraska, were rising in value because of the influx of immigration, but no direct overtures had been made by persons desirous of buying, until a meeting of the Executive Committee of the Board, held October 27, 1882. At that meeting Major Pearman, of Nebraska, appeared and made an informal bid of ten dollars an acre for all the University lands in Gage county. The Trustees thought the offer a good one, but did not deem it advisable to accept it without bringing forward the business in a more formal and public way.

Accordingly the Regent was directed to advertise for bids for the lands, the bids to be received on or before the 12th of December ensuing, which was the time of the next regular meeting of the Trustees. The advertisement was made, bids were presented, and they were opened at the time appointed in the presence of the Board and of the bidders. Ten bids were received, varying from $4.14 to $6.43 per acre. It was the opinion of the Trustees that none of the offers approximated the true value of the property, and, in accordance with a privilege reserved in the advertisement, all the bids were rejected.

In June, 1883, a committee consisting of Messrs. McLean, Bennett and Follansbee, and the Regent, was appointed to examine the lands and report. Careful examinations by personal inspection were made by Mr. Bennett and by the Regent, and at the December meeting they made a report. After full discussion, the following resolutions were adopted, and Mr. Bennett and the Regent were appointed a committee to carry the resolutions into effect:

Resolved, That a committee of two be appointed to appraise and fix minimum values on the lands in Gage county, Nebraska, belonging to the Illinois Industrial University, for the purpose of offering them for sale. That the lands so valued be offered in amounts not less than regularly subdivided quarter sections. That the buyer shall pay in cash, at the time of purchase, not less than one-fourth of the price of his purchase, and the balance in deferred payments at such times and in such amounts as the committee shall deem most advantageous to make sale of such lands. That such deferred payments shall draw interest at eight (8) per cent. per annum, payable annually, with penalties in interest on such interest payments after due of not less than eight per cent. per annum until paid; and that the purchaser shall pay all taxes which may be levied upon the lands so sold, after the day of sale.

Resolved, That when prices are fixed, as aforesaid, said committee shall adopt such measures for advertising said lands, and receiving bids thereon at or above the prices fixed, as shall seem best adapted to make speedy sales. That said committee may employ such aid as they may deem necessary to make such sales, incurring no unnecessary expense and paying no commissions on such sales to agents or other persons, unless with the approval of the Executive committee. That in the event of competition for any one or more quarter sections by bids at or in excess of the minimum price of any such lands, said committee shall submit such bids, together with the terms and securities offered, to the Executive Committee, which shall make the award.

Resolved, That the sales herein provided for shall be made either by contract, with covenants for quit-claim deeds to purchasers upon completion of all deferred payments with interest thereon, or such deferred payments may be secured by mortgage or trust deeds. But such committee

shall adopt, in making such sales, a method of security which shall furnish the safest and simplest security to the University, using such forms and instruments as shall be deemed best for perfecting such securities.

Resolved, That all of said lands shall be offered in bulk to any purchaser at a price not less than twelve dollars and fifty cents ($12.50) per acre. And at any time after portions of said lands have been sold, the remaining lands not sold may be sold in bulk at the minimum price of twelve dollars and fifty cents. In case such sale in bulk is made, not less than one-fourth of the price shall be paid in cash, and the deferred payments shall be for such time and on such terms, interest to be paid at not less than eight per cent. per annum, as the Executive Committee shall determine, subject to the farther approval of the Board of Trustees.

Resolved, That when any lands belonging to the Illinois Industrial University, and situated in Gage county, Nebraska, shall be sold, the President of the Board of Trustees of said University shall be, and he is hereby authorized to execute a quit-claim deed for such land or lands in the name of said Board of Trustees; and the Secretary of said Board shall atttest the same and shall affix the seal of the University thereto. Such deed and the execution thereof shall conform to the laws of the State of Nebraska, provided that the execution thereof shall not conflict with the laws of the State of Illinois and the resolutions of this Board as to the authority of this Board.

On appraisal, prices were fixed on each quarter section, varying from ten dollars to fifteen dollars per acre. After advertisement, sales began on the 4th day of March, 1884. Competition was made on a few pieces. After that date sales were made whenever any person should offer the prices and terms fixed by the resolutions of the Trustees.

The following statement gives the names of purchasers, descriptions of tracts, prices offered, moneys paid or yet due for principal or for interest, and the totals under the several heads. [See pp. 69 and 70.]

The committee adopted this method of sale: Each intending purchaser sends to the committee a proposition in writing stating the tract which he desires and the price and terms at which he is willing to buy. Ten per cent. of the purchase money is deposited and a certificate of deposit accompanies the application, this sum to be forfeited in case the application is accepted and the applicant fails to complete his purchase. Fifteen per cent. more is paid on completion of the purchase within 30 days from the acceptance of the proposition by the committee. The form of sale adopted is by contract, given by the University, for a deed to be made when the payments shall be completed according to the terms of the contract. On twelve contracts all payments have been made and deeds given. On all contracts payments have been made with remarkable punctuality, and on none has it been necessary to resort to any legal process to enforce payment or to vacate contracts.

All sales have been made in the office of the Regent. The committee found it covenient to have a correspondent at Beatrice, in Gage county, and were fortunate in securing the services of Mr. Charles E. Baker, of the firm of Burnham, Trevett and Mattis, of Beatrice and Champaign. Mr. Baker's services have been exceedingly useful, and have been rendered for a very slight compensation. The committee desires to express its high appreciation of the assistance received from this gentleman, and from the firm of which he is a member.

When the lands were inspected several persons were found to be trespassers, engaged in herding considerable numbers of cattle and sheep upon the property of the University. By the exercise of a little patience, settlements were made with all these persons, quietly and amicably, some money was collected for use already made, and some tracts were rented by the season for subsequent use. On a note taken for one of these rents $39.29 remains due, which with $928.25 collected, makes the revenue from this source $960.54.

The expenses incurred by the committee in the sale of the lands are:

For inspection by the committee	$124 35	
For services of collector	623 54	
For printing and advertising	190 45	
		$938 34
The acres of land sold are	9,340.09	
Total price		121,640 76
Paid in	$62,577 24	
To be paid	59,063 52	
Interest paid		21,871 37
Interest to be paid		12,260 61
Total proceeds		$155,772 74

All which is respectfully submitted.

CHARLES BENNETT,
S. H. PEABODY,
Committee.

Abstract of Sales of Lands.

No.	Name.	Tract.	Acres.	Price.	Paid.	Due.	Int. Paid.	Int. Due.	
1	Albert Hubka	NW 12, 3, 8...	160	$2,408 00	$1,258 00	$1,150 00	$490 57	$96 00	
2	J. T. Applegate	NW 4, 2, 8...	146.60	2,242 98	2,242 98		369 11		Deed given ..
3	J. T. Applegate, assignee J. H. Cummings	NE 30, 3, 8...	160	2,448 00	2,448 00		413 99		Deed given ..
4	J. T. Applegate, assignee Ab'm Ault	SW 30, 3, 8...	153.65	2,350 85	2,350 85		397 22		Deed given ..
5	S. D. Miller and Daniel Bashor	NW 31, 3, 8...	153.33	2,300 00	1,150 00	1,150 00	586 50	184 00	
6	T. A. Woodward, assignee Jas. G. Ladd	SW 12, 3, 8...	160	2,000 00	1,500 00	500 00	380 03	60 00	
7	August Zahlten	SW 24, 3, 8...	160	2,000 00	2,000 00		309 00		Deed given ..
8	Chas. E. Baker	SW 15, 3, 8...	160	2,240 00	2,240 00		79 74		Deed given ..
9	C. M. Dawson	SW 35, 3, 7...	160	2,400 00	1,900 00	500 00	574 00	40 00	
10	J. W. Herbert	SE 35, 3, 7...	160	2,400 00	900 00	1,500 00	638 00	360 00	
11	D. Richardson	NW 24, 3, 8...	160	2,000 00	500 00	1,500 00	530 00	240 00	
12	H. C. Kludas	SE 24, 3, 8...	160	2,000 00	500 00	1,500 00	414 42	360 00	
13	H. T. Willis and A. W. Mills	NW 27, 3, 8...	160	2,000 00	500 00	1,500 00	525 20	220 00	
14	W. T. Maxwell, assignee P. A. Moore	SW 31, 3, 8...	153.11	2,296 65	1,096 65	1,200 00	733 00	288 00	
15	W. L. Collins	NE 31, 3, 8...	160	2,000 00	500 00	1,500 00	581 33	240 00	
16	R. L. Gumaer	NW 11, 2, 8...	160	1,600 00	1,600 00		270 66		Deed given ..
17	R. L. Gumaer	NW 10, 2, 8...	160	2,000 00	1,700 00	300 00	379 33	24 00	
18	S. G. Bryant, assignee H. Null	SE 2, 2, 8...	160	1,600 00	400 00	1,200 00	434 86		
19	Lawrence Larsen	NW 35, 5, 8...	160	2,400 00	900 00	1,500 00	618 00	360 00	
20	Ch. Andersen	SW 35, 5, 8...	160	2,400 00	900 00	1,500 00	618 00	360 00	
21	Dennis Magner	SE 6, 2, 8...	160	2,000 00	1,100 00	900 00	442 32	72 00	
22	H. H. Snyder and J. T. Martin	SW 26, 3, 8...	160	2,000 00	1,600 00	400 00	428 33	32 00	
23	James Lowe	NW 13, 3, 8...	160	2,000 00	500 00	1,500 00	271 26	297 60	
24	John Higgins	SW 5, 2, 8...	160	2,240 00	1,040 00	1,200 00	580 08	192 00	
25	John Higgins	SE 5, 2, 8...	160	2,240 00	1,040 00	1,200 00	580 08	192 00	
26	M. R. O'Brien	NE 6, 2, 8...	151.67	1,895 88	845 88	1,050 00	450 53	112 00	
27	A. L. Wright	SE 14, 3, 8...	160	2,000 00	2,000 00		504 43		Deed given ..
28	A. L. Wright	SW 14, 3, 8...	160	2,000 00	500 00	1,500 00	505 58		
29	S. G. Bryant	NE 11, 2, 8...	160	1,600 00	1,600 00		258 66		Deed given ..
30	J. A. Huston	NE 24, 3, 8...	160	2,000 00	1,000 00	1,000 00	456 53	160 00	
31	J. H. Hanson	NE 35, 5, 8...	160	2,000 00	700 00	1,300 00	467 85	384 00	
32	P. C. O'Brien	NE 5, 2, 8...	147	2,058 00	514 50	1,543 50	403 87	308 05	
33	Christian Hesse	SE 30, 3, 8...	160	2,240 00	980 00	1,260 00	494 60	103 40	
34	Jos. Swoboda and H. J. Swoboda	SE 35, 5, 8...	160	2,000 00	1,000 00	1,000 00	436 00	240 00	
35	John Losey and Wm. Losey	NE 34, 3, 8...	160	2,000 00	800 00	1,200 00	274 00	240 00	
36	E. Fothergill and C. O. Fothergill	SW 27, 3, 8...	160	2,000 00	500 00	1,500 00	445 00	300 00	
37	W. M. Gibler	NE 10, 2, 8...	160	2,000 00	500 00	1,500 00	343 00	600 00	
38	D. H. Gilmore, assignee N. R. Simpson	NW 26, 3, 8...	160	2,000 00	500 00	1,500 00	428 00	384 00	
39	J. E. Blickenstaff	SE 31, 3, 8...	160	2,000 00	500 00	1,500 00	406 45	40 00	
40	Joseph Dezort	NW 34, 3, 8...	160	2,000 00	500 00	1,500 00	400 64	384 00	
41	J. S. Reynolds and A. L. French	SW 36, 2, 8...	160	2,000 00	500 00	1,500 00	395 00	492 00	
42	W. S. Morton and F. L. Marrs	SE 3, 2, 8...	160	2,000 00	500 00	1,500 00	395 00	480 00	
43	Samuel Cox	E½SE 15, 3, 8.	80	1,120 00	280 00	840 60	220 64	96 00	
44	C. E. Baker	W½SE 15, 3, 8.	80	1,120 00	280 00	840 00	220 64	250 40	
45	J. Blevins and R. J. Miller	NW 5, 2, 8...	148.20	2,074 80	518 70	1,556 10	376 25	497 92	

Abstracts of Sales of Lands—Continued.

No.	Name.	Tract.	Acres.	Price.	Paid.	Due.	Int. Paid.	Int. Due.	
46	J. M. Thomas	SW 2, 2, 8...	160	$1,600 00	$400 00	$1,200 00	$72 80	$612 00	.....
47	Matej Hubka	SE 12, 3, 8...	160	2,240 00	560 00	1,680 00	356 13	423 61	.....
48	J. K. Cullen	SE 34, 3, 8...	160	2,240 00	2,240 00	.....	277 70	.....	Deed given ..
49	Vensl Hnizda	SW 34, 3, 8...	160	2,240 00	2,240 00	.....	129 92	.....	Deed given ..
50	B. T. Hnizda	NE 26, 3, 8...	160	2,000 00	1,000 00	1,000 00	304 00	40 00	.....
51	James Skubal and J. W. Hnizda	SE 13, 3, 8...	160	2,000 00	850	1,150 00	312 20	120 00	.....
52	J. W. Hnizda	NE 13, 3, 8...	160	2,000 00	1,400 00	600 00	232 00	72 00	.....
53	E. R. Fogg	SW 13, 3, 8...	160	2,000 00	1,000 00	1,000 00	261 00	40 00	.....
54	B. F. Leiby	NW 6, 2, 8...	151.84	2,125 76	531 44	1,594 32	248 45	384 00	.....
55	L. L. Ruyle	NE 27, 3, 8...	160	1,600 00	1,600 00	.....	87 47	.....	Deed given ..
56	L. L. Ruyle	SE 27, 3, 8...	160	2,000 00	2,000 00	.....	109 33	.....	Deed given ..
57	Reissue of contract No. 20	.....	.....	.....	.....	.....	.....	.....	.....
58	E. Muhlhaussen	NE 3, 2, 8...	149.29	1,866 10	466 50	1,399 60	32 65	663 94	.....
59	Frank Havlina	N½SE 26, 3, 8.	80	1,000 00	400 00	600 00	4 00	144 00	.....
60	James Ha lina	S½SE 26, 3, 8.	80	1,000 00	400 00	600 00	4 00	144 00	.....
61	A. Marquandt	NW 3, 2, 8...	147.91	1,848 88	548 88	1,300 00	.....	706 16	.....
62	R. H. Muhlhausser and W. Muhlhauser	SW 6, 2, 8...	157.49	2,204 86	554 86	1,650 00	.....	885 47	.....
	Total	.....	9,340.09	$121,640 76	$62,577 24	$59,063 52	$21,871 37	$12,260 61	.....

And on motion of Mr. Cobb, the report was approved for record.

Four hundred dollars was appropriated from the state appropriation for buildings and grounds for painting, etc., in the chemical building.

On motion of Mr. Cobb, the Committee on Buildings and Grounds with its two additional members, as above, was instructed to have a fence built around the north campus, the fence to have 6x6 in. posts 8 ft. apart and a single rail of 1½ in. gas pipe, 18 in. high. The cost of the fence, painted, was limited to $500.00, to be paid from the state appropriation for buildings and grounds.

From the same fund the sum of $400.00 was appropriated, on motion of Mr. Cobb, for cleaning and minor repairs.

The balance, $203.00, of the state appropriation for the current year for buildings and grounds was assigned for the care of the lawn.

On motion of Mr. Cobb, $100.00 of the balance of the state appropriation for the current year for books and publications was assigned to pay for binding.

The balance of the state appropriation for cabinets for the current year, $178.58, was appropriated for the purchase of additions to the collection of birds of Illinois.

It was ordered that the cost of the carpet bought for the University parlor be charged to current funds.

The balance of the state appropriation for apparatus and material for the current year, $185.97, and in addition $90.00 from the state appropriation for apparatus and material for next year were assigned for the purchase of five microscopes and a microtome for the zoölogical laboratory.

From the same fund $625 was appropriated, on motion of Mr. Bullard, for the purchase of chemical apparatus.

The Farm Committee and the Regent were authorized to repair the division fence between the Griggs farm and land owned by Mr. F. G. Jaques at an expense of not more than $30.00, to be taken from the income of the Griggs farm.

The Regent was given power to spend a sum not exceeding $600.00 from current funds, for advertising the University.

On motion of Mr. Harker, the Regent's bill of $64.84, traveling expenses, was ordered paid from current funds.

On motion of Mr. Cobb, the following appropriations were made for the State Laboratory of Natural History for next quarter, to be paid from its funds:

For the field work, and the office and incidental expenses	$250 00
For the improvement of the library	125 00
For salaries and assist nce	750 00
For the publicati n of bulletins	75 00
For the illustration of the biennial report of the State Entomologist	250 00
For building an entomological laboratory and breeding room	1,000 00
	$2,450 00

The requests of Professor Forbes, as made in his report above, with reference to the salaries of the employés of the Laboratory of Natural History were granted, on motion of Mr. Bennett; and, by the same motion, he was given authority, as asked, to make further provisional arrangements for assistance in the Laboratory until the next meeting of the Trustees.

The Farm Committee returned the report of Professor Morrow, and the order was made that it be recorded.

On motion of Mr. McKay, the requests of the Board of Direction of the Experiment Station were granted, and Station funds were appropriated as asked.

A communication from Professor Burrill with regard to needed repairs upon the greenhouse was referred to the Committee on Buildings and Grounds, with instructions that the same be investigated and a report thereon made at the next meeting of the Board.

Consent was given that, in accordance with the request of the Faculty, the Regent visit and inspect the Chicago Manual Training School, and, if he find it of satisfactory grade, put it on the list of accredited high schools.

On motion of Mr. Cobb, it was ordered that Mr. Stratton's bill of $25.00 for work done in making photographs for the Paris Exposition be paid from current funds.

The Experiment Station vouchers were presented by the Regent and referred to the Finance Committee.

The Board then adjourned to meet at the Doane House, in Champaign, at 9 o'clock p. m.

Evening Session.

The Board met pursuant to adjournment, the same members being present as in the afternoon.

The President made the following report on bonds held by the Treasurer as part of the endowment fund:

REPORT OF ENDOWMENT FUND.

Champaign, June 11, 1889.

To the Board of Trustees of the University of Illinois.

The undersigned having been instructed by your body at the meeting held March 12, 1889, to make an examination of the bonds and other securities held by the Treasurer of this Board as endowment funds of the University of Illinois, would report that he visited the city of Springfield, and that John W. Bunn, the Treasurer of this Board, handed him bonds of various counties and school districts, amounting to the sum of three hundred and eighteen thousand four hundred dollars ($318,400.00), the same

being payable to the University of Illinois, and representing endowment funds of said University.

Respectfully submitted,

ALEXANDER McLEAN, President.

The report was approved for record.

The Treasurer made the following report which was referred to the Finance Committee:

TREASURER'S REPORT.

JOHN W. BUNN, TREASURER, IN ACCOUNT WITH THE UNIVERSITY OF ILLINOIS, DR.

1889.				
Mar.	12	To balance		$17,105 32
"	12	" interest on land contract No. 47, M. Hubka		37 75
"	30	" amount received on acc't University students' fees	$1,087 50	
"	30	" " " " preparatory year	255 00	
"	30	" " " " buildings and grounds	25 00	
"	30	" " " " rent Griggs farm	58 33	
				1,425 83
April	1	To amount received on acc't Agri'l Experiment Station		333 33
May	1	" interest on Sangamon county school bonds		260 00
"	10	" " " land contract No. 1, A. Hubka	$98 00	
"	10	" " " " " 21, D. Magner	7 00	
"	10	" " " " " 26, H. A. Greenwood, assignee	9 33	
"	10	" " " " " 33, C. Hesse	8 05	
				122 38
May	10	To Agri'l Experiment Station for fuel and lights		40 00
"	11	" amount rec'd for rent of Nebraska lands		114 44
"	31	" " " " g ass from Minnesota lands	$10 00	
"	31	" " " " interest on J. F. Leib's note	718 33	
"	31	" " " " University students' fees	1,498 75	
"	31	" " " " preparatory year	350 00	
"	31	" " " " music fees	139 50	
"	31	" " " " mechani al department	173 79	
"	31	" " " " a chitectu al department	405 33	
"	31	" " " " agricultural department	666 86	
"	31	" " " " horticultural department	131 30	
"	31	" " " " laboratories	271 55	
"	31	" " " " fuel and lights	49 92	
				4,415 33
				$23,854 38
		Cr.		
May	31	By amount paid on account Board expense	$79 91	
"	31	" " " " salaries	10,580 77	
"	31	" " " " buildings and grounds	36 25	
"	31	" " " " fuel and lights	258 90	
"	31	" " " " stationery and printing	453 97	
"	31	" " " " preparatory year	539 99	
"	31	" " " " mechanical department	219 98	
"	31	" " " " architectural department	804 50	
"	31	" " " " agricultural department	689 65	
"	31	" " " " horticultural department	29 39	
"	31	" " " " military department	27 25	
"	31	" " " " laboratories	300 44	
"	31	" " " " library and apparatus	10 00	
"	31	" " " " incidental expense	41 09	
				$14,072 09
May	31	By amount paid on account water supply	$200 00	
"	31	" " " " furniture and fixtures	79 26	
"	31	" " " " premium on bonds	674 10	
"	31	" " " " Experiment Stati n	25 00	
"	31	" " " " music fees	139 50	
				1,117 86
		State Appropriations—		
May	31	By amount paid on account buildings and grounds	$274 84	
"	31	" " " " mechanical and arch. shops	375 00	
"	31	" " " " books and publications	552 34	
"	31	" " " " cabinet	176 82	
"	31	" " " " apparatus and material	228 69	
"	31	" " " " metallurgical laboratory	14 50	
"	31	" " " " State Labora'y of Nat. Hist.	1,025 32	
				2,647 51
May	31	To balance		6,016 92
				$23,854 38

Urbana, June 11, 1889. JOHN W. BUNN, Treasurer.

The Business Agent, Professor S. W. Shattuck, made his report as follows, which was referred to the Finance Committee:

June 11, 1889.

Alexander McLean, President Board of Trustees, University of Illinois.

SIR: I have the honor to hand you herewith the financial statements due from me at this time.

Paper A shows the financial condition of the appropriations from current funds made March 12, 1889.

Paper B is a showing of the state appropriations, June 1st.

Paper C is a list of vouchers presented for audit, being 401-625 inclusive.

Paper D is an estimate of receipts and expenses for the three months ending September 1, 1889.

Paper E is an estimate of receipts and expenses for the twelve months ending September 1, 1890.

Respectfully submitted,

S. W. SHATTUCK, Business Agent.

Papers A and B presented with the Business Agent's report are as follows:

PAPER A—CURRENT APPROPRIATIONS.

Of March 12, 1889.	Appropr'd	Receipts also approp't'd	Expended	Balance.
Board expense	$300 00	.....	$79 91	$220 09
Salaries for instruction	19,835 66	$333 33	$9,669 78	10,499 21
" " services	1,400 00	.....	910 99	489 01
Buildings and grounds	50 00	25 00	36 25	38 75
Fuel and lights	1,000 00	89 92	258 90	831 02
Stationery and printing	700 00	.....	453 97	246 03
Mechanical department	200 00	173 79	219 98	153 81
Architectural "	200 00	405 33	804 50	.....
Agricultural "	200 00	666 86	689 65	177 21
Horticultural "	200 00	131 30	29 39	301 91
Military "	50 00	.....	27 25	22 75
Laboratories	200 00	271 55	300 44	171 11
Library and apparatus	50 00	.....	10 00	40 00
Incidentals	200 00	.....	41 09	159 91
Sundries—				
Furniture and fixtures	122 85	.....	79 26	43 59
Water supply	200 00	.....	200 00	.....
Commmencement expenses	200 00	.....	.....	200 00
Premium on bonds	674 10	.....	674 10	.....
Preparatory year	.....	605 00	539 99	65 01
University students' fees	.....	2,586 25	.....	2,586 25
Music fees	.....	139 50	139 50	.....
Griggs farm	.....	58 33	.....	58 33
Association Agri'tural College and Exp't Sta.	25 00	.....	25 00	.....
Minnesota lands	.....	10 00	.....	10 00

PAPER B—STATE APPROPRIATIONS.

	Appropr'd	Received.	Expended	Balance.
Taxes on lands.....(½ per annum)	$3,500 00	$3,128 85	$3,128 85	.....
Buildings and grounds..... "	4,000 00	4,000 00	3,797 00	$203 00
Mechanical & architectu'al shops "	3,000 00	3,000 00	2,985 00	15 00
Books and publications..... "	3,000 00	3,000 00	2,682 41	317 59
Cabinets..... "	2,000 00	2,000 00	1,821 42	178 58
Expenses of instruction..... "	32,000 00	32,000 00	32,000 00	.....
Apparatus and material..... "	3,000 00	3,000 00	2,816 18	183 82
Metallurgical laboratory..... "	4,000 00	4,000 00	2,584 31	1,415 69
	$54,500 00	$54,128 85	$51,815 17	$2,313 68
Illinois State Laboratory of Natural History	16,325 00	14,690 71	11,067 09	3,623 62

Communications were received from Professor J. C. Pickard and Mr. E. A. Kimball, stating that they were not candidates for reappointment.

The Regent and Messrs. Bennett and Bullard were appointed a committee to prepare and report resolutions concerning Professor Pickard's withdrawal; and Mr. Kimball's withdrawal was referred to the same committee.

On motion of Mr. Cobb, the Board adopted the following list of appointments and salaries for the ensuing year, beginning September 1, 1889:

LIST OF APPOINTMENTS AND SALARIES.

Names.	Position.	Salary.
Thomas J. Burrill.....	Professor of Botany and Horticulture.....	$2,300
Samuel W. Shattuck.....	Professor of Mathematics and Business Agent.....	2,300
Edward Snyder.....	Professor of Modern Languages.....	2,000
Rev. Nathaniel Butler, Jr.	Professor of English Literature.....	2,000
N. Clifford Ricker.....	Professor of Architecture.....	2,000
James D. Crawford.....	Professor of History and Ancient Languages.....	2,000
George E. Morrow.....	Professor of Agriculture.....	2,300
Peter Roos.....	Professor of Industrial Art and Designing.....	1,800
Ira O. Baker.....	Professor of Civil Engineering.....	2,000
Albert G. Manns.....	Assistant Professor of Chemistry.....	1,600
Stephen A Forbes.....	Professor of Entomology and Zoölogy.....	1,000
Theodore B. Comstock...	Professor of Mining Engineering.....	1,800
James H. Brownlee.....	Professor of Rhetoric and Oratory.....	2,000
Charles W. Rolfe.....	Professor of Geology.....	1,800
Donald McIntosh.....	Professor of Veterinary Science.....	1,800
.....	Professor of Latin.....	1,500
Arthur T. Woods.....	Professor of Mechanical Engineering.....	2,000
Arthur N. Talbot.....	Assistant Professor of Engineering and Mathematics.	1,600
.....	Assistant Professor of Zoölogy.....	1,000
.....	Instructor in Iron-work and Foreman.....	1,500
George W. Parker.....	Instructor in Wood-work and Foreman.....	1,200
George W. Myers.....	Instructor in Mathematics.....	750
Fanny M. Ryan.....	Instructor in Modern Languages.....	800
Bedros Tatarian.....	First Assistant in Chemical Laboratory.....	900
.....	Second Assistant in Chemical Laboratory.....	600
S. W. Stratton.....	Assistant in Architecture.....	1,200
.....	Assistant Librarian.....	500
.....	Assistant in Machine Shop.....	800
Essie Dana.....	Assistant in Drawing.....	250
A. B. Baker.....	Janitor.....	840

The Regent was authorized to fill the vacancies in the list, on consultation with the Committee on Instruction, subject to the approval of the Board. For this purpose Mr. Shawhan was made a member of the committee.

Mr. Kimball's request for leave of absence until September 1st was granted.

Mr. Harker, for the Committee on Buildings and Grounds, reported that the committee had considered the question of the site of the new drill hall, and recommended the site named in the Regent's report. The recommendation was adopted.

The Board then adjourned, to meet at the University parlor at 9 o'clock a. m. the next day.

SESSION WEDNESDAY MORNING.

The Board met pursuant to adjournment. The members present Tuesday, except Judge Harker, were present. Mr. S. M. Millard was also present.

The Auditing Committee presented these reports:

CHAMPAIGN, ILL., June 12, 1889.

To the Board of Trustees, University of Illinois.

Your committee would respectfully report that it has examined and compared the books of the Treasurer with the warrants drawn upon him for the past two years, beginning March 1, 1887, with No. 489 to 950, to September 1, 1887, No. 1 to 925 up to September 1, 1888, and No. 1, to 425 up to March 1, 1889, and found all to be in order and correct.

The warrants have been cancelled and left in the hands of the Treasurer.

F. M. MCKAY,
G. R. SHAWHAN, } Auditing Committee.

CHAMPAIGN, ILL., June 12, 1889.

To the Board of Trustees of University of Illinois.

Your committee would respectfully report that it has examined and compared the books of the treasurer with the warrants drawn upon him for the past two years from the funds belonging to the Agricultural Experiment Station, No. 1 to 153, up to June 30, 1888, amounting to $15,000, and No. 154 to 283 inclusive, to December 31, 1888, amounting to $6,834.63, and found all to be in order and correct.

The warrants have been cancelled and left in the hands of the Treasurer.

F. M. MCKAY,
G. R. SHAWHAN, } Auditing Committee.

The reports were separately approved on motion of Mr. Millard.

The Finance Committee presented the following report, which was on motion approved:

To the Board of Trustees of the University of Illinois.

Your Committee on Finance reports that it has examined the Business Agent's report, and the vouchers accompanying the same on which University warrants have been drawn, Nos. 401-625, and finds them correct as reported.

We have also examined the vouchers on which Experiment Station warrants, Nos. 327-409, have been drawn, and find them correct as reported.

F. M. MCKAY,
S. A. BULLARD, } Committee.

The following report was submitted by Mr. Bullard, chairman of the Committee on Buildings and Grounds, upon the petition of the young ladies of the University in regard to a room for calisthenic exercises and an instructor:

CALISTHENICS.

To the Board of Trustees of the University of Illinois.

GENTLEMEN: Your Committee on Buildings and Grounds desires to report on the communication which was referred from the lady students of the University asking for apartments and an instructor in calisthenics.

Your Committee, not being conversant with the uses of all the rooms of the buildings and not knowing whether the room desired by the ladies could be spared without an undue crowding of the work of other and regular departments, nor whether the physical training asked for was needed for the highest education of the young ladies, asked the assistance of the Faculty in determining these questions. The report of the Faculty is appended and made a part of this report.

While we are desirous in every way to advance the interests of all our students, yet we feel so limited in means and buildings at the present time that we deem it advisable not to undertake to establish the line of study and exercise asked for until we can do so in a thorough way.

S. A. BULLARD, }
G. R. SHAWHAN, } Committee.

To the Trustees of the University of Illinois.

GENTLEMEN: The Faculty has considered the questions referred to it by a committee of Trustees, of which Mr. S. A. Bullard is chairman, and presents the folowing in reply to those questions:

1. If the University were in possession of ample endowment sufficient for all purposes which might seem desirable, without doubt the establishment of a department of "physical culture" fully equipped with apartments and apparatus, and under the direction of expert medical authority, would be one of those desirable purposes. But it can hardly be said that such equipment, or the training which it would provide for, is "necessary" to the highest culture.

2. There is no apartment in either the main or chemical building that is suitable for such purpose, or can be spared from other engagements.

3. There is at present no person on the force of instruction who could undertake the charge of this work.

It may be said, farther, that the University has passed through an experience of this kind. When a new thing, a class in calisthenic instruction was popular, it soon became wearisome, even under a teacher admitted to be well skilled for the work. After her resignation, the class was continued until the larger part of the young ladies had been relieved by positive requests from mothers or physicians, and then the subject was dropped.

In conclusion it is proper to add that the general health of the young ladies in attendance at the University is excellent. The exceptions are rare, and these are mostly of young women who live at home in Champaign or Urbana, and who are unwisely encouraged or allowed by their parents to undertake the exhaustive duties of society while prosecuting their studies at the University.

Were the young ladies, or any of them, restricted within the limits often imposed in boarding schools, the needs of the case would be quite different.

Respectfully submitted, by order of the Faculty,

J. D. CRAWFORD, Secretary.

The report was adopted, and the Secretary was instructed to inform the petitioners of the action of the Board.

From the special committee on resolutions, Mr. Bennett reported the following, which on motion was adopted:

WHEREAS, Professor Joseph C. Pickard has signified his purpose to decline re-appointment to the chair of English Language and Literature; therefore, be it

Resolved, That at the sundering of the ties which for so many years have bound Professor Pickard to this University, this Board desires to place on record its full appreciation of the services he has always conscientiously rendered, of his high personal endowments as a man and a scholar, and of the affection and interest which he has inspired in those who have been under his instruction; together with the cordial desire that during the years which may yet be allotted to him, he may enjoy such opportunities of labor and usefulness as shall be fitted for the exercise of his erudition, culture and ability.

Also, Mr. Bullard reported the following, which was adopted:

Resolved, That while the Trustees accede to the request of Mr. Edwin A. Kimball to be relieved from the duties of Instructor in Iron-work and Foreman of the Machine Shop, they wish to acknowledge the long and efficient service which Mr. Kimball has given, and the industry and mechanical skill which he has exhibited. They cordially recommend him as a workman well qualified to oversee those engaged in mechanical vocations.

The Executive Committee reported that it had received and approved the treasurer's bond, which is for $300,000.

The Board then adjourned.

W. L. PILLSBURY,
Secretary.

ALEXANDER MCLEAN,
President.

List of Warrants for Year Ending August 31, 1889.

No	Date.	To Whom.	For What.	Amount.
	1888.			
1	Sept. 11....	Alexander McLean.....	Board expense.....	$38 08
2	" 11....	B. Pullen	"	17 75
3	" 11....	G. R. Shawhan.....	"	11 41
4	" 11....	Geo. C. Eisenmayer.....	"	46 00
5	" 11....	Chas. Bennett	"	37 91
6	" 11....	S. M. Millard.....	"	27 56
7	" 29....	S. H. Peabody	Salary, September, 1888	333 33
8	" 29....	T. J. Burrill.....	" "	166 66
9	" 29....	S. W. Shattuck.....	" "	166 66
10	" 29....	E. Snyder	" "	166 66
11	" 29....	J. C. Pickard.....	" "	166 66
12	" 29....	N. C. Ricker.....	" "	166 66
13	" 29....	J. D. Crawford.....	" "	166 66
14	" 29....	G. E. Morrow	" "	166 66
15	" 29....	P. Roos.....	" "	150 00
16	" 29....	I. O. Baker.....	" "	166 66
17	" 29....	S. A. Forbes.....	" "	83 33
18	" 29....	T. B. Comstock.....	" "	150 00
19	" 29....	J. H. Brownlee	" "	150 00
20	" 29....	C. W. Rolfe.....	" "	125 00
21	" 29....	D. McIntosh.....	" "	150 00
22	" 29....	N. Butler, Jr	" "	133 33
23	" 29....	A. N. Talbot.....	" "	116 66
24	" 29....	A. T. Woods	" "	166 66
25	" 29....	J. C. Jackson.....	" "	166 66
26	" 29....	W. H. Garman.....	" "	100 00
27	" 29....	E. A. Kimball.....	" "	125 00
28	" 29....	G. W. Parker.....	" "	90 00
29	" 29....	G. W. Myers	" "	50 00
30	" 29....	B. Tatarian.....	" "	80 00
31	" 29....	E. Dana.....	" "	25 00
32	" 29....	G. B. McHugh	" "	50 00
33	" 29....	A. B. Bak r.....	" "	70 00
34	" 29....	J. Marten.....	" "	66 66
35	" 29....	C. A. Hart.....	" "	50 00
36	" 29....	Am. Steam Gauge Co.....	Indicator and springs	63 75
37	" 29....	G. P. Clinton.....	Work in botanical laboratory.....	15 75
38	" 29....	State Laboratory Nat. Hist..	Expenses, three months	575 00
39	" 29....	Thomas Wright & Son	Grate bars	85 31
40	" 29....	Union Water Supply Co.....	Water, three months.....	100 00
41	" 29....	R. S. Wilber	Drayage.....	16 00
42	" 29....	Ill. State S. S. Association....	Thirtieth Annual Report.....	3 00
43	" 29....	Geo. E. Marshall & Co	Record book.....	5 00
44	" 29....	Brady & Co	Advertising	10 00
45	" 29....	W. L. Pillsbury.....	Expense to Board meeting.....	8 13
46	" 29....	Crosby Steam Gauge and Valve Co	Indicator.....	40 00
47	" 29....	Abendroth & Root M'f'g Co.	Boiler heads and tubes	143 00
48	" 29....	Crane Bros. M'f'g Co	Radiators	92 52
49	" 29....	Fuller & Fuller Co.....	Glass	33 04
50	" 29....	Besore & Bro.....	Lumber	347 72
51	Oct. 31....	S. H. Peabody.....	Salary, October, 1888.....	333 33
52	" 31....	T. J. Burrill.....	" "	166 66
53	" 31....	S. W. Shattuck.....	" "	166 66
54	" 31....	E. Snyder	" "	166 66
55	" 31....	J. C. Pickard.....	" "	166 66
56	" 31....	N. C. Ricker	" "	166 66
57	" 31....	J. D. Crawford.....	" "	166 66
58	" 31....	G. E. Morrow.....	" "	166 66
59	" 31....	P. Roos.....	" "	150 00
60	" 31....	I. O. Bak r.....	" "	166 66
61	" 31....	S. A. Forbes.....	" "	83 33
62	" 31....	T. B. Comstock.....	" "	150 00

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1888.			
63	Oct. 31....	J. H. Brownlee	Salary, October, 1888	$150 00
64	" 31....	C. W. Rolfe	" "	125 00
65	" 31....	D. McIntosh	" "	150 00
66	" 31....	N. Butler, Jr	" "	133 33
67	" 31....	A. N. Talbot	" "	116 66
68	" 31....	A. T. Woods	" "	166 66
69	" 31....	J. C. Jackson	" "	166 66
70	" 31....	W. H. Garman	" "	100 00
71	" 31....	E. A. Kimball	" "	125 00
72	" 31....	G. W. Parker	" "	90 00
73	" 31....	G. W. Myers	" "	50 00
74	" 31....	B. Tatarian	" "	80 00
75	" 31....	Essie Dana	" "	25 00
76	" 31....	G. B. McHugh	" "	50 00
77	" 31....	A. B. Baker	" "	70 00
78	" 31....	F. M. Ryan	" "	80 00
79	" 31....	John Marten	" "	66 66
80	" 31....	M. J. Snyder	" "	50 00
81	" 31....	C. A. Hart	" "	50 00
82	" 31....	G. P. Clinton	Work in Laboratory Natural History	18 65
83	" 31....	Mattie Waite	Botanical assistance	19 16
84	" 31....	M. J. Snyder	Salary, September, 1888	26 00
85	" 31....	J. S. Terrill	Work in museum, etc	39 17
86	" 31....	C. F. Adams	Taxidermy and supplies	150 11
87	" 31....	Chas. A. Helvie	Biological collecting	35 00
88	" 31....	Dr. A. Zieglar	Wax models	182 39
89	" 31....	A. J. Stoneburner	Salary, October, 1888	40 00
90	" 31....	A. J. Stoneburner	Labor, September, 1888	30 75
91	" 31....	Grace Peabody	Regent's clerk, Aug. and Sept., 1888.	11 74
92	" 31....	Isaac Fielding	Postage	10 00
93	" 31....	Illinois Central R. R. Co	Freight charges	92 35
94	" 31....	Ohio, Indiana & Western Ry.	"	3 46
95	" 31....	L. M. Moore	Blackboard	8 00
96	" 31....	Western Union Tel. Co	Telegrams	7 34
97	" 31....	Agricultural department	Expenses, September, 1888	119 18
98	" 31....	Horticultural department	" " "	17 07
99	" 31....	Mens' pa roll	Labor September, 1888	177 31
100	" 31....	Students' pay roll	" " "	141 12
101	" 31....	J. V. E. Schaefer	Salary, ¼ Sept. and Oct., 1888	25 00
102	" 31....	Yale & Towne M'f'g Co	La ches and keys	3 80
103	" 31....	Eimer & Amend	Chemical supplies	25 68
104	" 31....	E. H. Sargent & Co	" "	17 40
105	" 31....	Central Union Telephone Co	Use of instrument three months	15 00
106	" 31....	Lindsey & Davis	Sand	3 75
107	" 31....	J. C. Jackson	Chemical supplies	3 53
108	" 31....	L. C. Garwood	Cleaning clock	2 00
109	" 31....	Hammond Type-writer Co	Type-writer	100 00
110	" 31....	James W. Queen & Co	Thermometers	17 80
111	" 31....	Fairbanks, Morse & Co	Scales	22 20
112	" 31....	School of Mines Quarterly	Subscription	2 00
113	" 31....	Francis E. Galloupe	Book	2 00
114	" 31....	C. J. Sabin	Tile	2 00
115	" 31....	Urbana Gaslight & Coke Co.	Gas, three months	60 00
116	" 31....	Enterprise Coal & Coke Co.	Coal	85 00
117	" 31....	Crane Bros. M'f'g Co	Vise, pi e and fittings	42 69
118	" 31....	Wabash & Western Ry. Co.	Freight charges	13 47
119	Nov. 15....	Ohio, In iana & Western Ry.	" "	11 12
120	" 31....	Illinos Central R. R. Co	" "	138 65
121	" 31....	Horticultural depa tment	Expenses, October, 1888	50 16
122	" 31....	Agricultural department	" "	298 12
123	" 31....	Grace Peabody	Services in Regent's office	13 87
124	" 31....	Pay roll of men	Labor October, 1888	207 50
125	" 31....	Pay roll of students	" " "	153 36
126	" 30....	S. H. Peabody	Salary, November, 1888	333 33
127	" 30....	T. J. Burrill	" "	166 66
128	" 30....	S. W. Shattuck	" "	166 66
129	" 30....	E Snyder	" "	166 66
130	" 30....	J. C. Pickard	" "	166 66
131	" 30....	N. C. Ricker	" "	166 66
132	" 30....	J. D. Crawford	" "	166 66
133	" 30....	G. E. Morrow	" "	166 66
134	" 30....	P. Roos	" "	150 00
135	" 30....	I. O. Baker	" "	166 66
136	" 30....	S. A. Forbes	" "	83 33
137	" 30....	T. B. Comstock	" "	150 00
138	" 30....	J. H. Brownlee	" "	150 00
139	" 30....	C. W. Rolfe	" "	125 00
140	" 30....	D. McIntosh	" "	150 00

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1888.			
141	Nov. 30....	N. Butler, Jr.	Salary, November, 1888.	$133 33
142	" 30....	A. N. Talbot	" "	116 66
148	" 30....	A. T. Woods	" "	166 66
144	" 30....	J. C. Jackson	" "	166 66
145	" 30....	W. H. Garman	" "	100 00
146	" 30....	E. A. Kimball	" "	125 00
147	" 30....	G. W. Parker	" "	90 00
148	" 30....	G. W. Meyers	" "	50 00
149	" 30....	B. Tatarian	" "	80 00
150	" 30....	E. Dana	" "	25 00
151	" 30....	G. B. McHugh	" "	50 00
152	" 30....	A. B. Baker	" "	70 00
153	" 30....	F. M. Ryan	" "	80 00
154	" 30....	John Marten	" "	66 66
155	" 30....	M. J. Snyder	" "	50 00
156	" 30....	C. A. Hart	" "	50 00
157	" 30....	J. V. E. Schaefer	" "	20 00
158	" 30....	A. J. Stoneburner	" "	40 00
159	" 30....	S. W. Shattuck	Business Agent, three months	75 00
160	" 30....	Isaac Fielding	Postage	10 00
161	" 30....	Pay roll of women	Labor, September and October, 1888.	17 00
162	" 30....	W. C. Ritchie & Co	Paper tubes	2 00
163	" 30....	R. R. Donnelly & Sons	Cut of University	2 25
164	" 30....	A. J. Funkhouser	Advertising	4 40
165	" 30....	Brown & Co	Vol. 23, Encyclopedia Britannica	5 50
166	" 30....	Agricultural department	Expense, November, 1888	659 89
167	" 30....	Horticultural department	" "	17 55
168	" 30....	Grace Peabody	Regent's clerk	16 97
169	" 30....	Illinois Central R. R. Co	Freight charges	89 95
170	" 30....	American Express Co	Express charges	5 60
171	" 30....	United States Express Co	" "	2 45
172	" 30....	J. S. Terrill	Work in Laboratory Natural History	27 00
173	" 30....	W. T. Pratt	Mason work	10 00
174	" 30....	Pay roll of men	Labor November, 1888	191 11
175	" 30....	Pay roll of students	" "	126 18
176	" 30....	W. W. Abbott	Show mats	4 50
177	" 30....	Fleming & Conant	Roofing and hardware	24 97
178	" 30....	Geo. F. Kimball	Glass	34 88
179	" 30....	Besore & Brother	Lumber	190 79
180	" 30....	Lapham & Walls	Lime, cement, and lumber	23 15
181	" 30....	Champaign Tile Co	Tile, brick, and sand	10 88
182	" 30....	J. H. Bainum	Plastering and bricklaying	147 70
183	" 30....	John Wilkinson Co	Veneers	15 30
184	" 30....	Orr & Lockett	Glue	2 00
185	" 30....	Yale & Towne M'f'g Co	Locks and repairs	23 87
186	" 30....	Champaign & Urbana Gas Co.	Gas, Oct. 1 to Nov. 1, 1888	70 00
187	" 30....	Maxwell & Mollett	Oil	1 50
188	" 30....	Fuller & Fuller Co.	Caustic soda	4 25
189	" 30....	E. H. Sargent & Co	Chemical apparatus.	18 87
190	" 30....	Northern Distilling Co	Alcohol	23 25
191	" 30....	H. Swannell	Chemical apparatus and supplies	18 31
192	" 30....	T. H. Trevett	Copper wire, etc	2 42
193	" 30....	Kellogg, Johnson & Bliss	Tools	167 85
194	" 30....	A. C. McClurg & Co	Books and stationery	37 38
195	" 30....	American Philological Ass'n.	Transactions, 1887	2 00
196	" 30....	Forum Publishing Co	Books	17 50
197	" 30....	Carl Schoenhof	"	24 03
198	" 30....	Hubbard & Son	Repairs	4 25
199	" 30....	Fraser & Chalmers	Machinery	9 88
200	" 30....	Pond Engineering Co	Boiler fixtures	185 00
201	" 30....	Champaign Co. Herald	Certificates	2 50
202	" 30....	Champaign Co. Gazette	Report of Trustees, etc	32 50
203	" 30....	Union Water Supply Co	Water, Oct. 1, 1888, to Jan. 1, 1889	100 00
204	" 30....	R. S. Wilber	Hauling	81 75
205	" 30....	Crane Bros. M'f'g Co	Fittings	5 84
206	" 30....	Maud Kimball	Organist fall term, 1888	50 00
207	" 30....	C. W. Briggs	Band leader	15 00
208	" 30....	C. J. Burrill	Assistant in Nat. Hist. Lab'y	100 00
209	" 30....	E. Steiger	Books	28 20
210	" 30....	Townsend MacCoun	Set of maps	10 00
211	" 30....	Educational Supply Co	Laboratory apparatus, etc.	505 61
212	" 30....	Robinson & Burr	Fittings and labor	88 53
213	" 30....	Henry Trevett	Hardware and labor	88 27
214	" 30....	Wm. Price	Painting and glazing	201 48
215	" 30....	Philip Steele	Advertising and printing	30 00
216	" 30....	J. Bacon	Coal	4 98
217	" 30....	Enterprise Coal Co	"	179 12
218	" 30....	Caroline McElroy	Washing towels	2 50

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1888.			
219	Nov. 30....	Mary L. Barnes	Work in Laboratory	$29 85
220	" 30....	John Wilske	Mason work	15 50
221	" 30....	Pay-roll of women	Labor, November, 1888	9 50
222	" 30....	James B. Clow & Sons	Fittings	6 02
223	" 30....	G. P. Putnam's Sons	Book	5 50
224	" 30....	Architectural department	Power for instruction	60 00
225	" 30....	Mechanical department	" "	60 00
226	" 30....	Geo. Eisenmayer	Board expense	18 00
227	" 30....	S. M. Millard	" "	20 68
228	" 30....	Alex. McLean	" "	39 46
229	" 30....	Chas. Bennett	" "	20 43
230	" 30....	B. Pullen	" "	2 75
231	" 30....	Emory Cobb	" "	3 50
232	" 30....	S. H. Peabody	" "	41 85
233	" 30....	C. W. Rolfe	Expenses to Springfield	16 40
234	" 30....	Chas. D. Stone & Co	Customs fees, etc	16 28
235	" 30....	Buffalo Dental Mfg Co	Furnaces, etc	97 65
236	" 30....	Walker & Mulliken	Chairs, etc	53 15
237	" 30....	Lyon & Healy	Music	6 13
238	" 30....	Champaign & Urbana Gas Co.	Gas, Nov. 1 to Dec. 1, 1888	61 00
239	" 30....	R. O. Wheeler	Engraving certificates	13 20
240	" 30....	S. W. Shattuck	Petty expenses, 3 months	34 13
241	Dec. 31....	S. H. Peabody	Salary, December, 1888	333 33
242	" 31....	T. J. Burrill	" "	166 66
243	" 31....	S. W. Shattuck	" "	166 66
244	" 31....	E. Snyder	" "	166 66
245	" 31....	J. C. Pickard	" "	166 66
246	" 31....	N. C. Ricker	" "	166 66
247	" 31....	J. D. Crawford	" "	166 66
248	" 31....	G. E. Morrow	" "	166 66
249	" 31....	P. Roos	" "	150 00
250	" 31....	I. O. Baker	" "	166 66
251	" 31....	S. A. Forbes	" "	83 33
252	" 31....	T. B. Comstock	" "	150 00
253	" 31....	J. H. Brownlee	" "	150 00
254	" 31....	C. W. Rolfe	" "	125 00
255	" 31....	D. McIntosh	" "	150 00
256	" 31....	N. Butler, Jr	" "	133 33
257	" 31....	A. N. Talbott	" "	116 66
258	" 31....	A. T. Woods	" "	166 66
259	" 31....	J. C. Jackson	" "	166 66
260	" 31....	W. H. Garman	" "	100 00
261	" 31....	E. A. Kimball	" "	125 00
262	" 31....	G. W. Parker	" "	90 00
263	" 31....	G. W. Myers	" "	50 00
264	" 31....	B. Tatarian	" "	80 00
265	" 31....	E. Dana	" "	25 00
266	" 31....	G. B. McHugh	" "	50 00
267	" 31....	A. B. Baker	" "	70 00
268	" 31....	F. M. Ryan	" "	80 00
269	" 31....	John Marten	" "	66 66
270	" 31....	M. J. Snyder	" "	50 00
271	" 31....	C. A. Hart	" "	50 00
272	" 31....	A. J. Stoneburner	" "	65 00
	1889.			
273	Jan. 15....	Illinois Central R. R.	Freight charges	336 49
274	" 30....	Pay roll of men	Labor, December, 1888	188 53
275	" 30....	Pay roll of students	"	121 58
276	" 31....	S. H. Peabody	Salary, January, 1889	333 33
277	" 31....	T. J. Burrill	" "	166 66
278	" 31....	S. W. Shattuck	" "	166 66
279	" 31....	E. Snyder	" "	166 66
280	" 31....	J. C. Pickard	" "	166 66
281	" 31....	N. C. Ricker	" "	166 66
282	" 31....	J. D. Crawford	" "	166 66
283	" 31....	G. E. Morrow	" "	166 66
284	" 31....	P. Roos	" "	150 00
285	" 31....	I. O. Baker	" "	166 66
286	" 31....	S. A. Forbes	" "	83 33
287	" 31....	T. B. Comstock	" "	150 00
288	" 31....	J. H. Brownlee	" "	150 00
289	" 31....	C. W. Rolfe	" "	125 00
290	" 31....	D. McIntosh	" "	150 00
291	" 31....	N. Butler, Jr	" "	133 33
292	" 31....	A. N. Talbot	" "	116 66
293	" 31....	A. T. Woods	" "	166 66
294	" 31....	A. G. Manns	" "	50 00
295	" 31....	W. H. Garman	" "	100 00

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1889.			
296	Jan. 31....	E. A. Kimball,.....	Salary, January, 1889	$125 00
297	" 31....	G. W. Parker.....	" "	90 00
298	" 31....	G. W. Myers.....	" "	50 00
299	" 31....	B. Tatarian.....	" "	80 00
300	" 31....	E. Dana.....	" "	25 00
301	" 31....	G. B. McHugh	" "	50 00
302	" 31....	A. B. Baker.....	" "	70 00
303	" 31....	F. M. Ryan	" "	80 00
304	" 31....	John Marten.....	" "	66 66
305	" 31....	M. J. Snyder.....	" "	40 32
306	" 31....	C. A. Hart.....	" "	50 00
307	" 31....	J. V. Schaefer.....	" December, '88, and Jan., '89..	40 00
308	" 31....	A. J. Stoneburner.....	" January, 1889.....	65 00
309	" 31....	Grace Peabody.....	Regent's clerk, December, 1888.....	12 00
310	" 31....	Maud Kimball.....	Music fees.....	73 00
311	" 31....	J. S. Terrill.....	Work in laboratory.....	13 89
312	" 31....	Chas D. Stone & Co.	Customs fees, etc.....	35 96
313	" 31....	Dr. O. Pazschka.....	Collection of fungi.....	86 73
314	" 31....	Isaac Fielding.....	Postage, etc.....	25 00
315	" 31....	Chicago Com. & Power Co .	Smoke preventers.....	100 00
316	" 31....	D. H. Lloyde & Son.....	Stationery.	5 60
317	" 31....	F. Miller.....	Tuning pianos.....	5 50
318	" 31....	Oscar Miller.....	Hardware	7 15
319	" 31....	Jas. B. Clow & Son.....	Screws, etc.....	5 83
320	" 31....	F. A. Reichardt & Co	Chemicals.....	18 65
321	" 31....	Lapham & Walls.....	Lumber.....	19 08
322	" 31....	F. K Robeson & Co.....	Carpet.....	3 90
323	" 31....	Agricultural department.....	Expenses, December, 1888.....	136 48
324	" 31....	The Mas-Sin-Na-Gan. Co....	Book.	5 00
325	" 31....	Crane Bros. M'f'g. Co	Iron pipe, etc.....	33 00
326	" 31....	Champaign & Urbana Gas Co.	Gas, December, 1888.....	43 00
327	" 31....	Enterprise Coal & Coke Co.	Coal.....	247 50
328	" 31....	Fuller & Fuller Co.....	Glass.....	4 65
329	" 31....	Walker & Mulliken.....	Billiard cloth, etc.....	6 60
330	" 31....	Yale & Town M'f'g Co.....	Keys.....	3 60
331	" 31....	U. S. Patent Office.....	Volumes.....	31 20
332	" 31....	Thos. Wright & Son	Castings.....	19 79
333	" 31....	G. A. Douglas & Co.....	Photographic supplies.....	13 77
334	" 31....	Pantagraph Sta. Co.....	Binding, etc.....	52 00
335	" 31....	Heliotype Printing Co.....	Zinc plates.....	206 00
336	" 31....	R. Friedlander & Son	Books	150 00
337	" 31....	W. H. Walmsley & Co.....	Marine glass.....	30 12
338	" 31....	J. W. Franks & Sons	Printing.....	46 20
339	Feb. 28....	A. M. Westergren	Entomological drawing.....	60 00
340	" 28....	Mary L. Barnes.....	Assistant in botanical laboratory..	62 40
341	" 28....	J. S. Terrill	" " Laboratory Nat. History	17 40
342	" 28....	Samuel H. Scudder.....	Book.....	15 00
343	" 28....	S. B. Radebaugh,.....	Postage, etc.....	2 50
344	" 28....	S. A. Forbes.....	Sundry expenses.....	16 80
345	" 28....	Skeen & Stuart Sta. Co.....	Reporter's note books.....	1 10
346	" 28....	H. Ketzle.....	Prairie Farmers, 1873-74.....	7 50
347	" 28....	Grace Peabody.....	Regent's clerk, January, 1889	12 25
348	" 28....	Agricultural department	Expenses, January, 1889.....	121 05
349	" 28....	Pay roll of men	Labor, January, 1889.....	136 45
350	" 28....	Pay roll of students.....	" "	123 78
351	" 28....	S. H. Peabody.....	Salary, February, 1889.....	333 33
352	" 28....	T. J. Burrill,.....	" "	166 66
353	" 28....	S. W. Shattuck	" "	166 66
354	" 28....	E. Snyder.....	" "	166 66
355	" 28....	J. C. Pickard.....	" "	166 66
356	" 28....	N. C. Ricker.....	" "	166 66
357	" 28....	J. D. Crawford.....	" "	166 66
358	" 28....	G. E. Morrow.....	" "	166 66
359	" 28....	P. Roos.....	" "	150 00
360	" 28....	I. O. Baker.....	" "	166 66
361	" 28....	S. A. Forbes	" "	83 33
362	" 28....	T. B. Comstock.....	" "	150 00
363	" 28....	J. H. Brownlee.....	" "	150 00
364	" 28....	C. W. Rolfe.....	" "	125 00
365	" 28....	D. McIntosh.....	" "	150 00
366	" 28....	N. Butler, Jr.....	" "	133 33
367	" 28....	A. N. Talbot.....	" "	116 66
368	" 28....	A. T. Woods.....	" "	166 66
369	" 28....	A. G. Manns.....	" "	50 00
370	" 28....	W. H. Garman.....	" "	100 00
371	" 28....	E. A. Kimball.....	" "	125 00
372	" 28....	G. W. Parker.....	" "	90 00
373	" 28....	G. W. Myers.....	" "	50 00

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1889.			
374	Feb. 28....	B. Tatarian	Salary, February, 1889	$80 00
375	" 28....	G. B. McHugh	" "	60 00
376	" 28....	A. B. Baker	" "	70 00
377	" 28....	F. M. Ryan	" "	80 00
378	" 28....	John Marten	" "	66 66
379	" 28....	M. J. Snyder	" "	50 00
380	" 28....	C. A. Hart	" "	50 00
381	" 28....	J. V. E. Schaefer	" "	20 00
382	" 28....	A. J. Stoneburner	" "	65 00
383	" 28....	S. W. Shattuck	Business Agent. 3 months	75 00
384	" 28....	E. Steiger & Co	Books	14 86
385	" 28....	B. F. Stevens	"	32 49
386	" 28....	Carl Schoenhof	"	10 41
387	" 28....	Ticknor & Co	Periodicals	17 50
388	" 28....	H. L. Gay	"	6 50
389	" 28....	J. O. Kane	"	4 50
390	" 28....	Central Union Telephone Co.	Rent of instrument	15 00
391	" 28....	E. Dana	Salary, February, 1889	25 00
392	" 28....	Grace Peabody	Regent's clerk, February, 1889	11 37
393	" 28....	American Express Co	Charges	13 90
394	" 28....	United States Express Co...	"	13 05
395	" 28....	Illinois Central Railroad Co.	"	125 75
396	" 28....	Agricultural department	Expenses, February 1889	91 15
397	" 28....	Isaac Fielding	Postage	15 00
398	" 28....	E. O. Ulrich	Collection of bryozoans	100 00
399	" 28....	Mary Lena Barnes	Ass't in botanical labora'y, Feb., 1889	28 80
400	" 28....	A. M. Westergren	Entomological drawing	52 50
401	" 28....	Fraser & Chalmers	Pulp elevator, etc	81 25
402	" 28....	R. S. Wilber	D avage	118 50
403	" 28....	A. H. Roffe & Co	Subscription	275 61
404	" 28....	A. C. McClurg & Co	Books	169 83
405	" 28 ...	K. F. Koehler	"	40 47
406	" 28....	"The Illini"	Advertisements and printing	29 75
407	" 28....	Enterprise Coal & Coke Co.	110 tons coal	99 00
408	" 28....	E. H. Sargent & Co	Platinum foil, etc	16 09
409	" 28....	Champaign & Urbana Gas Co	Gas, January 1 to March 1, 1889	124 00
410	" 28....	William Sim	Testaments, etc	8 00
411	" 28....	Champaign Gazette	Printing and blanks	29 50
412	" 28....	Jas. W. Queen & Co	Apparatus	11 78
413	" 28....	Hugo Bilgram	Milled gearing	35 00
414	" 28....	F. P. Elliott & Co	Card board	30 00
415	" 28....	Heer & Seelig	Transit, etc	252 85
416	" 28....	Robinson & Burr	Labor and material	75 31
417	" 28....	Henry revett	" "	69 11
418	" 28....	Besore & Bro	Lumber	73 53
419	" 28....	S. W. Shattuck	Petty expenses, 3 months	28 58
420	" 28....	Students' pay roll	Labor, February, 1889	123 86
421	" 28....	Mens' pay roll	" " "	187 95
422	" 28....	Mechanical department	Labor, material, and power	178 87
423	" 28....	Mechanical department	" " "	133 18
424	" 28....	Architectural department	Labor and materials	65 40
425	" 28....	Architectural department	" " and power	582 92
426	Mar. 13....	O. A. Harker	Expense to Board meeting	16 00
427	" 13....	S. A. Bullard	" "	7 75
428	" 13....	Chas. Bennett	" "	4 88
429	" 13....	Geo. S. Haskell	" "	5 75
430	" 13....	F. M. McKay	" "	18 50
431	" 13....	Emory Cobb	" "	2 50
432	" 13....	Alex. McLean	" "	24 53
433	" 30....	Geo. M. Brinkerhoff	Premium on bonds	674 10
434	" 30....	Association Am. Agr. Coll. & Exp't Sta	Assessment and membership fee	25 00
435	" 30....	U. S. Express Company	Express charges	9 25
436	" 30....	American Express Company	"	2 10
437	" 30....	Maud Kimball	Salary, winter term, 1888-89	50 00
438	" 30....	C. W. Briggs	" "	15 00
439	" 30....	Union Water Supply Co	Water, Jan. 1 to March 31, 1889	100 00
440	" 30....	Geo. T. Williamson	Castings, etc	21 18
441	" 30....	S. H. Peabody	Salary, March, 1889	333 33
442	" 30....	T. J. Burrill	" "	166 66
443	" 30....	S. W. Shattuck	" "	166 66
444	" 30....	E. Snyder	" "	166 66
445	" 30....	J. C. Pickard	" "	166 66
446	" 30....	N. C. Ricker	" "	166 66
447	" 30....	J. D. Crawford	" "	166 66
448	" 30....	G. E. Morrow	" "	166 66
449	" 30....	P. Roos	" "	150 00

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1889.			
450	Mar. 30....	I. O. Baker	Salary, March, 1889	$166 66
451	" 30....	S. A. Forbes	" "	83 33
452	" 30....	T. B. Comstock	" "	150 00
453	" 30....	J. H. Brownlee	" "	150 00
454	" 30....	C. W. Rolfe	" "	125 00
455	" 30....	D. McIntosh	" "	150 00
456	" 30....	N. Butler, Jr	" "	133 33
457	" 30....	A. N. Talbot	" "	116 66
458	" 30....	A. T. Woods	" "	166 66
459	" 30....	A. G. Manns	" "	50 00
460	" 30....	W. H. Garman	" "	100 00
461	" 30....	E. A Kimball	" "	125 00
462	" 30....	G. W. Parker	" "	90 00
463	" 39....	G. W. Myers	" "	50 00
464	" 30....	B. Tatarian	" "	80 00
465	" 30....	G. B. McHugh	" "	60 00
466	" 30....	A B. Baker	" "	70 00
467	" 30....	F. M. Ryan	" "	80 00
468	" 30 ..	Essie Dana	" "	25 00
469	" 30....	John Marten	" "	66 66
470	" 30....	M. J. Snyder	" "	50 00
471	" 30....	C. A. Hart	" "	50 00
472	" 30....	Fleming & Conant	Hardware	8 05
473	" 30....	A. P. Cunningham	Masks and drugs	10 45
474	" 30....	C. J. Sabin	Coal	4 25
475	" 30....	Maltby & Wallace	Castings and fittings	1 74
476	Apr. 15....	A. J. S oneburner	Salary, March, 1889	65 00
477	" 15....	Grace Peabody	Regent's clerk, March, 1889	12 81
478	" 15....	I. C. R. R. Co.	Freight charges	49 30
479	" 15....	Isaac Fielding	Earthquake model and postage	33 35
480	" 15....	Kenyon News Agency	Subscriptions	12 20
481	" 15....	A. W. French	Rep't Commission of Education, 1868	75
482	" 15....	Nellie M. Bardwell	Chart drawings	10 00
483	" 15....	Mary Howe	Cyclostyle print ng	3 15
484	" 15....	J. S. Terrill	Work in laboratorie	17 18
485	" 15....	Mary L. Barnes	Work in botanical laboratory	30 00
486	" 15....	A. M. Westergren	Drawings, March, 1889	60 00
487	" 15....	S. A. Forbes	Expenses, Laboratory Natural Hist.	26 05
488	" 15....	Edu. Supply Co	Fish glue, etc	22 79
489	" 15....	W. E. Sanders	Canadian Entomologist	1 00
490	" 15....	Kellogg, Johnson & Bliss	Tools	7 06
491	" 15....	P. Bevis	Blue-prints	17 72
492	" 15....	C. U. Telephone Co	Rent of instrument, 3 months	15 00
493	" 15....	H. Chester	Ca riages	7 00
494	" 15....	T B. Comstock	Expenses, metallurgical and physical laboratories	2 20
495	" 15....	Geo. D. Weeks	Gasoline	1 50
496	" 15....	F. P. Rush & Co	Load cobs	1 00
497	" 15....	Agricultural depa tment	Expenses, March, 1889	116 50
498	" 15....	Horticultural department	Expenses	4 96
499	" 15....	Men's pay roll	Labor, March, 1889	149 54
500	" 15....	Stu ents' pay roll	"	137 07
501	" 30....	S. H. Pe body	Salary, April, 1889	333 33
502	" 30....	T. J. Burrill	" "	141 66
503	" 30....	S. W. Shattuck	" "	166 66
504	" 30....	E. Snyder	" "	166 66
505	" 30....	J. C. Pickard	" "	166 66
506	" 30....	N. C. Ricker	" "	166 66
507	" 30....	J. D. Crawford	" "	166 66
508	" 30....	G. E. Morrow	" "	141 66
509	" 30....	P. Roos	" "	150 00
510	" 30....	I. O. Baker	" "	166 66
511	" 30....	S. A. Forbes	" "	83 33
512	" 30....	heo. B. Comstock	" "	150 00
513	" 30....	J. H. Brownlee	" "	150 00
514	" 30....	C. W. Rolfe	" "	125 00
515	" 30....	D. McIntosh	" "	150 00
516	" 30....	N. Butler, Jr	" "	133 33
517	" 30....	A. N. Talbot	" "	116 66
518	" 30....	A. T. Woods	" "	166 66
519	" 30....	A. G. Manns	" "	50 00
520	" 30....	W. H. Garman	" "	100 00
521	" 30....	E. A. Kimball	" "	125 00
522	" 30....	G. W. Parker	" "	90 00
523	" 30....	G. W. Myers	" "	50 00
524	" 30....	B. Tatarian	" "	80 00
525	" 30....	G. B. McHugh	" "	60 00
526	" 30....	A. B. Baker	" "	70 00

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1889.			
527	Apr. 30....	F. M. Ryan	Salary, April, 1889	$80 00
528	" 30....	Essie Dana	" "	25 00
529	" 30....	John Marten	" "	66 66
530	" 30....	M. J. Snyder	" "	50 00
531	" 30....	C. A. Hart	" "	50 00
532	" 30....	A. J. Stoneburner	" "	40 00
533	" 30....	Enterprise Coal and Coke Co	Coal	39 60
534	" 30....	Champaign & Urbana Gas Co	Gas, March, 1889	56 00
535	" 30....	Pantagraph Stationery Co...	Letterheads	9 00
536	" 30....	E. O. Vaile	Illinois School Directory & adver...	11 00
537	" 30....	Samuel H. Scudder	Pt. 4 Butterflies, Eastern U. S..	5 00
538	" 30....	J. B. Ellis	Books	14 31
539	" 30....	Heliotype Printing Co	Zinc plates	4 50
540	" 30....	Frank B. Webster	Subscription	3 50
541	" 30....	A. P. Cunningham	Weekly Nature, etc	7 23
542	" 30....	Fuller & Fuller Co	Glass	22 37
543	" 30....	Orr & Lockett	Spring and glue	6 00
544	" 30....	Crane Bros. Manf'g Co	Brass castings	6 68
545	" 30....	Link Belt Machinery Co	Pulley and castings	13 90
546	" 30....	Marshall Field & Co	Carpet	72 85
547	" 30....	A. H. Roffe & Co	Subscriptions	3 10
548	" 30....	G. P. Putnam's Sons	"	5 50
549	" 30....	Houghton, Mifflin & Co	"	4 00
550	" 30....	A. C. McClurg & Co	Books	135 01
551	May 15....	M. L. Barnes	Salary, April, 1889	29 10
552	" 15....	A. M. Westergren	" "	60 00
553	" 15....	S. H. Scudder	Pts. 5-7 Butterflies, Eastern U. S...	15 00
554	" 15....	G. C. Willis	Muslin, etc	4 43
555	" 15....	Champaign Co. Gazette	Printing and paper	94 10
556	" 15....	J. S. Terrill	Work in laboratories	12 07
557	" 15....	J. M. Southwick	Bone snips, etc	3 10
558	" 15....	Wyckoff, Seamans & Bened't	Ribbons for type-writer	2 00
559	" 15....	G. A. Douglas & Co	Photographic supplies	18 95
560	" 15....	Western Electric Co	Magnet wire	5 00
561	" 15....	E. H. Sargent & Co	Sulphuric ether, etc	14 83
562	" 15....	Champaign & Urbana Gas Co	Gas, April, 1889	66 00
563	" 15....	H. Chester	Carriages	2 50
564	" 15....	Fred Miller	Tuning pianos	5 50
565	" 15....	Stearns & Co	1 barrel stucco	2 00
566	" 15....	Fuller & Fuller Co	Glass and glue	5 74
567	" 15....	Illinois Central R. R	Freight charges	27 09
568	" 15....	Moore, Jones & Co	Bronze castings	17 10
569	" 15....	Bates & Kimball	Subscription	3 00
570	" 15....	Isaac Fielding	Postage	15 00
571	" 15....	Maud Kimball	Music fees, winter term	139 50
572	" 15....	Grace Peabody	Regent's clerk, Apr 1, 1889	12 87
573	" 15....	Agricultural Department	Expenses, April, 1889	262 51
574	" 15....	Men's pay roll	Labor, April, 1889	177 27
575	" 15....	Students' pay roll	" "	110 34
576	" 31....	S. H. Peabody	Salary, May, 1889	333 33
577	" 31....	T. J. Burrill	" "	141 66
578	" 31....	S. W. Shattuck	" "	166 66
579	" 31....	E. Snyder	" "	166 66
580	" 31....	J. C. Pickard	" "	166 66
581	" 31....	N. C. Ricker	" "	166 66
582	" 31....	J. D. Crawford	" "	166 66
583	" 31....	G. E. Morrow	" "	141 66
584	" 31....	P. Roos	" "	150 00
585	" 31....	I. O. Baker	" "	166 66
586	" 31....	S. A. Forbes	" "	83 33
587	" 31....	T. B. Comstock	" "	150 00
588	" 31....	J. H. Brownlee	" "	150 00
589	" 31....	C. W. Rolfe	" "	125 00
590	" 31....	D. McIntosh	" "	150 00
591	" 31....	N. Butler, Jr	" "	133 33
592	" 31....	A. N. Talbot	" "	116 66
593	" 31....	A. T. Woods	" "	166 66
594	" 31....	A. G. Manns	" "	50 00
595	" 31....	W. H. Garman	" "	100 00
596	" 31....	E. A. Kimball	" "	125 00
597	" 31....	G. W. Parker	" "	90 00
598	" 31....	G. W. Myers	" "	50 00
599	" 31....	B. Tatarian	" "	80 00
600	" 31....	G. B. McHugh	" "	60 00
601	" 31....	A. B. Baker	" "	70 00
602	" 31....	F. M. Ryan	" "	80 00
603	" 31....	Essie Dana	" "	25 00

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1889.			
604	May 31....	John Marten	Salary, May, 1889	$66 66
605	" 31....	M. J. Snyder	" "	50 00
606	" 31....	C. A. Hart	" "	50 00
607	" 31....	A. J. Stoneburner	" "	40 00
608	" 31....	C W. Briggs	Salary, spring term, 1889	15 00
609	" 31....	Maud Kimball	" " "	50 00
610	" 31....	S. W. Shattuck	Business Agent, three months	75 00
611	" 31....	H. L. Weis	Assistance in physical laboratory	37 50
612	" 31....	R. B. McConney	" " "	37 50
613	" 31....	Isaac Fielding	Postage	30 00
614	" 31....	"Illini"	Advertising and blanks	7 25
615	" 31....	A. Bevis	Blanks and prints	8 26
616	" 31....	Agricultural department	Expenses, May, 1889	291 72
617	" 31....	C. Hennecke Co	Casts, etc	29 58
618	" 31....	C. & W. McClean	Set reloading tools	2 50
619	" 31....	American Naturalist	Subscription, 1889	4 00
620	" 31....	A. M. Westergren	Salary, May, 1889	60 00
621	" 31....	J. S. Terrill	Work in laboratories	9 53
622	" 31....	M. L. Barnes	Work in botanical laboratory	30 00
623	" 31....	Grace Peabody	Regent's clerk, May, 1889	16 93
624	" 31....	G. C. Willis	Toweling	4 40
625	" 31....	Horticultural department	Expense, May, 1889	17 53
626	" 31....	Bausch & Lomb Optical Co.	Cover glasses and slides	21 16
627	" 31....	H. Swannell	Glass and laboratory supplies	47 31
628	" 31....	Champaign Co. Herald	Paper and blanks	9 00
629	" 31....	J. O Kane	Books, etc	34 00
630	" 31....	J. W. Buiter Paper Co	Mounting board	22 50
631	" 31....	Henry Trevett	Hardware and lawn mower	35 25
632	" 31....	R. S. Wilber	Drayage	57 70
633	" 31....	Estes & Lauriat	Blackwood's Magazine	139 00
634	" 31....	A. C. McClurg & Co.	Books and stationery	269 69
635	" 31....	Enterprise Coal & Coke Co.	Coal	36 00
636	" 31....	Champaign & Urbana Gas Co.	Gas, May, 1889	66 00
637	" 31....	Thomas Wright & Son	Castings	13 70
638	" 31....	George Besore	Lumber	437 56
639	" 31....	Union Water Supply Co.	Water for April 1 to June 30	100 00
640	" 31....	West. Bank Note & Eng. Co.	Printing diplomas, etc	37 50
641	" 31....	Champaign Co. Gazette	Catalogues and stationery	340 67
642	" 31....	American Express Co.	Charges	23 40
643	" 31....	Illinois Central R. R. Co.	"	22 65
644	" 31....	Wabash R. R. Co.	"	4 28
645	" 31....	Mechanical department	Labor and material	39 28
646	" 31....	" "	Labor, material, and power	126 46
647	" 31....	Architectural department	Labor and material	50 08
648	" 31....	" "	Labor, material, and power	262 56
649	" 31....	Pay-roll of men, May, 1889	Labor	130 14
650	" 31....	Pay-roll of students, May, '89	"	111 41
651	June 12....	O. A. Harker	Expenses to Board Meeting	15 00
652	" 12....	Alex. McLean	"	37 38
653	" 12....	F. M. McKay	" "	16 50
654	" 12....	S. A. Bullard	" "	11 60
655	" 12....	C. Bennett	" "	5 50
656	" 12....	E. Cobb	" "	2 50
657	" 12....	S. M. Millard	" "	7 64
658	" 15....	D. Appleton & Co	Book	6 00
659	" 15....	S. A. Forbes	Petty expense, etc	145 99
660	" 15....	G. B. Grant	1 cut	4 00
661	" 15....	H. J. Green	Thermometers	31 50
662	" 15....	Robinson & Burr	Fittings, etc	33 39
663	" 15....	T. J. Burrill	Salary 6 months to June 30, 1889	100 00
664	" 15....	D. H. Lloyde & Son	Stationery	15 10
665	" 15....	Amer. Lead Pencil Co.	1 gross pencils	7 50
666	" 15....	Mathews, Northrup & Co	Engraving	25 00
667	" 15....	S. H. Vowell & Co.	Repairs on caligraph	6 65
668	" 15 ..	Lowis Engraving Co.	Engraving	1 78
669	" 15....	J. C. West	Specimen of fish	10 00
670	" 15....	Judd & Detwiler	Electrotyping	67 95
671	" 15....	Ginn & Co	Journal of Morphology	9 00
672	" 15....	Brown & Co	2 vol. Britannica	11 00
673	" 15....	C. F. Adams	Mounting birds, etc	172 08
674	" 15....	Champaign Co. Gazette	Binding	100 00
675	" 15....	Pay rolls of men and women	Labor, June, 1889	203 00
676	" 29....	S. H. Peabody	Salary, June, 1889	333 33
677	" 29....	T. J. Burrill	" " "	141 66
678	" 29....	S. W. Shattuck	" " "	166 66
679	" 29....	E. Snyder	" " "	166 66
680	" 29....	J. C. Pickard	" " "	166 66
681	" 29....	N. C. Ricker	" " "	166 66

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1889.			
682	June 29....	J. D. Crawford	Salary, June, 1889	$166 66
683	" 29....	G. E. Morrow	" " "	141 66
684	" 29....	P. Roos	" " "	150 00
685	" 29....	I. O. Baker	" " "	166 66
686	" 29....	S. A. Forbes	" " "	83 33
687	" 29....	T. B. Comstock	" " "	150 00
688	" 29....	J. H. Brownlee	" " "	150 00
689	" 29....	C. W. Rolfe	" " "	125 00
690	" 29....	D. McIntosh	" " "	150 00
691	" 29....	N. Butler, Jr	" " "	133 33
692	" 29....	A. N. Talbot	" " "	116 66
693	" 29....	A. T. Woods	" " "	166 66
694	" 29....	A. G. Manns	" " "	50 00
695	" 29....	W. H. Garman	" " "	100 00
696	" 29....	E. A. Kimball	" " "	125 00
697	" 29....	G. W. Parker	" " "	90 00
698	" 29....	G. W. Myers	" " "	50 00
699	" 29....	B. Tatarian	" " "	80 00
700	" 29....	G. B. McHugh	" " "	60 00
701	" 29....	A. B. Baker	" " "	70 00
702	" 29....	F. M. Ryan	" " "	80 00
703	" 29....	Essie Dana	" " "	25 00
704	" 29....	J. Marten	" " "	66 66
705	" 29....	M. J. Snyder	" " "	50 00
706	" 29....	C. A. Hart	" " "	50 00
707	" 29....	A. M. Westergren	" " "	60 00
708	" 29....	S. E. Goodrich	Collecting insects	2 00
709	" 29....	J. W. Bunn	Taxes on Neb. and Minn. lands	1,543 62
710	" 29....	Imperial Quartet	Services at commencement	80 64
711	" 29....	Maud Kimball	Music fees, spring term	119 00
712	" 29....	S. W. Stratton	Photographing	25 00
713	" 29....	S. H. Peabody	Traveling expenses	64 84
714	" 29....	Walker & Mu liken	Dusters, etc	2 90
715	" 29....	Champa gn Times	Stationery and blanks	10 50
716	" 29....	Amberg File & Index Co....	Refitting files	3 50
717	" 29....	Hornstein Bros	Examination sheets	3 25
718	" 29....	Champaign Co. Herald	Programmes	15 25
719	" 29....	Isaac Fielding	Postage	20 00
720	" 29....	A. J. Stoneburner	Salary ½ June, '89	20 00
721	" 29....	G. P. Putnam's Sons	Books	200 59
722	" 29....	R. Friedlander & Son	Books	116 31
723	July 15....	J. S. Terrill	Work in laboratory	10 16
724	" 15....	Pay roll of men and women	Labor, June, '89	201 90
725	" 15....	Pay roll of students	" " "	194 16
726	" 31....	S. H. Peabody	Salary, July, 1889	333 33
727	" 31....	T. J. Burrill	" "	141 66
728	" 31....	S. W. Shattuck	" "	166 66
729	" 31....	E. Snyder	" "	166 66
730	" 31....	J. C. Pickard	" "	166 66
731	" 31....	N. C. Ricker	" "	166 66
732	" 31....	J. D. Crawford	" "	166 66
733	" 31....	G. E. Morrow	" "	141 66
734	" 31....	P. Roos	" "	150 00
735	" 31....	I. O. Baker	" "	166 66
736	" 31....	S. A. Forbes	" "	83 33
737	" 31....	T. B. Comstock	" "	150 00
738	" 31....	J. H. Brownlee	" "	150 00
739	" 31....	C. W. Rolfe	" "	125 00
740	" 31....	D. McIntosh	" "	150 00
741	" 31....	N. Butler, Jr	" "	133 33
742	" 31....	A. N. Talbot	" "	116 66
743	" 31....	A. T. Woods	" "	166 66
744	" 31....	E. A. Kimball	" "	125 00
745	" 31....	G. W. Parker	" "	90 00
746	" 31....	A. B. Baker	" "	70 00
747	" 31....	J Marten	" "	75 00
748	" 31....	M. J. Snyder	" "	50 00
749	" 31....	C. A. Hart	" "	50 00
750	" 31....	A. M. Westergren	" "	60 00
751	" 31....	M. L. Barnes	Salary, June, 1889	29 25
752	" 31....	W. H. Garman	Field expenses	12 66
753	" 31....	M. J. Snyder	Expenses to Springfield	5 83
754	" 31....	J. S. Terrill	Work in laboratory	6 19
755	" 31....	S. A. Forbes	Expenses	55 65
756	" 31....	A. P. Cunningham	Nature (13 weeks)	2 34
757	" 31....	S. H. Scudder	Pts. 8 and 9 Butterflies Eastern U. S.	10 00
758	" 31....	U. S. Express Co	Charges	4 90

List of Warrants—Continued.

No.	Date.	To Whom.	For Whom.	Amount.
	1889.			
759	July 31....	H. Chester	Carriages	$9 00
760	" 31....	Grace Peabody	Services in Regent's office	15 05
761	" 31....	S. W. Shattuck	Petty expenses 3 months	25 72
762	" 31....	Isaac Fielding	Po-tage	22 50
763	" 31....	Illinois Central R. R. Co.	Freight charges	22 40
764	" 31....	O. I. & W. R. R. Co	" "	3 32
765	" 31....	G. E. Morrow	Farm Expense, June, 1889	248 62
766	" 31....	L. C. Garwood	Loading tools	3 50
767	" 31....	Enterprise Coal & Coke Co.	Coal	18 00
768	" 31....	Champaign & Urbana Gas Co	Gas, June 1889	16 00
769	" 31....	G. F. Kimball	Glass	38 16
770	" 31....	Fuller & Fuller Co	"	2 91
771	" 31....	Fuller & Fuller Co	"	25 13
772	" 31....	S. R. Roberts	Manual of Conchology	24 00
773	" 31....	C. McElroy	Washing towels	2 63
774	" 31....	G. C. Willis	Toweling	7 00
775	" 31....	J. S. Terrill	Work in laboratory	5 55
776	" 31....	Central Union Telephone Co	Rent of telephone	15 00
777	" 31....	R. S. Wilber	Drayage	28 50
778	" 31....	Illinois Central R. R. Co	Charges	15 55
779	" 31....	Wabash West. R. R. Co	"	15 30
780	" 31....	Crane Bros. Mfg. Co	Iron pipe, etc	28 37
781	" 31....	J. H Bainum	Plastering	201 68
782	" 31....	Isaac Fielding	Postage	10 00
783	" 31....	J. E. Hunt	Paper	1 87
784	" 31....	U. S. Express Co	Charges	16 26
785	" 31....	Am. Express Co	"	19 24
786	Aug. 10....	Illinois Central R. R. Co	"	207 20
787	" 10....	J. Lindsey	Sand	6 50
788	" 10....	The Independent	Advertising	9 92
789	" 10....	J. S. Terrill	Labor	41 40
790	" 10....	J. Marten	Expenses	20 00
791	" 10....	M. J. Snyder	"	13 33
792	" 10....	S. A. Forbes	" maps, etc	21 50
793	" 10....	S. H. Scudder	Pt. 10 Scudder's Butterflies	5 00
794	" 10....	E. H. Sargent & Co	Test tubes, bottles, etc	20 81
795	" 10....	Kerr Bros	Material and labor on drill hall	1,538 72
796	" 10....	G. Besore	Lumber for drill hall	669 93
797	" 10....	Yale & Towne Mfg. Co	Locks	8 22
798	" 10....	Agricultural department	Expenses, July, 1889	171 12
799	" 10....	S. W. Shattuck, pay roll men.	Labor, July, 1889	293 97
800	" 10....	S. W. Shattuck, " students	" July, 1889	299 52
801	" 31....	S. H. Peabody	Salary, Augtst, 1889	333 33
802	" 31....	T. J. Burrill	" "	141 66
803	" 31....	S. W. Shattuck	" "	166 66
804	" 31....	E. Snyder	" "	166 66
805	" 31....	J. C. Pickard	" "	166 66
806	" 31....	N. C. Ricker	" "	166 66
807	" 31....	J. D. Crawford	" "	166 66
808	" 31....	G. E Morrow	" "	141 66
809	" 31....	P. Roos	" "	150 00
810	" 31....	I. O. Baker	" "	166 66
811	" 31....	S. A. Forbes	" "	83 33
812	" 31....	T. B. Comstock	" "	150 00
813	" 31....	J. H. Brownlee	" "	150 00
814	" 31....	C. W. Rolfe	" "	125 00
815	" 31....	D. McIntosh	" "	150 00
816	" 31....	N. Butler, Jr	" "	133 33
817	" 31....	A. N. Talbot	" "	116 66
818	" 31....	A. T. Woods	" "	166 66
819	" 31....	E. A. Kimball	" "	125 00
820	" 31....	G. W. Parker	" "	90 00
821	" 31....	A. B. Baker	" "	70 00
822	" 31....	J. Marten	" "	75 00
823	" 31....	M. J. Snyder	" "	50 00
824	" 31....	C. A. Hart	" "	50 00
825	" 31....	A. M. Westergren	" "	60 00
826	" 31....	Grace Peabody	" for services	5 00
827	" 31....	S. W. Shattuck	" as Business Agent 3 months	75 00
828	" 31....	J. W. Spalding	Postage	10 00
829	" 31....	W. T. Comstock	Advertising	1 00
830	" 31....	Western Union Tel. Co	Telegrams	1 42
831	" 31....	Fuller & Fuller Co	Glue	1 80
832	" 31....	Charles Bros.	Painting and calcimining	314 20
833	" 31....	Illinois Central R. R. Co	Charges	185 80
834	" 31....	Agricultural department	Expenses, August, 1889	229 23

List of Warrants—Concluded.

No.	Date.	To Whom.	For What.	Amount.
	1889.			
835	Aug. 31....	Grace Peabody.....	Services in Regent's office Aug., '89.	$3 75
836	" 31....	Students' pay roll.....	Labor, August, 1889.....	211 84
837	" 31....	Pay roll of men and women.	" "	252 62
838	" 31....	Kerr Bros.....	Labor and material for drill hall....	1,154 93
839	" 31....	G. Besore.....	Lumber for drill hall.....	809 18
840	" 31....	Robinson & Burr.....	Labor and material.....	20 88
841	" 31....	Chicago Carpet Co.....	Matting and mats.....	38 03
842	" 31....	G. Besore.....	Lumber	313 07
843	" 31....	Singer & Talcott Stone Co..	Stone.....	247 40
844	" 31....	T. Wright & Son.....	Grates, etc.....	9 94
845	" 31....	Hubbard & Son	Hardware	86 57
846	" 31....	R. S. Wilber.....	Hauling	101 00
847	" 31....	W. Price.....	Wall paper.....	4 00
848	" 31....	Crane Bros. & Co	Iron pipe.....	257 98
849	" 31....	W. T. Pratt.....	Roof repairs.....	8 10
850	" 31....	L. M. Moore	Blackboard	26 12
851	" 31....	Illinois Machine Works.....	Fittings and repairs	11 37
852	" 31....	Fuller & Fuller Co.....	Glue	3 54
853	" 31....	Sutton Brick and Tile Co...	Brick	75 00
854	" 31....	S. W. Conant.....	Hardware and repairs.....	59 96
855	" 31....	H. Trevett.....	"	39 17
856	" 31....	T. H. Trevett.....	"	6 03
857	" 31....	S. H. Scudder.....	Pt. 11 of Butterflies.....	5 00
858	" 31....	Lyon & Healy.....	Repairs.....	3 10
859	" 31....	Champaign Co. Gazette.	Blanks and printing	30 00
860	" 31....	Bradley & Co.....	Advertising	10 00
861	" 31....	Illinois State S. S. Associa'n	"	5 00
862	" 31....	Leader Publishing Co.....	"	1 50
863	" 31....	G. E. Marshall & Co.....	Record book.....	5 00
864	" 31....	A. N. Kellogg News Co.....	Advertising	220 00
865	" 31....	Lord & Thomas	"	257 16
866	" 31....	Enterprise Coal Co.....	Coal.....	276 25
867	" 31....	Charles Bros.....	Calcimining, etc.....	21 15
868	" 31....	Fuller & Fuller Co.....	Glass.....	15 73
869	" 31....	E. Henry	Paints, oils, etc.....	141 31
870	" 31....	S. W. Conant.....	Hardware	9 75
871	" 31....	S. W. Shattuck, Business Agt.	Petty expenses.....	29 78
872	" 31....	Architectural department....	Labor and material.....	17 98
873	" 31....	" "	" "	1,423 11

Financial statement of the University of Illinois [not including State Laboratory of Natural History or the Agricultural Experiment Station] for the year ending August 31, 1889.

RECEIPTS, SEPTEMBER 1, 1888—AUGUST 31, 1889.		
Balance		$23,151 21
From State Appropriations—		
For taxes on lands in Minnesota and Nebraska	$1,543 62	
For buildings and grounds	2,500 00	
For laboratories	1,500 00	
For mechanical shops	1,500 00	
For books and publications	1,000 00	
For specimens for cabinets	500 00	
For current expenses of instruction	20,000 00	
For new boiler	1,250 00	
For drill hall	10,000 00	
		39,793 62
From other sources—		
Interest	$26,527 71	
Rents	1,295 65	
Fees of University students	9,354 75	
Fees of preparatory students	1,920 00	
Gross receipts of business departments	11,104 65	
Miscellaneous	41 25	
Agricultural Experiment Station	1,196 11	
Balance J. F. Leib note	1,500 00	
		52,940 12
		$115,884 95
EXPENDITURES, SEPTEMBER 1, 1888—AUGUST 31, 1889.		
From State Appropriations—		
Taxes on lands in Minnesota and Nebraska	$1,543 62	
Buildings and grounds	3,069 03	
Laboratories	1,499 40	
Mechanical shops	1,160 00	
Books and publications	1,511 31	
Cabinets	1,004 72	
Current expenses of instruction	13,441 73	
Metallurgical laboratory	844 39	
Drill hall	4,988 34	
		$29,062 54
From other funds—		
Expenses of Board of Trustees	$471 56	
Salaries for instruction	25,608 02	
Salaries for services	2,821 17	
Buildings and grounds	257 50	
Fuel and lights	2,386 29	
Stationery, printing and postage	1,362 70	
Preparatory department	1,419 97	
Gross expenses of business departments	9,979 35	
Water supply	400 00	
Premium on bonds	674 10	
Miscellaneous	585 12	
Incidentals	377 18	
		46,342 96
Balance		40,479 45
		$115,884 95

Financial statement of the Illinois State Laboratory of Natural History, for the fiscal year ending June 30, 1889.

RECEIPTS.		
Balance from last report	$470 92	
For field, office and incidental expenses	1,000 00	
Improvement of library	1,000 00	
Pay of assistants	3,000 00	
Publication of bulletins	300 00	
EXPENDITURES.		
For field, office, and incidental expenses		$852 94
Improvement of library		1,109 22
Pay of assistants		3,037 24
Publication of bulletins		271 52
Balance		500 00
	$5,770 92	$5,770 92

Financial statement of the Agricultural Experiment Station, University of Illinois, for the year ending June 30, 1889.

RECEIPTS.		
Appropriated by Congress	$15,000 00	
EXPENDITURES.		
Buildings and repairs		$482 42
Board expenses		97 60
Books and publications, and binding		421 51
Botanical apparatus, supplies, and fixtures		25 65
Bulletins and reports		1,189 97
Chemical apparatus, supplies, and fixtures		156 23
Fertilizers		63 70
Fuel and lights		372 10
Furniture and fittings		99 98
Incidentals		173 00
Printing, stationery, and postage		78 80
Salaries		7,856 11
Seeds and trees		183 30
Tools		177 10
Wages and teams		3,464 64
Sundry special expenditures on certain experiments		157 89
	$15,000 00	$15,000 00

PROCEEDINGS

OF THE

BOARD OF TRUSTEES

OF THE

UNIVERSITY OF ILLINOIS,

FOR THE YEAR ENDING AUGUST 31, 1890.

MEETING OF SEPTEMBER 10, 1889.

The Board of Trustees of the University of Illinois met in the University parlor, in Urbana, at 3:30 o'clock p. m., September 10, 1889.

The members present were Messrs. Bennett, Bullard, Clemens, Cobb, Edwards, Harker, McLean, and Shawhan; absent, Governor Fifer, and Messrs. Haskell, McKay, and Millard.

The minutes of the last meeting were approved.

The Regent's report was then read.

REGENT'S REPORT.

To the Trustees of the University of Illinois.

GENTLEMEN: At the last meeting of the Board of Trustees, the Regent "was authorized to fill the vacancies in the list"—of appointments—"on consultation with the Committee on Instruction, subject to the approval of the Board. For this purpose Mr. Shawhan was made a member of the committee." Pursuant to this action of the Board, the following appointments have been made:

Rufus Anderson, Instructor in Iron Work and Foreman, $1,600 per annum.

S. R. Winchell, Professor of Latin, $2,000 per annum.

Howard S. Brode, Assistant in Zoölogy, $100 per month.

H. S. Grindley, Second Assistant in Chemistry, $60 per month.

J. V. E. Schaeffer, Assistant in Machine Shop, $80 per month.

Cleaves Bennett, Assistant in Library, $40 per month.

Mr. Anderson graduated from the mechanical department of Cornell University. He has served several years as foreman in private mechanical shops, and for five years as foreman in the Sibley College of Engineering, of Cornell University. From his long and special experience, and the evidences of his practical skill as workman and teacher, I am led to put great confidence in his ability to do the work desired here.

Mr. Winchell is a graduate of the University of Michigan, has served successfully as principal of the high schools at Ann Arbor, Michigan, and at Milwaukee, Wisconsin, and is well known as an educational author and publisher. He will be an important accession to the force in our college of literature and science.

Mr. Brode comes with excellent recommendations for his work in connection with Professor Forbes.

The other appointees are well known graduates of our own schools.

Learning that Professor Arthur W. Palmer had finished the year's work which he had undertaken in Germany, and was about to return to this State, I offered him the nomination to the vacancy made by the transfer of Prof. Manns from the Experiment Station. But Mr. Manns declines the appointment to the University work, preferring to remain in that of the Experiment Station. I have no question but that he would do the University excellent service. Some conference with him has given an understanding as to his ulterior purposes in life which shows that this declination is creditable alike to his good sense and to his kindly disposition to the University, and I think his wishes should be acceded to.

I therefore, with leave of the Board, nominate Arthur W. Palmer, Sc. D., to the position of Assistant Professor of Chemistry, at a salary of $1,600 per annum, and recommend that he be placed in charge of the department of chemistry. Prof. Palmer will be remembered as a graduate of this University, having received his Doctor's degree at Harvard University. He has had long experience as a teacher, both at Harvard and at home; he is thoroughly a chemist, familiar with our courses and methods, and has fairly earned this appointment.

Mr. Bedros Tatarian has declined the appointment as First Assistant in the Chemical Laboratory, and Miss Essie Dana declines to be Assistant in Drawing.

These places are to be supplied.

Wednesday last an alarm of fire was made, proceeding from the north barn, caused, probably, by the machinery connected with the large windmill. The barn was filled with hay and burned rapidly. All the animals and most of the machinery and tools were saved. The barn with about sixty tons of hay, the dairy house, the corn-crib, with about 600 bushels of grain, and the silo were lost. Prof. Morrow's house, although at one time in imminent danger, was not injured. The loss of this barn makes a serious interruption in the work of the farm, and especially of the Experiment Station. I hope that the Board will see the need of its immediate reconstruction, and I believe that the means for so doing will be found to be within your control. The total loss may be roughly estimated at about five thousand dollars.

Professor Morrow has returned from his European trip. During his absence the farm work has been cared for by Mr. F. D. Gardner, in a very satisfactory manner. The farm report is presented herewith:

FARM REPORT.

UNIVERSITY, Sept. 10, 1889.

Dr. S. H. Peabody, Regent:

SIR: During the three months ending September 1st, the financial transactions of the University farm have aggregated as follows:

Receipts	$314 28
Expenditures	258 13

The expenditures have been the larger because of the harvest and threshing—fully completed—and some necessary purchases. The sales have been smaller than usual because of my absence. The hay and oats harvest was satisfactory. There is a prospect of a fine crop of corn. The potatoes are in good condition. The live stock has generally done well.

The work during the quarter seems to me to have been well and economically done.

The burning of the barn on the experiment farm, September 4th, was a serious misfortune. Aside from the buildings, there were burned about 60 tons of hay, 500 bushels of corn, 100 bushels of wheat, 100 bushels of oats, together with harness, tools, etc., to the amount of about $100 to $125, not counting property of the Experiment Station.

Respectfully submitted, G. E. MORROW.

The quarterly report of the Experiment Station, with recommendations and estimates, is herewith presented. I believe that the Station has settled down into regular, efficient, and useful work. It is now issuing nearly 10,000 bulletins, quarterly, mostly to farmers in Illinois. The trial experiments at Flora, in the southern part of the state, indicate important results, which, if corroborated by subsequent experiments, will prove a very great service to the farmers in that section. A second series of these trials is already begun.

REPORT OF THE EXPERIMENT STATION.

To the Regent of the University of Illinois.

SIR: The Board of Direction of the Experiment Station asks authority from the Board of Trustees to undertake the following work:

1. During the past year an experiment in relation to the effect of fertilizers upon wheat has been carried on at Flora by your authority. The Board of Direction proposes to repeat this experiment at Flora, and desires, with your consent, to undertake similar experiments at several other points. It is proposed to expend upon these experiments during the year not more than one hundred dollars.

2. An experiment to test the vitality of seeds.

3. An experiment to test the durability of woods.

4. An experiment to test the deterioration of varieties.

To carry on its operations until October 1, 1889, the Board of Direction asks that Station funds be appropriated to its use:

For fuel and lights	$50 00
For incidental expense	25 00
For wages	300 00
	$375 00

And for the quarter ending December 31, 1889:

Board expense	$40 00
Books and publications	50 00
Botanical apparatus	100 00
Bulletins and reports	350 00
Chemical apparatus	75 00
Fertilizers	10 00
Fuel and lights	100 00
Incidentals	25 00
Printing, stationery, and postage	25 00
Salaries	1,960 00
Seeds and trees	25 00
Tools	130 00
Wages and teams	800 00
Dairying experiment	100 00
Wheat experiments	50 00
Total	$3,840 00

The following papers are presented:

A. Vouchers for auditing, with a list of the same.

B. Statement of expenditures for quarter ending June 30, 1889.

C. Statement of receipts and expenditures for the year ending June 30, 1889.

D. Statement of appropriations, expenditures, and balances for the current quarter ending September 30, 1889.

E. Estimate of expenditures for the quarter ending December 31, 1889.

PAPER C—*Statement of Accounts for the year ending June 30, 1889.*

RECEIPTS.	
Appropriated by Congress	$15,000 00
EXPENDITURES.	
Buildings and repairs	482 42
Board expenses	97 60
Books and publications, and binding	421 51
Botanical apparatus, supplies and fixtures	25 65
Bulletins and reports	1,189 97
Chemical apparatus, supplies, and fixtures	156 23
Fertilizers	63 70
Fuel and lights	372 10
Furniture and fittings	99 98
Incidentals	76 50
Printing, stationery, and postage	78 80
Salaries	7,856 11
Seeds and trees	183 30
Tools	177 10
Wages and teams	3,464 64
Sundry—	
Biology of ensilage	50 00
Fruit preservation	13 50
Corn experiment at Flora	16 75
Wheat experiment at Flora	25 67
Experiment with fertilizers on grasslands [fencing]	51 97
Expense delegates to Knoxville	71 50
Association American Colleges and Experiment Stations	25 00
	$15,000 00

Respectfully submitted,

S. H. PEABODY, President Board of Direction.

The new drill hall has made considerable progress. The walls are nearly finished, and the building will be inclosed before cold weather comes. It will be difficult to finish it within the appropriation made by the state, and some funds from current account will be needed.

The improvements asked in the upper story of the main building were referred to the Committee on Buildings and Grounds, and with its approval have been made. The department of architecture finds itself in apartments well suited to its needs, both as to space and light. The amount of money expended has considerably exceeded the estimate. A part of this excess comes from the need of casing the girders overhead, from which the plaster was falling. This has been required from time to time in all the large rooms where the heavy girders are exposed. The whole improvement has cost $590.62. The sum appropriated at the last meeting was $430. The balance should now be assigned.

The renovation of the chemical building has been done at a cost of $286.54. The sum assigned was $400.

The fence around the north campus has mostly been set; the remainder being left until the work about the new building should be finished. The amount expended is $496.64. The appropriation was $500. It will require $50 more for painting, which should be done without delay.

The general repairs, cleaning, calcimining, etc., have been larger than usual at this season, especially because of the amount of carpenter, mason, and painter's work done in the two buildings. For this purpose $400 was authorized. The cost has been $548.69, which you are asked to approve.

The Library Committee presents a report of its transactions for the year ending June 30th. It is a matter of regret that the legislature should reduce the usual appropriation for this important purpose. The amount available is only $1,000, for which I ask the usual reference with authority to act.

REPORT OF LIBRARY COMMITTEE.

To the Trustees of the University of Illinois.

GENTLEMEN: At the meeting of the Trustees of September, 1888, the following order was passed:

"That the expenditure of the state appropriation for books and publications for the current year be referred to a committee consisting of the Regent, the Librarian, and the Business Agent, and that the list of books and the bids obtained therefor be referred to the Executive Committee of the Board for its approval."

Acting under this direction the Library Committee, after conference with the members of the Faculty, prepared as usual, a list of periodicals and a list of books. Both these were submitted to and were approved by the Executive Committee.

Nov. 27, 1888. Leave was given by the Executive Committee to purchase list of periodicals for year 1889 from A. H. Roffe & Co., for $273.81.

Dec. 8, 1888. Leave given by same to purchase missing back numbers to complete volumes, to the amount of $15.00.

Jan. 16, 1889. Leave given to pay for binding Patent Office reports $31.20.

Bids were invited from A. C. McClurg & Co., and S. A. Maxwell & Co., of Chicago, and G. P. Putnam's Sons, of New York, as to list of books, already approved by the Executive Committee. These firms had all requested opportunity to present bids. Lists were sent to each firm separately. After lapse of considerable time, Maxwell & Co. wrote declining to bid, farther than an offer to buy such books as they could find in market at 10 per cent. commission. Bids were received from Putnam & Co., and from McClurg & Co.; the latter were found to be the lowest, and the purchase was awarded to them by the Executive Committee, Jan. 26,

1889, to the amount of $545.88, the books to be delivered free of cost for freight, etc., at Champaign.

At the same time the Executive Committee ordered that the Regent be authorized "to purchase the necessary books not included in the above list, at the best terms possible, and to report the same to the Board."

Pursuant to these orders of the Trustees and the Executive Committee, the Library Committee and the Regent present the accompanying statement of their expenditures on this account:

UNIVERSITY OF ILLINOIS, Sept. 10, 1889.

A STATEMENT OF STATE APPROPRIATION FOR BOOKS AND PUBLICATIONS FOR TWELVE MONTHS, ENDING SEPT. 1, 1889.

1888.				
Sept. 1		Balance		$1,511 31
Warrant	112	Subscription, School of Mines	$2 00	
"	113	Index o Magazines, Galloupe	2 00	
"	160	Book, Brown & Co	5 50	
"	194	Book, McClurg & Co	5 25	
"	195	Transactions, Amer. Phil. Asso	2 00	
"	197	Books, Schoenhof	24 03	
"	196	Bound Forum, Forum Pub. Co	17 50	
"	209	Books, Steiger & Co	28 20	
"	210	Maps, MacCoun	10 00	
"	223	Book, Putnam's Sons	5 50	
"	324	Book, Haines Co	5 00	
"	331	Binding, U. S. Patent Office	31 20	
"	384	Books, Steiger & Co	14 86	
"	385	Books, B. F. Stevens	32 49	
"	386	Books, Schoenhof	10 41	
"	403	Periodicals, Roffe & Co	275 61	
"	404	Books, McClurg & Co	169 83	
"	481	Book, A. W. French	75	
"	547	Subscriptions, A. H. Roffe & Co	3 10	
"	548	Book, Putnam's Sons	5 50	
"	549	Books, Houghton & Co	4 00	
"	550	Books, McClurg & Co	135 01	
"	633	Books, Estes & Lauriat	139 00	
"	634	Books, McClurg & Co	261 49	
"	644	Freight, Wabash Co	3 49	
"	658	Book, Appleton & Co	6 00	
"	672	Books, Brown & Co	11 00	
"	674	Binding, Champaign Co. Gazette	100 00	
"	721	Books, Putnam's Sons	200 59	
				1,511 31

S. W. SHATTUCK, Business Agent.

Respectfully submitted,

S. H. PEABODY,
S. W. SHATTUCK,
J. D. CRAWFORD,
} Library Committee.

I ask the following items:

From state appropriation for apparatus and material—	
For instruments for department of civil engineering	$250
For gauges and tools of precision for machine shop	300
For geological relief map, $10; for aneroid barometer, $40	50
From state appropriation for cabinets—	
For human skeleton	50
For current expenses zoölogical laboratory	50
From current funds—	
For furniture and fittings, including two teachers' desks, settees and chairs, desks for drawing rooms, and racks for drawing boards	200
For repairs to boilers at main building	600

Respectfully submitted,

S. H. PEABODY, Regent.

On motion by Mr. Cobb, the nominations of instructors in the University for the current year were approved, as made by the Regent:

S. R. Winchell, Professor of Latin	$2,000 per annum.
A. W. Palmer, Assistant Professor in Chemistry	1,600 " "
Rufus Anderson, Instructor in Iron Work and Foreman	1,600 " "
Howard S. Brode, Assistant in Zoölogy	100 per month.
Henry Jussel, First Assistant in Chemistry	90 " "
H. S. Grindly, Second Assistant in Chemistry	60 " "
J. V. E. Schaeffer, Assistant in Machine Shop	80 " "
Cleaves Bennett, Assistant in Library	40 " "
Etta Beach, Assistant in Drawing	25 " "

BUSINESS AGENT'S REPORT.

The Business Agent, Prof. S. W. Shattuck, made his report, which was referred to the Committee on Finance:

UNIVERSITY OF ILLINOIS, Sept. 10, 1889.

Alexander McLean, Pres. Board of Trustees, University of Illinois,

SIR: I have the honor to transmit herewith the usual papers due from me at this time.

Paper A is a statement of the current appropriations for the six months ending Sept. 1, 1889.

Paper B is a statement of the state appropriations, Sept. 1, 1889.

Paper C is a list of vouchers presented for audit, being 626 to 837 inclusive.

Paper D is an estimate of receipts and expenses for the twelve months ending Sept. 1, 1890.

Paper E is an estimate of receipts and expenses for the six months ending March 1, 1890.

The Board is requested to make the necessary appropriation for the expenses of these six months.

Respectfully submitted,
S. W. SHATTUCK, Business Agent.

PAPER A—CURRENT APPROPRIATIONS.

Of March 12, 1889, and June 11, 1889.	Appropriated	Receipts also appropriated.	Expended.	Balance.
Board expense	$300 00		$188 03	$111 97
Salaries for instruction	19,835 66	$333 33	18,944 55	1,224 44
" " services	1,400 00		1,260 27	139 73
Buildings and grounds	50 00	104 00	111 00	43 00
Fuel and lights	1,000 00	227 72	1,033 50	194 22
Stationery and printing	1,300 00		1,122 32	177 68
Mechanical department	200 00	182 14	322 47	59 67
Architectnral "	200 00	2,068 25	2,217 50	50 75
Agricultural "	200 00	981 14	1,547 78	
Horticultural "	200 00	196 42	72 87	323 55
Military "	50 00		44 46	5 54
Laboratories	200 00	578 52	315 97	462 55
Library and apparatus	50 00		16 35	33 65
Incidentals	264 84		234 52	30 32
Sundries—				
Furniture and fixtures	124 85		82 49	42 36
Water supply	200 00		200 00	
Commencement expenses	200 00		196 93	3 07
Premium on bonds	674 10		674 10	
Preparat ry year		632 50	619 99	12 51
University students' fees		3,057 50		3,057 50
Music fees		258 50	258 50	
Griggs farm		638 33		638 33
Association Agt'l Col. and Exp. Sta.	25 00		25 00	
Minnesota and Nebraska lands		10 00		10 00
Paris Exposition	25 00		25 00	

PAPER B—STATE APPROPRIATIONS.

	Approp'd.	Received.	Expended	Balance.
Taxes on land.....(½ per annum)	$3,400 00	$1,543 62	$1,543 62	.....
Buildings and grounds..... "	5,000 00	2,500 00	1,835 68	$664 32
Mech. and Arch. shops..... "	3,000 00	1,500 00	50 00	1,450 00
Books and publications..... "	2,000 00	1,000 00	.....	1,000 00
Cabinets..... "	1,000 00	500 00	4 72	495 28
Expenses of instruction..... "	40,000 00	20,000 00	.....	20,000 00
Apparatus and material..... "	3,000 00	1,500 00	.....	1,500 00
Metallurgical laboratory.....	4,000 00	4,000 00	2,624 18	1,375 82
Drill hall.....	10,000 00	10,000 00	4,988 34	5,011 66
New boiler in machine shops...	1,250 00	1,250 00	.....	1,250 00
	$72,650 00	$43,793 62	$11,046 54	$32,747 08
Illinois State Laboratory of Natural History..	15,123 62	9,873 62	1,870 21	8,003 41

Messrs. McKay and Millard, of the Finance Committee, being absent, the President appointed Messrs. Bennett and Clemens on the committee to serve for this meeting.

So much of the Regent's report as related to the loss by fire and to rebuilding the barn was, on motion, referred to the Committee on Buildings and Grounds with instructions to consider the matter and report to the Board later during this meeting.

The requests made by the Board of Direction of the Experiment Station for authority to undertake new work, were granted on motion of Mr. Cobb.

Also, on motion of Mr. Cobb, appropriations of Station funds were made as asked, for both the current and the next quarters.

The report of the Library Committee was received and approved on motion of Mr. Cobb.

It was voted that the Library Committee should consist of the Regent, the Business Agent, and the Librarian, Prof. J. D. Crawford, and that to them should be entrusted the expenditure of the state appropriation of $1,000.00 for the use of the library; and the Committee was instructed to consult with the chairman of the Executive Committee.

The Board then adjourned to meet at the Doane House, in Champaign, at 9 o'clock p. m.

Evening Session.

The Board convened at the Doane House according to adjournment, the same members being present as in the afternoon.

On motion of Mr. Cobb, appropriations were made as follows:

From state appropriation for buildings and grounds—	
For completion of fence around north campus.....	$50 00
Additional for repairs and cleaning.....	150 00
Additional for fitting up rooms of architectural department.....	170 00

On motion of Mr. Bullard, there was appropriated:

From state appropriation for apparatus and material—	
For civil engineering instruments	$250 00
For gauges and instruments of precision for machine shop	3 0 00
For geologic relief map	10 00
For aneroid barometer	40 00

On motion of Mr. Harker, there was appropriated:

From state appropriation for cabinets—	
For human skeleton	$50 00
For current expenses of zoölogical laboratory	50 00

On motion of Mr. Bullard, there was appropriated:

From current funds—	
For desks, settees, racks, etc	$200 00

And on motion of Mr. Harker, there was appropriated from the same fund, in payment of the Regent's bill for traveling expenses, $123.42.

On motion of Mr. Harker, the Secretary was instructed to return to Mr. Foster North, of Kewanee, his letter to the Board, and to say to him that the proposition therein contained was declined.

The Board then adjourned to meet at the University at 8:30 o'clock a. m. Wednesday.

Session of Wednesday.

The Board met at the University parlor at 9 o'clock a. m., Wednesday, the same members being present as on the previous day.

The Treasurer, Mr. J. W. Bunn, then presented his report, which was referred to the Finance Committee.

John W. Bunn, Treasurer, in account with the University of Illinois—*Dr.*

1889.				
June	11	To balance		$6,016 92
	"	" J. F. Leib for balance note		1,500 00
	15	" interest on Morgan Co. bonds	$1,400 00	
	"	" " Urbana school bonds	577 50	
	"	" " Montgomery Co. school bonds	780 00	
				2,757 50
	17	To interest on Sangamon Co. school bonds due April 1		51 00
July	1	" " " Champaign Co. bonds	$4,500 00	
	"	" " Pike Co. bonds	2,100 00	
	"	" " Sangamon Co. bonds	880 00	
	"	" " Chicago water bonds	875 00	
	"	" " Macoupin Co. bonds	660 00	
	"	" " Pittsfield school bonds	630 00	
	"	" " Litchfield school bonds	440 00	
	"	" " Montgomery Co. school bonds	260 00	
	"	" " Christian Co. school bonds	240 00	
	"	" " Kankakee school bonds	60 00	
	"	" " Sangamon Co. school bonds	112 00	
	"	" " Kankakee Co. school bonds	1,500 00	
				12,257 00

Treasurer's Report—*Continued.*

Dr.

		To interest on Kankakee Co. School bonds		$900 00
July	3	" am't rec'd from state for taxes on lands in Minnesota and Nebraska	$1,543 62	
		" " " " " for buildings and grounds	2,500 00	
		" " " " " for laboratories	1,500 00	
		" " " " " mechanical shops	1,500 00	
		" " " " " books and publications	1,000 00	
		" " " " " specimens for cab nets	500 00	
		" " " " " expenses of instruction	20,000 00	
		" " " " " new boiler in machine shop	1,250 00	
		" " " " " construction of drill hall	10,000 00	
				39,793 62
	20	To am't rec'd from state for State Laboratory of Natural History:		
		" " " on acc't field work, office and incidental expenses	$1,000 00	
		" " " " " library	500 00	
		" " " " " salaries and assistance	3,000 00	
		" " " " " publication of bulletins	500 00	
		" " " " " illustration of biennial report of State Entomologist	250 00	
		" " " " " building entomological laboratory and breeding room	1,000 00	
				6,250 00
		To interest on land contract No. 12, H. E. Kludas	$123 95	
		" " " " No. 47, M. Hubka	73 88	
				197 83
		To am't rec'd on acc't Nebraska lands		67 80
Aug.	1	To interest on Morgan co. school bonds	$350 00	
	20	" " " Montgomery Co. school bonds	84 00	
				434 00
		To a'mt rec'd of Agricultural Experiment Station—		
		on acc't fuel and lights	$45 00	
		on acc't agricultural department	79 31	
		on acc't archi ectural department	225 83	
		on acc't mechanical department	1 00	
				351 14
		To am't rec'd for rent of Nebraska lands		25 00
	28	" " " Nebraska lands		8 08
	31	" " on acc't buildings and grounds	$79 00	
		" " " fuel and lights	92 80	
		" " " laboratories	306 97	
		" " " horticultural department	65 12	
		" " " agricultural department	234 97	
		" " " architectural department	1,441 09	
		" " " mechanical department	7 35	
		" " " rent for Griggs farm	580 00	
		" " " students' fees	471 25	
		" " " preparatory year	27 50	
		" " " music fees	119 00	
				3,425 05
				$74,034 94

Cr.

Aug.	31	By amount paid on account board expense	$108 12	
		" " " salaries	9,624 05	
		" " " bu ldings and g ounds	74 75	
		" " " fuel and lights	774 60	
		" " " stationery and printing	668 35	
		" " " preparatory year	80 00	
		" " " mechani al department	102 49	
		" " " architectural depar ment	1,413 00	
		" " " agricultural department	858 13	
		" " " horticultural department	43 48	
		" " " military epartment	17 21	
		" " " laboratories	15 53	
		" " " library and apparatus	6 35	
		" " " incidentals	193 43	
				$13,979 49
		" " " furniture and fixtures	$1 23	
		" " " commencement expenses	196 93	
		" " " music fees	119 00	
		" " " Paris Exposition	25 00	
				342 16

Treasurer's Report—Continued.

			Cr.		
Aug.	31	State appropriations— By amount paid on account	taxes on lands in Minnesota and Nebraska.....	$1,543 62	
		" "	buildings and grounds....	2,038 68	
		" "	mechanical and architectural shops.....	65 00	
		" "	books and publications ..	317 59	
		" "	cabinets	183 30	
		" "	apparatus and material ..	183 82	
		" "	metallurgical laboratory..	39 87	
		" "	drill hall.....	4,988 34	
		" "	State Laboratory of Natural History.....	1,870 21	
					$11,230 43
		Balance		.....	48,482 86
					$74,034 94

JOHN W. BUNN, Treasurer.

Urbana, September 10, 1889.

The matter of University lands in Minnesota was referred to a committee consisting of Mr. Bennett and the regent, on motion of Dr. Edwards.

The Committee on Buildings and Grounds made the following report:

REPORT OF BUILDING COMMITTEE.

To the Trustees of the University of Illinois.

GENTLEMEN: By vote of the Trustees at the regular meeting in June, the matters pertaining to the erection of the new drill hall, the alteration of the rooms in the upper story of the main building, and the construction of the entomological laboratory, were referred to the standing Committee on Buildings and Grounds, to which the President of the Board and the Regent were added, for the purposes involved in the same motion.

A meeting of the committee was held at the University June 12th, at which were present Messrs. Bullard, Shawhan and Peabody. Absent, Messrs. McLean and Harker.

The committee voted to proceed with the work in the upper story of the main building, in accordance with the plans presented by the Regent. Also to proceed with the erection of the entomological laboratory in accordance with designs presented by Professor Forbes.

A second meeting of the committee was held at the University July 9th; present, Messrs. Bullard, Shawhan, McLean and Peabody.

After consideration of designs and estimates for drill hall, it was—

Voted: That Professor N. C. Ricker be appointed architect for the drill hall, and that he be empowered to act as architect in regard to all contracts to be made for materials and work to be purchased or used in construction of that building.

Voted: That the designs and detail drawings presented by Professor Ricker for said drill hall, be approved and adopted.

Voted: That the foundation of the drill hall, from the footings to the surface of the ground at grade line, be made of hard-burned brick laid in cement; that the wall from the top of the foundation to the top of the window sills be twelve inches thick, of which the outer portion, at least six inches thick, be laid in natural faced, coursed, rubble, of stone to be approved by the architect, the inner remaining portion to be laid with well burned brick; that from the top of the window sills to the top of the cornice the wall be twelve inches thick laid with well burned brick.

Voted: That in all present estimates and contracts the floor be omitted.

Bids from various parties having been opened and considered, contracts were awarded to the following parties, for different parts of the work respectively, they being in the judgment of the committee upon terms most advantageous to the University.

Wherever the bids included work or material for the floor, corresponding deductions for work and material were to be made as should be determined by the architect.

For brick and stone masonry, to Kerr Brothers, of Urbana, they to furnish all labor and material, for $4,333.88, if walls were built all of brick, with 8 cents per cubic foot additional for whatever part should be built of stone, except the cut stone for door and window sills.

For tinner's work, as described in specifications, to Hubbard & Sons, of Urbana, for $825.00.

For lumber, to George Besore, of Urbana, for $1,479.11.

Contract has since been awarded with consent of committee, to F. Felkel, of Cleveland, Ohio, for all steel, wrought-iron, and cast-iron structural work, for $1,063.50.

For further information concerning the progress of the building, the report of the architect to the committee is herewith appended.

ARCHITECT'S REPORT.

UNIVERSITY OF ILLINOIS, URBANA, ILL., 1889.

To the Building Committee of the Board of Trustees of the University of Illinois.

GENTLEMEN: The contract for tinner's work was executed with Hubbard & Sons, of Urbana, at $825, as awarded.

The contract for lumber was made with George Besore at $1,479.11, after omitting the floor. The lumber has all been delivered, and the final certificate for payment given.

The contract for masonry was made with Kerr Brothers at $4,333.88 fo masonry if entirely of brick, with an additional payment of 8 cents per cubic foot for the stone masonry required by the drawings and specifications.

These three contracts were awarded by you at your second meeting, though only the price of the first was then fixed.

After a great deal of correspondence and delay, and correspondence by the Regent with most of the members of the committee, the contract for the iron and steel structural work was finally awarded to F. Felkel, of Cleveland, for $1,063.50, being about $300 lower than any other bid received, the freight from Cleveland being probably about $30 on this. This includes everything except anchor rods and plates, ventilation gratings, and the fastenings, such as bolts, lag bolts, plow bolts, wood screws and Russell & Erwin screw-nails, which have been obtained from other parties in Champaign and Urbana, either because they were required for immediate use in the building, or were manufactured articles kept in stock in the hardware trade, and as cheaply procured here as anywhere.

This metal work is required to be shipped from Cleveland on or before Oct. 2d, (time extended about one week beyond that stated in contract), so that it will probably be received about Oct. 5th, which will be as soon as the framing of the roof is completed.

The excavations cost about one-half as much as estimated, principally owing to the greater inclination of the site, though they were everywhere carried down into the solid yellow clay, to reach a soil of practically uniform resistance. As this is loaded with about 1¼ tons only per square foot, or ⅛ as much as is now frequently used for heavy buildings on Chicago soil, no unequal settlements or cracks need be feared.

The difference of level is about 2 ft. at each end of the building, 6 in. on the northern side, and the greatest difference is about 3 ft. with the thickest layer of black soil, which is found at the middle of the southern front. It therefore became necessary to bench the footings, which were arranged to rest on the solid yellow clay, and still require as little extra brickwork as possible.

The grade was fixed 6 inches above the highest surface of the ground at the northwest angle, and the foundation walls were carried 3 feet 7⅜ inches below grade along the north and half the east and west sides, instead of the 4 feet contracted for, this saving of two courses being used to partially compensate for the extra depth of foundations required along the southern front, where they were carried about 2 feet 8 inches deeper.

As it was uncertain whether the floor would be put in the building or not, and as it would be quite inconvenient to use it with the door sills level with the top of the base, as originally designed, it was decided to drop them 2½ feet thus resting on the grade level, making the door frames longer by that amount and putting in a temporary panel 2½ feet high between the doors and transom bars, so that the sills and doors could easily be raised at any time by simply shortening the frames and taking out the panels. The contract for masonry was let on this basis, making a deduction for the 2½ feet in height of masonry omitted at each doorway.

After taking into account the omission of footings on insides of end walls as not required, the addition of 1 foot in the height of frame of each doorway and in that of the large southern window, etc., and the extra masonry required in the foundations, this leaves an extra of 201 cubic feet of brickwork (actual and not mason's measure) in addition to that contracted for.

After a great deal of further consideration, and consultation with the Regent, it was finally decided to make a few additional changes in the masonry, better to adapt the building to its inclined site.

The more important of these were to drop the floor level 22 inches, thus making it 16 inches above grade level, and to set the door sills permanently at that level. The 2½ feet panels were omitted at the doorways, thus facilitating the hanging of the end doors by top rolls, and the frames were made a foot higher than originally drawn, this increased height mostly going into the transom, and the large southern window is also made a foot higher. Dropping the floor 22 inches left the tops of window sills 6 feet 10 inches above the floor, so that the windows and the top of the stone facing were also dropped 16 inches, making tops of sills 5 feet 6 inches above the floor.

Bonded arches 12 inches wide were used over the windows, and it was thought best not to diminish the height of the walls any, as the building would appear none too high externally, especially from the north, but to add another course of brick above the notches in the cornice, one at the sides of the notches, and another in the corbel courses, so as better to proportion the cornice to the present arrangement of the exterior of the building. This change in the cornice will cost about $53.

Some stone masonry has been saved, but the University will be required to take the stone not used (about 7 cords), unless the contractors succeed in disposing of it otherwise, which they have agreed to do, if possible.

The stone work will cost about $290, so that the masonry will cost about $400 in addition to the contract price of $4,333,88. The masons found it practically impossible to build an 8 inch wall so that it is all 12 inches except at the sliding doors in part.

The cut stone was obtained from the Singer & Talcott Company, of Chicago; Mr. Pendergast was asked if he wished to renew his bid, but did not reply. The freight rates on the stone appear pretty high, being 20 cents per hundred, while but 7½ are charged for rubble stone.

The masons have been required to use Lemont stone, costing about $2 per cord more than Indiana stone, and also to use machine-made brick throughout, because of better color and harder, though considerably smaller

than hand-made, which has materially reduced their profits and gives us a better building. But there is no claim for extras on this account, for it was stated to them before signing the contract, that both these conditions would probably be required. On this account, the use of some old lumber, fence-posts, etc., for scaffolding has been allowed them.

For economy, it was decided to substitute oak blocks built up of 2x6 plank set on edge for the stone blocks originally intended to be set beneath the ends of the main trusses to distribute the pressure over a safe area of the walls. They are just as good, and will be durable in their position.

Mr. Felkel has made the request that the iron and steel work be inspected in Cleveland instead of here, that any rejected work might be more quickly replaced with a saving of freights, and has suggested Mr. Probert, inspector of all iron and bridge-work for the city, as a proper man to be employed to make this inspection and the tests of the materials.

I replied to Mr. Felkel that this arrangement would be inadmissable, and that it did not appear to me that the University would obtain greater security that proper materials were used, than if samples were tested here by Professor Woods, as we should be compelled in some degree to rely on the honor and good faith of himself and the manufacturers of the work; that it might be possible to send Mr. Schaefer to Cleveland to inspect the work, when completed, but that this would require action of your committee, if done; further, that if the materials and work were in accordance with the contract and specifications, he need not fear rejection of either.

If the committee has any preferences in this matter of testing samples and inspection of the work, I shall carry out its orders with pleasure; otherwise, I will inspect the work when received here, in accordance with the contract, and will act as appears advisable in regard to testing samples. It may, perhaps, be of some use to require a certificate on honor, or an affidavit, from Mr. Felkel and the manufacturers, that the samples have been taken from the materials actually used for the work.

Mr. Felkel appears to be simply a contracting engineer, who sub-lets his work to the manufacturers, but I have not thought it necessary to raise that question under the contract, since the work is required in the least time and at the least cost possible.

Sufficient lumber will also be required for a staging for the erection of one main truss, as this can be so arranged that it can be readily moved for use in erecting the others. I believe the erection of the frame-work of the roof will be easy and rapid.

It will be necessary to paint the external wood-work, the shingles, and the tin roof, at any rate, whether the sash and glass are put in the windows now or not.

Sufficient earth should also be taken from the interior properly to grade around the exterior and to cover the brick foundation walls, as intended, so that this can be sown with grass seed this fall.

Since a large part of my time has been required for superintendence, arranging and completing contracts, specifications, etc., in order to get these papers and the working blue-prints out in time, I have found it absolutely necessary to employ some assistance in staking out and leveling for the building, and also in making the tracings of the drawings, all this amounting to about $18, I believe. I have also paid out personally $6.39 for materials for drawings, tracings, blue-prints, postage, etc.

With all my endeavors for economy, the cost of some items of the work has exceeded my estimates by a few hundred dollars, so that there is now about $400 remaining, not expended or contracted for. This does not consider the cost of the rubble stone, which the University may be required to take.

EXPENDITURES REQUIRED BUT NOT PROVIDED FOR.

Windows—Sashes and transoms with double thick glass set	$480 70
Lumber for scaffolds	18 69
Painting, cornice and frames, doors and windows, shingle roof, tin roof, oiling sheathing and frame-work of roof	900 00
Hardware, locks and hinges for doors, rolls and fixtures for doors, sash pivots and fastenings, nails	180 00
Permanent floor, including excavation and grading	2,457 66
Total	$4,037 05

Very respectfully submitted, N. CLIFFORD RICKER, Architect.

We ask appropriations to the amount of $3,645.39.

Respectfully submitted,

S. A. BULLARD,
O. A. HARKER,
G. R. SHAWHAN,
} Committee on Buildings and Grounds.

On motion of Mr. Cobb, the report of the committee was received and approved, and the committee was instructed to complete the building as proposed; and for this purpose, including drainage, the sum of $4,000 was appropriated from current funds, to the expenditure of which amount the committee was limited.

The Committee on Buildings and Grounds presented the following report:

REPORT CONCERNING BARN.

To the Trustees of the University of Illinois.

Your Committee on Buildings and Grounds, to which was referred the part of the Regent's report in reference to the loss of our north barn, reports that it has considered the situation and consulted with Professor Morrow as to what we must actually have to conduct the work of the University in his department.

The committee asks an appropriation of fifteen hundred dollars to build stables for cattle and horses and room for feed—the stable to be so constructed that it may become a part of the barn it is desirable to build at a later date, when sufficient funds therefor may be provided.

Respectfully submitted,

S. A. BULLARD,
O. A. HARKER,
G. R. SHAWHAN,
} Committee on Buildings and Grounds.

On motion of Mr. Bennett, the report of the committee was concurred in.

Also, on motion of Mr. Bennett, Professor Morrow and Mr. Cobb were added to the committee for the purposes of the foregoing motion, and the committee was instructed not to exceed the sum appropriated in carrying to completion the work proposed.

The Committee on Buildings and Grounds made the following report relative to the greenhouse:

To the Trustees of the University of Illinois.

Your Committee on Buildings and Grounds, to which was referred the communication of Professor Burrill regarding repairs on the greenhouse,

reports that it has examined the building, and finds repairs needed very badly, and recommends that one hundred and fifty dollars be appropriated from current funds for, repairing furnace, resetting glass, pointing up and painting brickwork, and painting the woodwork.

Respectfully submitted,

S. A. BULLARD,
G. R. SHAWHAN,
O. A. HARKER,
} Committee on Buildings and Grounds.

The report was concurred in and $150 was appropriated from current funds for the repairs named.

The Committee on Finance made the two following reports, which, on motion of Mr. Bennett, were approved for record:

To the Board of Trustees of the University of Illinois.

Your Committee on Finance reports that it has examined and compared the books of the Treasurer with the warrants, Nos. 284 to 448 inclusive, drawn upon him for the six months ending June 30, 1889, against the funds belonging to the Experiment Station, amounting to $8,165.37, and finds them correct as presented.

Respectfully submitted,

S. A. BULLARD, of the Finance Committee.

To the Board of Trustees of the University of Illinois.

Your Finance Committee, to which was referred the report of the Business Agent, reports that it has examined the same and the vouchers submitted therewith, and finds them correct in form and properly receipted, except the salaries of Professors Comstock, McIntosh and Butler for August, 1889, forwhich receipts have not been given owing to the absence of said Professors.

The committee has found the vouchers of the Experiment Station, Nos. 410-474, which were referred to it, correct as presented and duly receipted.

The committee has also examined and found correct the statement of the receipts and expenditures of the Experiment Station for the year ending June 30, 1889; the amount of said expenditures is $15,000.

Respectfully submitted,

S. A. BULLARD,
W. W. CLEMENS,
} Finance Committee.

Appropriations for the next six months, as asked for by the Business Agent, were made as follows, on motion of Mr. Cobb:

Board expenses	$300 00
Salaries for instruction	22,730 00
Salaries for services	1,900 00
Buildings and grounds	50 00
Fuel and lights	2,000 00
Stationery and printing	350 00
Mechanical department	200 00
Architectural "	200 00
Agricultural "	200 00
Horticultural "	200 00
Military "	50 00
Laboratories	200 00
Library and apparatus	50 00
Incidentals	200 00
Furniture and fixtures	50 00
Water supply	200 00
Total appropriated	$28,880 00

The usual quarterly appropriations for the State Laboratory of Natural History were made for the ensuing quarter, on motion of Mr. Cobb.

On motion of Mr. Cobb, there was appropriated:

From current funds— For repair of boilers.....	$600 00

The Finance Committee's report was approved for record as follows:

To the Trustees of the University of Illinois.

Your Finance Committee respectfully reports that it has examined the report of the Treasurer, Mr. J. W. Bunn, for the three months ending September 1, 1889, and finds it correct, and that there are funds in the hands of the Treasurer amounting to $48,482.86.

Respectfully submitted,

S. A. BULLARD,
W. W. CLEMENS, } Finance Committee.

Adjourned.

ALEXANDER MCLEAN,
President.

W. L. PILLSBURY,
Secretary.

MEETING OF DECEMBER 10, 1889.

The Board of Trustees of the University of Illinois met in the University parlor, in Urbana, at 3:30 o'clock p. m., December 10, 1889.

The members present were Messrs. Bennett, Bullard, Clemens, Cobb, Haskell, McKay, McLean, and Shawhan; absent, Governor Fifer, and Messrs. Edwards, Harker, and Millard.

The minutes of the last meeting were approved.

The Executive Committee reported taking the following action:

REPORT OF EXECUTIVE COMMITTEE.

At a meeting of the Executive Committee of the Board of Trustees of the University of Illinois it was resolved as follows:

WHEREAS, Dr. Selim H. Peabody, Regent of said University of Illinois, has been granted leave of absence from the University on account of ill health,

Therefore, be it resolved, That Professor Thomas J. Burrill be and is hereby appointed to act as Regent and be known as Acting Regent of the University of Illinois until the next regular meeting of the Board of Trustees.

Resolved, That Professor George E. Morrow be and is hereby appointed to act as President and be known as Acting President of the Board of Direction of the Experiment Station until the next regular meeting of the Board of Trustees.

ALEXANDER MCLEAN, President,
EMORY COBB,
CHAS. BENNETT,
} Executive Committee.

Nov. 2, 1889.

On motion of Mr. Bullard, the action of the Executive Committee was confirmed, as reported.

On further motion by Mr. Bullard, it was voted to continue Professor Burrill as Acting Regent of the University, and Profes-or Morrow as Acting President of the Board of Direction of the Experiment Station during Dr. Peabody's absence.

The Acting Regent was then called upon for his report, which was presented as follows:

REPORT OF ACTING REGENT.

To the Honorable Board of Trustees, University of Illinois.

GENTLEMEN: In accordance with a leave of absence voted by you to Dr. Selim H. Peabody, Regent of the University, he took his departure for Europe October 9, 1889, after the initial work for the present school term had been well organized. As Vice-President of the Faculty his official duties from that date devolved upon me without any direct action by yourselves. November 2d the Executive Committee of your Board, acting as I understand upon the request of Dr. Peabody, appointed me Acting Regent, subject to your approval at this meeting. At the same time and in the same manner Professor G. E. Morrow was appointed president *pro tem.* of the Board of the Direction of the Agricultural Experiment Station. In both these cases the appointees of the Executive Committee entered at once upon the discharge of the duties assigned to them, and have to this date filled to the best of their ability these temporary offices.

It is of course impossible that the work of the University should progress without detriment on account of the absence of the chief executive officer. No one can be more fully aware of this than he who attempts to perform the varied duties of the Regent's office, however well ordered that office may have been when temporarily surrendered. But I am greatly gratified to be able to report that, so far as I am informed, the current affairs of the term have been pleasantly and profitably passed. But little friction has occurred; instructors have been zealous and successful, and students have been diligent and courteous. No serious complaint has come to my knowledge from any quarter; however, a very respectful expression of dissatisfaction is to be laid before you from one department.

The number of students is now greater than ever before in the history of the University. Class cards have been issued during the term to 449 students, against 391 for the fall term last year. Of the present number 305 are in the regular University courses, and 144 are classed as preparatory. For the corresponding term last year there were respectively 240 and 151 in these divisions.

This increased attendance, though encouraging from every stand-point, has made necessary some further division of classes into sections, involving more labor in instruction; and in several other cases the larger classes have caused increased labor on the part of teachers. There are, however, no complaints on this account. The extra provisions necessary to accommodate the increased numbers have been made wherever it was within our power to act, and some requests are to be presented to you on the same account. Finding it a matter of necessity, some expense was incurred, for which no provision had been made, in the gentlemens' coat-room, and some hooks for clothing have been placed in the hall of the first floor beneath the stairs, as a temporary relief to the coat-room.

The condition of the walks leading to the main building has made it practically impossible to keep the floors of this building in a state of satisfactory cleanliness, during bad weather. While cinders only are used on these walks, this annoyance will probably always exist, though recoating with fresh material will be of advantage now, and is, no doubt, the best thing that can be done at present.

It was ascertained some weeks ago that the part of the roof of the main building which was once blown off and recovered with tin, was in bad order, mainly owing to the quality of the paint originally used and the manner of its application. The tin was, in numerous places, very badly rusted and so exposed as to cause further injury continually. Believing that no time should be lost in making this repair, while the weather permitted, the work was undertaken without authority for the expenditure on the part of the Trustees. But upon reporting this and sundry other items of needed repairs to the Executive Committee sufficient money was assigned to cover the costs, which have been about as follows:

Repair of roof main building	$25 62
Repair of stone steps main building (rear) and boiler-house	6 00
Repair of outside water-closet	12 00
Improvements in coat room	13 87

The work upon the new drill hall has been considered altogether satisfactory except from the long delay caused by the failure to receive at the proper time the iron and steel. For the particulars in regard to this building reference is made to the report of the Building Committee. I am informed that there are liabilities of about $275.00 on brick work, when completed, beyond the payments which are reported. I take this occasion to call special attention to the laborious service rendered by Professor Ricker, as architect and superintendent of this building, consuming as it has his summer vacation as well as a considerable amount of his time and energy since the beginning of the collegiate year. The building itself will show how successfully his plans meet the unusual requirements of architectural knowledge and skill.

The barn authorized at the last meeting is practically completed within the appropriation ($1,500.00) then made for it.

The repairs ordered upon the greenhouse have been made except in regard to paint. The glass of the large room was entirely reset and the external surface of the rafters given a coat of paint at the time. The brickwork of this portion was washed with cement instead of painting. The external portion of the flue was entirely rebuilt and coated the same as the brick just mentioned. Some painting was done inside, but the continuous wet weather has prevented the outside painting contemplated.

The progress of affairs on the farm may be best learned from the report of Professor Morrow herewith presented. Notwithstanding the low prices for all farm products, the financial statement shows a fair surplus of sales over expenditures.

FARM REPORT.

UNIVERSITY, December 10, 1889.

Dr. T. J. Burrill, Acting Regent,

SIR: The financial operations of the University farms for the year ending December 1, 1889, may be thus stated.

Receipts for the year	$4,005 21	
Expenditures for the year	2,700 41	
Balance to credit of farms		$1,304 80
Inventory salable property, Dec. 1, 1888	$15,530 00	
Inventory salable property, Dec. 1, 1889	13,967 00	
Reduction during the year		1,563 00
Balance against farms for year		$258 20

This unfavorable showing is mainly accounted for by the destruction of about $1,000 worth of hay, grain, machinery, and other salable property at the burning of the barn in September last, and by the lower prices for hay and grain, on hand. The cattle are valued at low prices, lower than last year, quality considered.

Both receipts and expenditures are lower than in any former year.

FINANCIAL STATEMENT FOR 1889.

Receipts—		
Live Stock: Cattle	$1,121 55	
Hogs	751 32	
Horses	210 00	
Milk	35 29	
Poultry	20 50	
		$2,138 66
Field products: Hay	$882 37	
Corn	459 48	
Timothy seed	184 37	
Oats	13 80	
Pasture	69 85	
		1,609 87
Labor		236 43
Miscellaneous		20 25
Total receipts		$4,005 21
Expenses—		
Labor		$1,727 24
Live Stock: Cattle	$122 50	
Hogs	113 25	
Horses	80 00	
		315 75
Feed		110 95
Machinery and harness		235 02
Seeds		45 69
Lumber, blacksmithing and repairs, hardware		180 36
Advertising		35 60
Miscellaneous		49 80
Total expenses		$2,700 41
Balance to credit of farms		1,304 80
Total expenses and balance		$4,005 21
Inventory, December 1, 1889—		
Live stock—Horses, 10 @ $150	$1,500 00	
Colts, 12 @ $75	900 00	
		$2,400 00
Cattle, 74 Shorthorns @ $75	$5,550 00	
7 Holsteins @ $100	700 00	
8 Herefords @ $125	1,000 00	
5 Jerseys @ $50	250 00	
		7,500 00
Grade cattle, 7		105 00
Hogs, 45		250 00
Poultry		20 00
Total live stock		$10,275 00
Field products—Hay	$687 00	
Corn, 3,500 bushels @ 23 cents	805 00	
Oats, 2,800 bushels @ 18 cents	500 00	
Timothy seed	30 00	
Ensilage, fodders, straw	250 00	
Total field products		2,272 00
Miscellaneous		20 00
Implements and machinery		1,400 00
Total		$13,967 00
Total inventory, 1888		$15,530 00
Total inventory, 1889		13,967 00
Reduction during the year		$1,563 00

The rebuilding of the barn has been nearly completed as authorized at the September meeting of the Trustees. Although not so large as is needed, it will enable us to shelter our stock and store food for them in part.

The farm work is fairly up to the season. Some of the corn matured late and not all the crop has been gathered. The live stock generally is in good condition. The sales of fat stock and breeding cattle have been at unprecedentedly low prices.

With the hope that next year may give some advance in price for products and that we may not again suffer from fire, this report is respectfully submitted.

G. E. MORROW, Professor of Agriculture.

The entire horticultural operations in the field have been turned over to the Experiment Station, except some small plantations of strawberries and raspberries from which sales were made to the amount of $94.94, very little over the cost of production. The other sales from the horticultural department were from the greenhouse. As now arranged, the University pays for the repairs on the greenhouse and provides the coal for heating, while the salary of the gardener is charged to the Experiment Station. There is needed a new supply of pots, which will cost about $40.00, for which an appropriation is asked. An equal amount is desirable for the purchase of new stock, both for the house and for the grounds.

Owing to the resignation of Professor Comstock, which was accepted by your Executive Committee, some changes became necessary in the instruction of classes, but no new teacher was employed. Professor Talbot assumed charge of the class in mine attack—a junior study in the course of mining engineering. There proved to be no call for the regular classes in this course for the senior year. The instruction in physics for the winter and spring terms was assigned by Dr. Peabody to Mr. Stratton. This made it necessary to provide instruction for descriptive geometry during the winter term. This subject occurs in all the engineering and architectural courses, freshman year; hence results a large attendance of students—so large that the class must be divided into two sections, each having two hours per day. After a considerable inquiry I recommend to your consideration for this work Mr. Lincoln Bush, a graduate in 1888 from our school of civil engineering, and formerly an assistant instructor in this class. He is now engaged in professional service in Colorado, but has signified his willingness to accept this University work for the winter term at $80.00 per month. For the spring term the required instruction can be accomplished by the regular teachers.

Attention is respectfully asked to a paper signed by members of the Faculty concerning the detail of Lieut. Hoppin for another year to the office now held by him in the University.

UNIVERSITY OF ILLINOIS, Oct. 31, 1889.

To the Trustees of the University of Illinois.

GENTLEMEN: We, the undersigned members of the Faculty of the University of Illinois, knowing that the detail of Lieut. C. B. Hoppin, 2d Cavalry, U. S. A., as military instructor in this University, expires in June next, and understanding that it is possible that such detail be extended for another year, express the desire that such action be taken by the Trustees as shall lead to the continuance of Lieut. Hoppin in connection with the University as long as possible.

[Signed by all the members of the Faculty.]

A letter from Dr. Peabody also accompanies this document. I cannot too strongly express my conviction that his reappointment to the important position he now holds will not only be satisfactory to all members of the Faculty and to all students, but that it will be in all probability decidedly beneficial to the University. Just what should be done in the case, I leave to your wisdom and experience. In this connection it may be stated that the offer of a prize medal as described in a paper by Lieut. Hoppin, herewith presented, was made known to the Faculty, which body passed a vote of thanks to the prospective donor and referred the matter for further action to your Board:

UNIVERSITY OF ILLINOIS, Dec. 10, 1889.

Prof. T. J. Burrill, Acting Regent, University of Illinois,

SIR: In accordance with your request I have the honor to submit the following report of the condition of the work under my direction.

I would state that the condition of the old companies is quite up to the point usually reached at this season, there being no question as to their ability to drill well.

The new companies are quite large, including a total of one hundred and fifty-one new students. Their progress thus far has been very satisfactory, there having been more good instructors available this year than ever before since I have been on duty here. The drills this term are quite short, owing to lack of light in the drill hall; and next term they will be discontinued entirely for part of the term, on account of lack of heat.

By request I have been in general charge of the gymnasium this year, and take pleasure in informing you that there is much interest shown in that work. There are now one hundred and ten students, members of the different gymnastic classes, with an average daily attendance of from fifty to sixty. The instructors, Messrs. Moore, Hanssen, and Gilliland, seem to be giving entire satisfaction thus far; but in view of the importance of the work, I respectfully recommend that a skilled instructor be employed as soon as the resources of the University will admit.

It seems to me very important that measures should be taken for heating and lighting the new drill hall; the fact that it will be used as a gymnasium, making it especially so, it being dangerous to allow young men to exercise violently in a cold room.

I respectfully recommend that twenty dollars be appropriated for the construction of gallery targets and payment for necessary labor in connection therewith.

I take pleasure in reporting that Mr. W. C. Hazleton, of Forest Glen, Illinois, (late Capt. 8th Illinois Cavalry) proposes to donate to the University a medal, to be competed for annually through the military department under rules which will be submitted to the Trustees for approval at their next meeting. His intention is, I know, to furnish a fine medal worth from $25 to $50, and he would be pleased to have such action taken by the Trustees in the case as to indicate whether or not his proposition meets their approval.

I am, sir, very respectfully yours,

C. B. HOPPIN, 1st Lt. 2d Cavalry.

A donation has also been received from Colonel Henry C. Merriam, 7th Infantry, U. S. A., of one Merriam pack or knapsack, a patented article that has been widely adopted for the armies of Europe as well as for the soldiers in the United States. A suitable acknowledgment of this should be made.

The matter of gymnasium and practice therein, mentioned in the report of Lieut. Hoppin, is one that calls for serious consideration and well-ordered action. In this respect the University is greatly behind the recognized necessities of physical culture for students, and may well emulate the example of other institutions of similar kind, even of several of less note in perhaps all other respects than the University of Illinois.

During the year the students have purchased and placed in the drill hall $125.00 worth of gymnastic apparatus, money being for the most part the proceeds of an athletic entertainment given last year by them in Champaign. Those who now wish to practice in the gymnasium pay 50 cents a term for a ticket, and with the money so secured instructors are employed from among the students, three being now in such service. The room is opened for this purpose from 9 to 10 a. m. and from 3 to 4 p. m. five days in the week, and from 10 a. m. to 12 m. Saturday. As shown by the report, it is well patronized.

A communication from the Faculty upon amendments to the general rules for the guidance of students is herewith submitted.

There are also submitted for your information and consideration communications as follows:

From the Professor of Mechanical Engineering in regard to a new engine for the shops.

From the Professor of Architecture in regard to the work of the current term and a request for an appropriation for the collection of engravings, etc.

From the Professor of Zoölogy noting progress of current work and asking for action concerning distribution of publications of the State Laboratory of Natural History.

From the Professor of Geology and Physiology asking for gas fittings for his room, and for a microscope.

From the Professor of Industrial Art and Designing asking for a case for students' equipments.

A summary of appropriations asked is as follows:

From state appropriation for mechanical and architectual shops—	
For new engine in machine shop	$150 00
From state appropriation for apparatus and material—	
For collection of engravings, etc., in architectual department	100 00
For microscope in geological department	100 00
For apparatus in physical laboratory	75 00
From appropriation for fuel and lights—	
For gas fittings in Prof. Rolfe's room	15 00
From current funds—	
For case in Prof. Roos's room	50 00
For targets in drill hall	20 00
From state appropriation for building and grounds—	
For double windows in chemical laboratory	10 00
From appropriation for horticultural department—	
For pots	40 00
For greenhouse stock	40 00
Total	$600 00

In addition to this, the Business Agent will ask for small sums for current miscellaneous expenses.

I have carefully inquired concerning the needs of these several appropriations, and am well convinced that each one is essential to the best work of the various departments of the University.

The work of the Agricultural Experiment Station has very satisfactorily passed during the quarter, with the single exception of the necessary delay in issuing the regular bulletin for the quarter. The manuscript for this is not yet finished, but will soon be ready for the printer. I submit herewith the report of the Acting President of the Board of Direction, whose quarterly meeting was held yesterday and to-day:

REPORT OF THE AGRICULTURAL EXPERIMENT STATION.

Professor T. J. Burrill, Acting Regent, University of Illinois,

SIR: The Board of Direction of the Agricultural Experiment Station, University of Illinois, presents these papers:

Paper A is a list of vouchers for auditing Nos. 475–535, inclusive, except No. 530, with the vouchers.

Paper B is a statement of Station expenditures for the quarter ending September 30, 1889.

Paper C is a statement of the appropriations, expenditures and balances December 1st for the quarter ending December 31, 1889.

Paper D is a statement of appropriations asked for the purpose of carrying on the work of the Station for the quarter ending March 31, 1890, and of some further appropriations asked for this quarter.

The Board of Direction asks authority from the Trustees of the University to undertake the following work:

1. To investigate a disease of cattle now prevalent in this vicinity and elsewhere in the state among cattle which have been turned into the corn fields.

2. To take up some experimental work with cucurbitaceous plants.

The Board of Direction also asks leave to have analyzed by the chemist of the Station some samples of butter taken at the American Fat Stock Show by a committee of the Association of American Agricultural Colleges and Experiment Stations and sent to the Station laboratory, and to report to the Association the results of such analysis.

The Board of Direction also states that Dr. A. G. Manns asks to be relieved from his engagement as First Assistant Chemist of the Station, and that it recommends that his request be granted, to take effect December 31, 1889; and it further recommends that the vacancy be filled by the appointment of Mr. E. H. Farrington, of Washington, D. C., and that Mr. Farrington be paid $1,500 a year, payable monthly, the appointment to take effect January 1, 1890.

The appropriation of the several sums named in paper D, for the purposes therein stated, is asked of the Trustees, as follows:

For the current quarter ending December 31, 1889—

Buildings and repairs	$25 00
Corn experiment at Flora	10 00
Tools	35 00
Sundry—	
Professor Morrow's expenses to Washington	36 50
Total	$106 50

For the quarter ending March 31, 1890—

Buildings and repairs	$25 00
Board expense	40 00
Books and periodicals	300 00
Botanical apparatus	10 00
Bulletins	750 00
Chemical apparatus	75 00
Meteorological apparatus	15 00
Fertilizers	40 00
Fuel and lights	100 00
Incidentals	25 00
Printing, stationery and postage	25 00
Salaries	1,850 00
Seeds and trees	50 00
Tools	100 00
Wages and teams	700 00
Sundry—	
Dairying experiment	100 00
Investigation of cattle disease	100 00
Membership fee, Association of American Agricultural Colleges and Experiment Stations	10 00
Wheat experiment	15 00
Total	$4,330 00

Since I was appointed Acting President of the Board of Direction to serve until this meeting of the Board of Trustees, it will be necessary for the Trustees to take further action with regard to the temporary vacancy.

Respectfully submitted,

G. E. MORROW, Acting President.

December 10, 1889.

The Board of Direction also asks that, if the Board of Trustees so desire, an invitation be extended to the Association of American Agricultural Colleges and Experiment Stations to hold its next annual meeting at this University.

Very respectfully submitted,

T. J. BURRILL, Acting Regent.

The several matters presented in the Regent's report were then taken up, on motion of Mr. Cobb

On motion of Mr. McKay, Mr. Lincoln Bush was appointed instructor in descriptive geometry for the winter term of this college year at a salary of eighty dollars per month.

At this point, by request, the Business Agent, Prof. Shattuck, made his report, as follows:

UNIVERSITY OF ILLINOIS, December 10, 1889.

Alexander McLean, President Board of Trustees, University of Illinois.

SIR: I have the honor to hand you herewith the financial papers due from me at this time.

Paper A is a statement of the current appropriations for the past three months.

Paper B is a showing of the state appropriations December 1, 1889.

Paper C is a list of vouchers presented for audit, being 838 to 873 of old series, and 1 to 200 of the present, inclusive.

Paper D is an estimate of receipts and expenses for the nine months ending September 1, 1890.

Paper E is a list of several additional appropriations the Board is requested to make, for use in the three months ending February 28, 1890.

Respectfully submitted,

S. W. SHATTUCK, Business Agent.

PAPER A—CURRENT APPROPRIATIONS.

Of September 10, 1889.	Appropriated.	Receipts also appropriated	Expended	Balance.
Board expense	$300 00	.....	$120 27	$179 73
Salaries for instruction. { Current	22,700 00	.....	2,564 99	12,335 25
{ State		.....	7,799 76	
Salaries for services	1,900 00	.....	849 06	1,050 94
Buildings and grounds	200 00	$42 50	207 06	35 44
Fuel and lights	2,000 00	84 82	509 68	1,575 14
Stationery and printing	350 00	.....	148 02	201 98
Mechanical department	200 00	217 21	393 97	23 24
Architectural department	200 00	1,125 16	1,290 28	34 88
Agricultural department	200 00	2,107 55	787 58	1,519 97
Horticultural department	200 00	139 90	56 66	283 24
Military department	50 00	.....	38 23	11 77
Laboratories	200 00	178 00	356 91	21 09
Library and apparatus	50 00	.....	30 45	19 55
Incidentals	323 42	.....	205 70	117 72
Sundries.				
Furniture and fixtures	250 00	.....	210 35	39 65
Water supply	200 00	.....	200 00	.....
Boiler repairs	600 00	.....	518 79	81 21
Drill hall	4,000 00	.....	962 10	3,037 90
Farm barn	1,500 00	.....	877 63	622 37
Minnesota and Nebraska lands	66 18	.....	66 18	.....
Preparatory year	.....	707 50	574 98	132 52
University students' fees	.....	4,624 00	.....	4,624 00

PAPER B—STATE APPROPRIATIONS.

	Appropriated.	Received.	Expended	Balance.
Taxes on land (½ per annum)	$3,400 00	$1,543 62	$1,543 62	.....
Buildings and grounds (½ per annum)	5,000 00	2,500 00	2,190 11	$309 89
Mechanical and arch'l. shops (½ per annum)	3,000 00	1,500 00	420 00	1,080 00
Books and publications (½ per annum)	2,000 00	1,000 00	146 22	853 78
Cabinets (½ per annum)	1,000 00	500 00	23 72	476 28
Ex enses of instruction (½ per annum)	40,000 00	20,000 00	7,799 76	12,200 24
Apparatus and material (½ per annum)	3,000 00	1,500 00	1,072 62	427 38
Metallurgical laboratory (½ per annum)	4,000 00	4,000 00	2,626 98	1,373 02
Drill hall	10,000 00	10,000 00	8,528 54	1,471 46
New boiler in machine shops	1,250 00	1,250 00	.....	1,2 0 00
Total	$72,650 00	$43,793 62	$24,351 57	$19,442 05
Illinois State Laboratory of Natural History	15,123 62	9,873 62	4,352 71	5,520 91

The vouchers presented by the Business Agent, with the Experiment Station vouchers, were referred to the Finance Committee.

Consideration of the Regent's report was now resumed, and, on motion of Mr. Cobb, the request of the Faculty with regard to the detail of Lieut. Hoppin, as military instructor in the University, was approved, and the matter was referred to the President and the Acting Regent for action.

It was also voted that the Board learned with pleasure of Capt. W. C. Hazelton's purpose to donate a medal for annual competition by the military department, and would gratefully accept the gift, to be awarded under rules mutually acceptable to the donor and the Board; and the Acting Regent and Lieut. Hoppin were instructed to act with Capt. Hazelton in formulating such rules, and to report them to the Board at its next meeting.

An appropriation of twenty dollars from current funds was made for the construction of targets in the drill hall.

The Acting Regent was instructed to make suitable acknowledgment of the donation of a Merriam pack received from Col. Henry C. Merriam, 7th Infantry, U. S. A.

The request of the Faculty, that certain of the rules for the government of students of the University be amended, was taken up; and, on motion of Mr. Haskell, paragraphs four, five, six, and seven in that part of the rules relating to societies and classes were amended to read as follows:

"The junior class will give a public exhibition under direction of the Faculty at such times as the Faculty may direct; the seniors may give class day exercises during the commencement week."

"The times for all public entertainments or exhibitions must be fixed, with consent of the Faculty, at least two weeks beforehand; and all programs for the same must be submitted to the Regent and receive his approval."

And paragraph four of the rules for the gymnasium was amended to read as follows:

"4. No person other than the members of the classes will be permitted in the hall during class hours, excepting officers of the University or persons introduced by them. Students excused from drill for physical disability will not be allowed to exercise in the gymnasium, except on special permission of the Regent."

By the same motion, the printing of 1,000 copies of the rules was authorized, at an expenditure of not to exceed fifty dollars, from current funds.

With regard to the distribution of the first volume of zoölogical and botanical reports by the State Laboratory of Natural History the Board adopted the following:

WHEREAS, The state law, approved June, 25, 1885, making provision for the publication of a series of zoölogical and botanical reports by the State Laboratory of Natural History, under the charge of this Board, gives no direction concerning the distribution of such reports;

Resolved, That the Director of the said Laboratory, the Librarian of the University, and the Secretary of this Board, be made a committee for the distribution of these publications; and that we recommend to this committee that the present edition of one thousand copies of the first volume on the ornithology of the state be issued substantially as follows:

1. To state officers and members of the legislature. 2. To state educational institutions. 3. To the colleges of Illinois. 4. To public high schools. 5. To private academies and seminaries. 6. To the public libraries of the state. 7. To scientific bodies and institutions in the United States. 8. To foreign scientific societies and institutions as an exchange. 9. To special students of ornithology within the state. 10. To American ornithologists generally.

The copies remaining after a suitable supply to the persons, societies, and institutions of the above list, may be placed on sale or distributed, at the discretion of the committee.

Receipts shall be taken for all the volumes issued, and an annual report of the distribution shall be filed with the Regent of the University.

The Board directed the Acting Regent to correspond with Dr. Peabody and consult with Prof. Woods with regard to the matter of procuring an engine for the machine shop, and to report thereon at the next meeting of the Board.

On motion of Mr. Bullard, one hundred dollars was assigned from the state appropriation for apparatus and material for collection of designs, etc., for the architectural drawing room.

From the same fund one hundred dollars was appropriated for the purchase of a microscope for the geological laboratory.

From the fund for fuel and lights fifteen dollars was assigned, to be used in putting gas fixtures into Professor Rolfe's room.

From current funds fifty dollars was appropriated for a case in Professor Roos's room.

From the state appropriation for apparatus and material, seventy-five dollars was appropriated for the use of the physical laboratory.

The matter of protecting the water pipes in the room for gas analysis in the chemical laboratory was referred to the Committee on Buildings and Grounds.

From the funds of the horticultural department, forty dollars was assigned for the purchase of pots and forty dollars for the purchase of greenhouse stock.

The subject of a communication from certain students was given in charge of the Chairman of the Committee on Instruction and the Acting Regent, with power to act.

The Board then adjourned, to meet at 8 o'clock in the evening at the Doane House, in Champaign.

Evening Session.

When the Board met, pursuant to adjournment, the same members were present as in the afternoon.

The requests made by the Board of Direction for authority to take up new experiments were granted, as asked, on motion of Mr. McKay.

The resignation of Dr. Manns was accepted.

Mr. E. H. Farrington was, on motion of Mr. McKay, appointed First Assistant Chemist of the Experiment Station for one year from January 1, 1890, at a salary of fifteen hundred dollars a year, payable annually.

Appropriations for the Experiment Station were made, on motion of Mr. Shawhan, from Station funds, as asked for in the report from the Station.

The Acting Regent was directed to extend, on behalf of the Board of Trustees, a cordial invitation to the Association of American Agricultural Colleges and Experiment Stations to hold its next annual meeting at this University.

On motion of Mr. Bennett, the following report from the Committee on Buildings and Grounds was approved:

Report of Building Committee.

To the Trustees of the University of Illinois.

Gentlemen: Your Committee on Buildings and Grounds reports that the work on the buildings under the direction of the committee has progressed acceptably, except with regard to the roof of the new drill hall. The delay was caused by the failure of the steel contractor to supply material for the roof. This has occasioned a delay of nearly six weeks and considerable extra expense in finishing our work. There is a clause in the steel contract for a rebate of six dollars per day for each day the work is delayed over time. Mr. Felkel, the contractor, asks to have this waived and that he be paid in full for his work. Your committee has to recommend that the contract be settled as it stipulates, as that amount will scarcely reimburse the extra cost we are subject to on account of the delay.

The attention of the Board is called to the report which Professor Ricker, as architect, makes to the committee.

UNIVERSITY OF ILLINOIS, Dec. 7, 1889.

To the Building Committee of the Board of Trustees of the University of Illinois.

GENTLEMEN: Since your meeting in September, work on the drill hall has been pushed as rapidly as possible.

The city of Urbana raised the sidewalk and street grade more than a foot south of the drill hall, greatly improving the appearance of the grounds, and taking the earth from the interior of the building without expense to the University.

About one thousand cubic yards of earth additional were taken out by Mr. T. R. Leal at 15 cents per cubic yard, an ample quantity for properly grading around the building, and this left roughly graded until the completion of the building.

Masonry piers and wooden girders were used for supporting the floor, being less expensive than bearing walls, and more convenient for running pipes beneath the floor.

As a desire was expressed by several Trustees to have a good floor, free from boards with loose fibres, quarter-sawed Georgia pine was ordered at an increase of $4 per thousand, which cost the contractor $6 additional. This is stored in the architectural shops and will make the best floor in any University building.

Putting in the floor delayed the completion of the framing of the roof about two weeks after the final date agreed upon for the delivery of the iron and steel work. The last of this work was shipped from Cleveland about six weeks later than it should have been, so that about one month's working time was practically lost, though a few men were employed in setting the cast iron washers and the joint pins, when they were received. But none of the trusses could be erected until the last lot of steel rods was received, as this contained several rods belonging to the truss first erected.

The fourth and last of the large trusses is now completed, and the remainder of the work of the erection of the framework of the roof will be much easier and more rapid, if weather favors.

The sash and transoms have not yet been ordered, though I have bids of $481 for them with double-thick A-glass set, and $280 without glass. This seems too high a price, and I have asked for other prices from several manufacturers.

As the erection of the framing of the roof will cost considerably more than it would have done a month ago, I have thought it best to leave the drainage of the building until spring, as it can be done just as well after the completion of the building. I understand the committee to wish the drains from the conductors carried into a main drain, which is to run south beside the avenue, and is to receive drains from the shops when required. There is no system of drains from the shops now, most of the conductors discharging on the ground. It will be an expensive operation to put in a system of drains of proper size to serve both buildings, using salt-glazed pipes with cemented joints, and extending the main to the creek; but this is the only way to do a good and permanent job, and it would be best to make one job of both buildings. Farm tiles with open joints would probably do, but would not be so good, though they would cost much less. I hope the committee will consider this matter of drainage and give me more definite instructions before the work is to be executed. To protect the walls from rain and frost as far as possible, I have directed them to be covered with impervious building paper, which will keep out the water from the top of the wall, and reduce the injury from frost, protecting the walls until the roof and cornice are up.

Otherwise, the building is not liable to serious injury, and there does not appear to be any water in the excavation beneath it yet. I believe we shall now be able to complete it without much risk or delay, excepting from bad weather.

I wrote Mr. Felkel some days since, requesting him to make a clear statement of the causes of the delay in completing and shipping the iron and steel work, to be presented for the consideration of the committee at its meeting. His reply and a copy of my letter are enclosed with this.

If the weather continues mild, it will be possible to complete the masonry of the building soon, using mixed cement and lime mortar, and perhaps salt, though there would be serious risk of injury if the weather should become very cold. It might be safest to board up the gable and leave the completion of the masonry until spring.

Very respectfully submitted,

N. CLIFFORD RICKER, Architect.

The barn is about done and is acceptable to the department interested.

Respectfully submitted,

S. A. BULLARD, GEO. R. SHAWHAN, } Committee on Buildings and Grounds.

The report of the Treasurer, Mr. J. W. Bunn, was then received and referred to the Finance Committee:

JOHN W. BUNN, TREASURER, IN ACCOUNT WITH THE UNIVERSITY OF ILLINOIS.—*Dr.*

1889.					
Sept.	10	To balance			$48,482 86
	30	" am't rec'd on account	University students' fees	$3,625 00	
		" " " " "	preparatory year	500 00	
		" " " " "	buildings and grounds	30 00	
					4,155 00
Oct.	1	To interest on Montgomery Co. school bonds			56 00
Nov.	21	" am't rec'd on account	agricultural department from Experiment Station	$118 50	
		" " " " "	architectural department	16 71	135 21
Nov.	21	To am't rec'd on account	University students' fees, Aug. 1889	$233 00	
		" " " " "	preparatory year, Aug. 1889	40 00	273 00
Nov.	30	To am't rec'd on account	buildings and grounds	12 50	
		" " " " "	fuel and lights	84 82	
		" " " " "	mechanical department	217 21	
		" " " " "	architectual department	1,108 45	
		" " " " "	horticultural department	139 90	
		" " " " "	agricultural department	1,989 05	
		" " " " "	laboratories	178 00	
		" " " " "	University students' fees	766 00	
		" " " " "	preparatory year	167 50	4,663 43
					$57,765 50
			Cr.		
1889.					
Aug.	31	By am't paid on acc't	salaries	$3,414 05	
		" " "	Board expense	120 27	
		" " "	buildings and grounds	207 06	
		" " "	fuel and lights	509 68	
		" " "	stationery and printing	148 02	
		" " "	preparatory year	574 98	
		" " "	Minnesota lands	66 18	
		" " "	mechanical department	393 97	
		" " "	architectural department	1,200 28	
		" " "	agricultural department	787 58	
		" " "	horticultural department	56 66	
		" " "	military department	38 23	
		" " "	laboratories	356 91	
		" " "	library and apparatus	30 45	
		" " "	incidental expense	205 70	$8,200 02
Aug.	31	By am't paid on acc't	furniture and fixtures	210 35	
		" " "	water supply	200 00	
		" " "	boiler repairs	518 79	
		" " "	drill hall	962 10	
		" " "	farm barn	877 63	2,768 87

Report of Treasurer—*Concluded.*

		Cr.		
1889.		State Appropriations.		
Aug.	31	By am't paid on acc't buildings and grounds	$354 43	
		" " " mechanical and arch'l shops	370 00	
		" " " books and publications	146 22	
		" " " cabinets	19 00	
		" " " expenses of instruction	7,799 76	
		" " " apparatus and material	1,072 62	
		" " " metallurgical laboratory	2 80	
		" " " drill hall	3,540 20	
		" " " State Laboratory of Nat. Hist.	2,482 50	
				$15,787 53
		Balance		31,009 08
				$57,765 50

JOHN W. BUNN, Treasurer.

Urbana, December 10, 1889.

The following appropriations, asked for by the Business Agent in paper E of his report, were made, on motion of Mr. Cobb:

From current funds—	
For mechanical department	$100 00
For architectural department	100 00
From state appropriations for buildings and grounds—	
For general repairs	150 00
For repairs already made	75 00

The action of the Executive Committee, detailed in the following reports, was confirmed, on motion of Mr. Shawhan:

CHAMPAIGN, ILL. Nov. 8, 1889.

At a meeting of the Executive Committee Professor Forbes was appointed to attend, as a representative of the University, the meeting of the Association of American Agricultural Colleges and Experiment Stations to be held in Washington the 12th inst.

Also, on motion, Professor Morrow was appointed to represent the Experiment Station at the same meeting, his expenses to be paid out of the Experiment Station funds.

ALEXANDER MCLEAN, President,
EMORY COBB,
CHAS. BENNETT,
} Executive Committee.

CHICAGO, ILL., November 15, 1889.

At a meeting of the Executive Committee, Judge Bennett reported that he had visited the Pope county and other Minnesota lands, and inspected them carefully, and that he recommended the sale of Pope county land at not less than $10 per acre, on the same terms as the Nebraska lands were sold, to-wit: 25 per cent. in hand, balance on same time, interest at not less than 6 per cent., and that they be put on the market for sale now.

On motion, Mr. Bennett was authorized to correspond and consummate sales on above terms, and also to name some person in Champaign to take charge and assist during the absence of Dr. Peabody.

On motion, the sum of one hundred and fifty dollars was appropriated out of state appropriations for buildings and grounds for repairing roof of the main building, and for fittings in the coat room.

On motion, nineteen dollars was appropriated from state appropriations for cabinets, for purchase of fossil fish.

On motion, sixty-six dollars and eighteen cents was appropriated from current funds in payment of Mr. Bennett's bill for expenses in examining lands.

ALEXANDER MCLEAN, President,
EMORY COBB,
CHAS. BENNETT,
} Executive Committee.

Professor Shattuck was appointed to fill Dr. Peabody's place on the Committee on Minnesota Lands during his absence.

On motion of Mr. Cobb, it was voted that until the next meeting of the Board the committee have power to sell other lands.

The Executive Committee also reported that Sept. 20, 1889, it had received from Professor Theo. B. Comstock his declination of the appointment for this college year to the professorship of mining engineering, and that it had accepted the same.

The action of the committee was confirmed.

The usual quarterly appropriations for the State Laboratory of Natural History were made for the ensuing quarter, on motion of Mr. Shawhan.

The Finance Committee reported as follows:

To the Trustees of the University of Illinois.

Your Finance Committee begs leave to report that it has examined the vouchers of the Experiment Station, numbering from 475 to 535, inclusive, except 530; also the vouchers of the University, numbering from 838 to 873, inclusive, and 1 to 200, inclusive, and finds them to be correct.

Respectfully submitted,

F. M. MCKAY,
S. A. BULLARD,
W. W. CLEMENS,
} Finance Committee.

The report was approved.

The Finance Committee further reported:

To the Trustees of the University of Illinois.

Your finance committee has examined the quarterly report of Mr. John W. Bunn, Treasurer of the University, and finds that the footings are correct, and that there is cash in the treasury to the amount of $31,009.08.

Respectfully submitted,

S. A. BULLARD,
W. W. CLEMENS,
} Finance Committee.

The report was approved.

Adjourned.

W. L. PILLSBURY,
Secretary.

ALEXANDER MCLEAN,
President.

MEETING OF MARCH 11, 1890.

The Board of Trustees of the University of Illinois met in the University parlor, in Urbana, at 3:30 o'clock p. m., March 11, 1890.

The members present were Messrs. Bennett, Bullard, Cobb, Edwards, and McLean; absent, Governor Fifer, and Messrs. Clemens, Harker, Haskell, McKay, Millard, and Shawhan.

There being no quorum present, after listening to the report of the Acting Regent, Professor Burrill, the Board adjourned to meet at 7:30 o'clock, p. m., at the Doane House in Champaign.

REGENT'S REPORT.

To the Honorable Board of Trustees, of the University of Illinois.

GENTLEMEN: In fulfillment of duty, I respectfully submit an account of affairs concerning the progress of the University during the quarter now closing, together with some papers presented for your consideration. The usual biennial financial exhibit of the departments, which have business transactions, is handed you herewith; and there are also appended the biennial reports due at this time of the heads of departments of instruction.

It gives me much pleasure to repeat the favorable report made at your last meeting in regard to the excellent spirit prevailing throughout the University and the very satisfactory progress made in every department thereof. No serious adverse criticism can be made upon anything that has occurred during these three months, and there is no doubt that creditable work has been accomplished. No body of instructors could work together more harmoniously with each earnestly striving to advance the best interests of his special department, while generously contributing in all cases and in all feasible ways to the highest good of the Institution as a whole. There has not been a single instance of expressed dissatisfaction, much less of personal or official contention. This is the best thing that can be said of any University Faculty, if, as in the present case, the men are each active workers not only in the accomplishment of routine duties, but also towards the highest possible advancement of the departments severally committed to their charge.

It would be unreasonable to expect that students should forget their youth and uniformly fall into place with the precision of machinery; but order and loyalty to authority have characterized their behavior and earned for them a complimentary notice. Cheerful compliance has uniformly been given to established rules and to the better requirements of propriety and conscience. The good name of the University is held by

students, as it should be, in high regard and esteem. This is better than absolute submission to prescribed law or any other means of enforcing discipline. Indeed, during the period named, we have had little need for this word in our vocabulary.

The single exception to the desirable and satisfactory condition of affairs has been the absence of the Regent and the loss of his commanding influence, whose early return we now hopefully anticipate.

The roll of students for the present term shows 428 names. Of these, 361 are those of gentlemen and 67 of ladies; 315 are matriculated, or are special students attending the regular University classes; 113 are classed as preparatory, but quite a number of these also take some freshman studies. The total enrollment for the year now reaches 464. This is 47 more than the entire enrollment for last year.

According to the arrangements made at the last meeting of your Board, Mr. Lincoln Bush became a teacher of descriptive geometry at the beginning of the current term, and has succeeded very satisfactorily in his work. He is employed for this term only. It is, therefore, especially proper that mention should be here made of his good services as a capable and accomplished instructor.

Instruction is now fully provided for the remainder of the year.

Reference is made to the reports of the committees appointed by you upon the detail of Lieut. Hoppin, and upon the case of one of the assistant instructors.

THE HAZELTON PRIZE MEDAL.

The prize medal donated by Capt. W. C. Hazelton has been received, and proves to be of an exceedingly beautiful and artistic design. It should be mentioned that the design was made by Mr. James P. Hubbell, of the sophomore class, architectural course. The rules proposed in connection therewith are herewith submitted for your consideration and approval. It is believed that the hopes of the thoughtful and generous donor will be fully realized in the awakening of increased interest in the military drill through competition for this beautiful medal.

UNIVERSITY OF ILLINOIS, Jan. 30, 1890.

To the Trustees of the University of Illinois.

GENTLEMEN: We respectfully request that the following rules, which are acceptable to Capt. W. C. Hazelton, the giver of the medal, be established to govern in the contemplated competitions for the Hazelton Medal:

1. The competition shall take place at the University of Illinois, between the 15th of May and the 15th of June each year. The exact date and time to be determined yearly by the Regent.

2. The medal shall be awarded by a committee of three judges, to be selected by the officer in charge of the military department of this University and approved by the Regent and the donor of the medal; but no professor or student of the University will be so chosen, nor any ex-student who has been in attendance at the University within three years of the date set for the competition.

3. The following may compete: Any student of the University of Illinois who shall have been in attendance at the University during at least sixteen weeks of the current school year, and who has had no more than four unexcused absences from drill during that time, and who may present himself for the competition in full uniform.

4. The award shall be upon the following points, and any student marked lower than seventy-five out of a possible one hundred on any point will not be allowed to take further part in the competition:

1—Erectness of carriage, military appearance, and neatness.

2—Execution of the school of the soldier without arms.

3—Manual of arms with and without the numbers.

5. The medal will be awarded to the competitor having the highest number of points as determined by the judges and approved by the Regent, or by some person designated by him. The medal may be worn by the winner until returned as required by the next rule.

6. The successful competitor shall receipt to the Business Agent of the University for the medal when received by him, and shall return the same on or before May 15th next following the competition.

7. To the successful competitor for each year will be issued a certificate thereof by the University, which certificate will be permanently held by him and entered in the University catalogue and records.

T. J. BURRILL, Acting Regent.
C. B. HOPPIN, 1st Lt. 2d Cav.,
Prof. Military Science and Tactics.

The drill practice has been omitted during inclement weather on account of the unusual prevalence of disease in the order of colds, supposed to be a peculiar malady called influenza or grip, and on account of the want of artificial heat in the drill hall. In this connection attention is especially called to the subject of warming the new drill hall mentioned in the report of Professor Woods. Gymnastic practice has been continued by a large number of students under the arrangements reported to you at the last meeting. Many thanks are due Lieut. Hoppin for his proffered aid in the general supervision of these athletic and health-winning exercises. It is hoped that the better facilities of the new hall may be taken advantage of in providing for more and better gymnastic training and practice. Good bodily development must be secured, if the highest mental capacities are to be gained; and robust health must be considered an essential prerequisite for the best scholarship. The need of some provision for heating the new hall is emphasized, if the room is also to be devoted to gymnastics.

The supply of catalogues has been exhausted since your last meeting; and, there being many calls for them, an abridged circular containing the most important information concerning admission, courses of studies, etc., has been issued to meet the emergency.

ANNUAL CATALOGUE.

Authority is now asked to publish the annual catalogue at the earliest practicable opportunity, at an expense not to exceed $400. This sum it is believed will be sufficient for an edition of 6,000 copies of the usual size. Last year 5,000 copies were printed.

Upon recommendation of the Faculty the following minor changes in the designated courses of study are proposed and authority is asked to make them, viz.:

English and modern languages, Freshman year.—Instead of rhetoric, American authors and British authors, make the order, American authors, British authors, and rhetoric. *Senior Year.*—Add second year French as extra optional for the three terms of the year.

Ancient languages, Sophomore year.—Read Terence or Tusculan Disputations, instead of the former alone.

Agricultural course, Freshman year.—Substitute rhetoric for British authors.

Courses of mechanical and civil engineering and architecture, Junior year.—Insert with advanced descriptive geometry, hydraulics.

With the exception of the French spoken of, these proposed changes imply nothing additional to the work now required, but they do indicate better the actual requirements or serve better the convenience of instruction. The second year of French is taught in other courses, and it seems proper that the students of the special course in modern languages should at least have an opportunity to take the study. It does not necessitate the formation of a new class for instruction.

Authority is also asked to modify the descriptive matter of the catalogue when this can be made to express more nearly or more clearly the actual present condition of things.

In this connection mention may be made of the desirability of securing some better cuts of the University buildings. A possibility of great improvement in this matter is made evident by an inspection of the illustrations in use. Probably no better use can be made of the requisite amount, if taken from the fund set apart for advertising.

SECURITY FROM FIRE.

The loss by fire of the magnificent building of the Toronto University, which, with the contents consumed, was valued at about one million dollars, besides invaluable collections and accumulations, has again called attention to our own dangers in this respect. Renewed precautions have been taken to prevent such a calamity. The main buildings have been carefully examined and everything supposed possible has been done to remove the liability to fire. The members of the Faculty have undertaken to inform themselves thoroughly as to what to do and how to do it in case of need. An organization of students has been formed under the supervision and command of Lieut. Hoppin, who kindly consents to look after the matter. The details for the purpose, with the necessary accompanying directions, are printed on slips of paper designed to be posted in every occupied room.

Attention is respectfully asked to the provision of fire escapes from the upper story of the main building. From this floor, now daily occupied for class instruction attended by a large number of students, and having upon it the society halls, there is no means of descent except by the central staircase. Other plans may suggest themselves to your wisdom, but a simple escape can be made at each end of the building by cutting through the floor into the hall below where extra stairs exist. These openings may be kept closed by trap doors; and, to prevent accident by their being left open, they may be cased sufficiently high to be safe. A wire or rope ladder would then furnish the escape. Without further recommendations at present, your earnest consideration of the subject is solicited. For quick removal of the books from the library, a canvas chute might be provided to be placed in one of the windows and to reach the ground below.

WORLD'S FAIR IN CHICAGO.

The anticipated holding of a World's Fair in Chicago should be noted, and, as it seems to me, preparations should be entered upon at once for the best possible presentation of the University and its work. To do this, much careful consideration, a good deal of labor, and no small sum of money will be required. With these a magnificent showing can be made and an emphatic demonstration furnished that the University is worthy to receive a large amount of the valuable material which somebody will secure at the close of the great exhibition. Assuming that the fair is to be held, the first thing to do is to decide whether an exhibit by the University shall be made, after which it is presumable that the most that can be done now is to appoint a suitable committee to report at your next meeting. In the meantime, however, enthusiasm can be aroused among members and friends of the institution and an important beginning made before definite plans shall be formulated.

The report of the Building Committee, will give you the details of the work done upon the new drill hall since your last meeting, and the further requirements for the same. But the building reports for itself, and shows that very satisfactory progress has been made. The completion of this structure will mark a mile-stone in the history of the University, and it may be fittingly dedicated to its designed purposes by appropriate ceremonies under your direction. Will you take action upon the subject?

The following statement of the Professor of Agriculture is respectfully submitted:

FARM REPORT.

UNIVERSITY OF ILLINOS, March 8, 1890.

Dr. T. J. Burrill, Acting Regent,

SIR: During the three months ending March 1st, the receipts from the University farms have been $97.41. The expenditures have been $453.79.

The low prices for grains, and for hay except when the condition of the roads made the delivery of hay almost impossible, have made it seem not advisable to make sales. It is hoped that with the opening of spring there may be an improved demand for live stock for breeding purposes.

Respectfully submitted,

G. E. MORROW.

CHEMICAL LABORATORY.

The request herewith communicated from the chemical department is worthy of your favorable action if the means can be found to meet the demand. Many petty purchases have been necessary during the current year at prices far above what the goods could have been procured for in bulk, and especially by importation. Economy demands that the laboratory shall be well furnished by the latter method. By reference to the balance sheet of the department, it will be seen that there was received during the year ending March 1, 1890, $1,309.83 from students, against an expenditure of $1,400.69 (deducting the $22.40 furnished other departments). It may be presumed that an increase of students will, at the beginning, augment expenditures more than receipts, just as the original equipment of a laboratory shows a heavy expense account. Putting the $90.86 debit balance as above with the $258.77 decrease in inventory, we have a debit balance of $349.63 over the receipts from the special payments by students. This is not more probably than should be anticipated under the conditions of the year, if students are expected to pay for what they actually use and no more.

UNIVERSITY OF ILLINOIS, March 6, 1890.

Prof. T. J. Burrill, Acting Regent,

SIR: The number of students in attendance in the classes in chemistry is now greater than it has been for several years, and increased expenditure is thereby necessitated. Therefore, in order to derive the greatest possible benefit from our privilege of importing goods duty-free, I recommend that the usual appropriation of six hundred and fifty dollars for chemicals and apparatus be increased to one thousand dollars.

Respectfully submitted,

ARTHUR W. PALMER.

MILITARY DEPARTMENT.

Appropriations of $41.00 for the military department and $69.00 for the band are asked for, as set forth in the accompanying communication by Lieut. Hoppin. The former is perhaps sufficiently explained; to the latter statement it should be added that eleven members of the band now use their own instruments, while four depend upon those furnished by the University. These four instruments are essential horns, but they are worn out and unsuitable for good music, as well as liable to break down at any time. Great interest has been taken in the band practice during the year and excellent proficiency has been attained.

It is probable that the matter of a flag-staff and flags should be referred to an appropriate committee.

UNIVERSITY OF ILLINOIS, March 10, 1890.

Prof. T. J. Burrill, Acting Regent,

DEAR SIR: I have the honor to report that the following named articles are needed for use in the military department, viz.:

170 firing pins	$17 00
4 stocks, new	12 00
12 stocks repaired (estimated)	6 00
12 hammers	2 50
2 locks, complete	2 50
2 lock plates	1 00
	$41 00

I would state that these are breakages which have been accumulating for several years, and all, or most of them, should be replaced.

In this connection I would respectfully recommend that a warmed room be provided for the storage of these rifles during the winter, if it shall be found impracticable to heat the new drill hall, as it has been to heat the old one.

The University instruments now in the hands of the band are much worn, and the following should, in my opinion, be replaced if possible:

One b-flat tuba (Helicon)	$45 00
Two b-flat tenor horns	22 00
Two music stands	2 00
	$69 00

I would further recommend that a suitable flag-staff be erected in the vicinity of the new drill hall, and that a set of flags, as follows, be purchased:

One garrison flag 20′x36′.

One post flag 20′x10′.

Two storm flags 4′ 2′′x8′.

Halyards and blocks should of course be fitted to the staff.

I am, sir, very respectfully your obedient servant,

C. B. HOPPIN,

1st Lieut. 2d Cavalry, Professor Military Science and Tactics.

FINANCIAL STATEMENTS.

The balance sheets of the departments doing business in connection with the work of instruction are given below. That of the agricultural department shows a deficit of $258.21. This is largely owing to a loss of about one thousand dollars' worth of material in the fire which consumed the barn; but the prevailing low prices for farm produce have also contributed to this result. The credit balance of the horticultural department is due rather to the small cost of the work to the University, than to large proceeds.

BALANCE SHEETS.

THE DEPARTMENT OF AGRICULTURE.

Credits:		
Inventory, Dec. 1, 1889—		
Live stock, including teams	$10,275 00	
Machinery and tools	1,400 00	
Farm products and miscellaneous	2,292 00	
		$13,967 00
Sales—Live stock	$2,138 66	
Farm products and miscellaneous	1,630 12	
Labor	236 43	
		4,005 21
Deficit		258 20
		$18,230 41
Debits:		
Inventory, Dec. 1, 1888:		
Live stock, including teams	$10.115 00	
Machinery and tools	1,800 00	
Farm products	3,615 00	
		$15,530 00
Expenses: Labor	$1,727 24	
Stock	315 75	
Machinery	235 02	
Miscellaneous	422 40	
		2,700 41
		$18,230 41

THE HORTICULTURAL DEPARTMENT.

Credits:		
Cash from greenhouse	$165 47	
Small fruits	95 13	
Nursery and forest	5 25	
Garden	16 25	
Orchard	119 82	
		$401 92
Debits:		
Greenhouse	$189 32	
Small fruits	48 52	
Orchard	24 78	
		$262 62
Balance		139 30
		$401 92

THE CHEMICAL LABORATORY.

Credits:		
State appropriations	$625 00	
Receipts from students	1,309 83	
Other departments	22 40	
		$1,957 23
Debits:		
Chemicals and apparatus, permanent	$106 24	
Chemicals and apparatus, current	799 56	
Repairs, freight and sundries	199 29	
Gas	318 00	
		$1,423 09
Balance		534 14
		$1,957 23
Inventory, March 1, 1889		$14,574 56
Inventory, March 1, 1890		14,315 79

THE MACHINE AND CARPENTER SHOPS.

	Machine Shop.		Carpenter Shop.	
Credits:				
Work for University	$570 03		$4,064 80	
Work for other parties	33 05		503 88	
State appropriations	1,025 72		625 00	
		$1,628 80		$5,193 68
Deficit		1,082 68		347 55
		$2,711 48		$5,541 23
Debits:				
Materials and tools	$671 46		$1,496 29	
Labor	258 18		2,673 10	
Power	231 84		231 84	
Instruction	1,550 00		1,140 00	
		$2,711 48		$5,541 23
Inventory, February 28, 1889	$321 69		$873 21	
Inventory, February 28, 1890	277 94		1,193 59	

A report of the Board of Direction of the Agricultural Experiment Station is herewith presented. In this connection I may say that the representatives of the State Board of Agriculture, Mr. E. E. Chester, of the State Horticultural Society, Mr. Henry M. Dunlap, and of the State Dairymen's Association Mr. H. B. Gurler, the present incumbents, stand recommended to you as members of the Board of Direction.

REPORT OF EXPERIMENT STATION.

Prof. T. J. Burrill, Acting Regent, University of Illinois,

SIR: The Board of Direction of the Agricultural Experiment Station, University of Illinois, presents these papers:

Paper A is a list of vouchers to be audited, Nos. 530, and 536 to 599, inclusive, and with it are the vouchers.

Paper B is a statement of the Station expenditures for the quarter ending December 31, 1889.

Paper C is a statement of the appropriations, expenditures and balances for the half year ending December 31, 1889.

Paper D is a statement of the appropriations, expenditures, and balances March 1st for the quarter ending March 31, 1890.

Paper E is a statement of appropriations asked for the purpose of carrying on the work of the Station for the quarter ending June 30, 1890, and of some further appropriations asked for this quarter.

Estimates for the quarter ending June 30, 1890:	
Buildings and repairs	$40 00
Board expense	40 00
Books and periodicals	150 00
Botanical apparatus	10 00
Bulletins	350 00
Chemical apparatus	75 00
Fuel and lights	100 00
Incidentals	25 00
Printing, stationery and postage	25 00
Salaries	1,850 00
Seeds and trees	80 00
Tools	40 00
Wages and teams	1,000 00
Sundry—	
Corn experiment at Flora	20 00
Dairying experiment at DeKalb	100 00
Extermination of Canada thistles at Mattoon	5 00
Materials for tree protection experiments	20 00
Wheat experiments at Flora, Odin, and Farina	30 00
Total	$3,960 00

For the current quarter, to make up a deficiency in the dairying experiments, an appropriation is asked of $30.

Paper F is a record of experiments undertaken by the Station for the year ending March 11, 1890.

TABLE SHOWING EXPERIMENTS IN HAND DURING YEAR.

No of experiment.	Class and title of experiment.	Still in progress.	To be repeated.	Finished.	Reported in bulletin.
	Field Experiments—				
1	Corn, testing varieties	..	+	..	No. 8
2	Corn, testing varieties for ensilage	..	..	+	.....
3	Corn, time of planting	..	+	..	No. 8
4	Corn, depth of planting	..	+	..	"
5	Corn, thickness of planting	..	+	..	"
8	Corn, frequency of cultivation	..	+	..	"
9	Corn, depth of cultivation	..	+	..	"
10	Corn, effect of root-pruning	..	+	..	"
11	Corn, effect of fertilizers	..	+	..	"
12	Oats, quantity of seed per acre	..	+	..	No. 7
13	Oats, compact or loose seed-bed	..	+	..	"
14	Oats, time of sowing	..	+	..	"
15	Oats, depth of sowing	..	+	..	"
16	Grasses, comparison of varieties	+	..	..	.....
17	Clovers, comparison of varieties	+	..	..	.....
18	Grasses and clovers sown with or without grain	+	..	..	.....
19	Grasses, field tests of varieties	+	..	..	.....
20	Clovers, field tests of varieties	+	..	..	.....
21	Grasses and clovers, field tests of mixtures	+	..	..	.....
22	Weeds, number and kinds on given areas	+	..	..	.....
23	Rotation, University experiments continued	+	..	..	.....
24	Fertilizers, comparison of	..	+	..	No. 8
50	Grasses and clovers, effect of ripeness on yield and chemical qualities	..	+	..	No. 5
53	Wheat, effect of time and manner of harvesting	..	+	..	.....
54	Corn, root growth	..	+	..	No. 8
62	Wheat, effect of fertilizers	+	..	..	.....
63	Wheat, methods of soil preparation	+	..	..	.....
64	Wheat, large or small seed	..	..	+	.....
65	Wheat, quantity of seed per acre	+	..	..	.....
66	Wheat, time of sowing	+	..	..	.....
67	Wheat, depth of sowing	+	..	..	.....
68	Wheat, its relation to chess	+	..	..	.....
69	Wheat, its protection from chinch bugs; effect of fertilizers upon. [Experiment at Flora, Odin and Farina]	+	..	..	.....
71	Corn fodder, effect of ripeness	..	+	..	.....
84	Oats, testing varieties	..	+	..	No. 7
85	Oats, effect of sowing spring wheat with	..	..	+	.....
86	Fertilizers, effect on grass lands	+	..	..	.....
88	Beets, testing varieties	..	+	..	.....
89	Corn, cross fertilization of	..	+	..	.....
90	Corn, rate of growth	..	+	..	.....
95	Corn, effect of sowing rye in	..	+	..	.....
	Feeding Experiments—				
26	Feeding cattle of different breeds	+	..	..	.....
27	Cost of production of young steers	..	+	..	.....
28	Cost of production of young colts	+	..	..	.....
29	Cost of production of young calves	..	+	..	.....
58	Record of milk product [milk measured in experiment No. 29]	+	..	..	.....
60	Pigs, comparison between corn, grass and corn, and grass in feeding	..	+	..	.....
81	Value of offal fed to pigs	..	+	..	.....
82	Feeding ensilage to colts	..	..	+	.....
83	Comparison of corn meal, and of corn meal and wheat meal fed to pigs	..	..	+	.....
87	Pigs, comparative value of soaked and dry corn in feeding	..	+	..	.....
99	Heifers, comparative value of ensilage and corn fodder in feeding	+	..	..	.....
100	Pigs, comparative value of corn and beets, and corn in feeding	+	..	..	.....
	Tree Culture—				
31	Orchard, soil cultivation and management	+	..	..	.....
32	Orchard, soil fertilization	+	..	..	.....
33	Apples, testing new varieties by planting	+	..	..	.....
34	Apples, testing new varieties by top-grafting	+	..	..	.....
35	Apples, testing hardiness of root-grafted and double-worked trees	+	..	..	.....

No. of experiment.	Class and title of experiment.	Still in progress...	To be repeated....	Finished.....	Reported in bulletin.....
	Tree Culture—				
36	Pears, testing new varieties	+			
37	Plums, testing new varieties	+			
38	Cherries, testing new varieties	+			
39	Forest trees, growing of	+			
57	Trees, use of insecticides on		+		
78	Testing time and methods of transplanting trees	+			
79	Testing and improving native fruits	+			
80	Testing the effects of stock and cion upon each other	+			
91	Peach trees, winter protection of	+			
	Vine Culture—				
40	Grapes, testing new varieties	+			
41	Grapes, methods of training	+			
42	Grapes, soil treatment	+			
	Small Fruit Culture—				
43	Blackberries, testing varieties	+			
44	Raspberries, testing varieties	+			
45	Strawberries, testing varieties	+			
46	Strawberries, method of management	+			
51	Strawberries, raising seedlings	+			
52	Raspberries, soil management	+			
	Gardening—				
48	Beans, testing varieties		+		
49	Sweet corn, testing varieties		+		No. 8
56	Potatoes, investigation of scab		+		
	Tree and Vine Culture—				
55	Fungicides, use of		+		
	Miscellaneous—				
73	Record of soil temperatures	+			
75	Soil moisture, evaporation of water from the surface of water, of uncultivated soil, of cultivated soil, of a corn plant, and of grass		+		
76	Meteorological record from August 17, 1888	+			
77	Biology of ensilage				No. 7
92	Canada thistles, extermination of. [At Mattoon]	+			
93	Fruits, production of new varieties from seeds	+			
94	Vitality of timothy, bluegrass, and red-top seeds tested			+	
96	Horses, investigation of "slobbers" in			+	
97	Vitality of seeds tested	+			
98	Cattle, investigation of disease sometimes attacking them when turned into stalks		+		

The Board of Direction, on recommendation of its Committees on Field, Feeding, Dairy, and Horticultural Experiments, has directed the continuance of work along the lines pursued during the past year. Some of the experiments in progress are of such character that they will continue for several years; others it is desired to repeat—in some cases with slight modifications; while others will not be carried on further.

In addition, authority is asked to undertake the following new experiments, each of which is in the line of work hitherto authorized:

1. Cost of production of pumpkins. These will be raised with a view to using them for feeding purposes.

2. The protection of trees from borers, mice, rabbits, and other animals.

3. The protection of trees from climatic injuries.

To carry on this work for the current and the next quarters, appropriations are asked as in paper D.

The Board of Direction wishes to use this season the lands already assigned, and asks that they be reassigned.

Authority is also asked to get bids for chemical and botanical supplies for the year beginning July 1, 1890, and to order the same on satisfactory bids—the amount for the chemical laboratory being limited to $225.00, and for the botanical laboratory to $50.00.

Mr. E. H. Farrington accepted your appointment as Assistant Chemist of the Station, at a salary of $1,500 per year, and began work January 1, 1890. His work has been entirely satisfactory.

The Board of Direction has reappointed the Station staff for the ensuing year, beginning April 1, 1890, with salaries as at present, and asks that its action be confirmed.

Respectfully submitted,

G. E. MORROW,
Acting President Board of Direction.

Turning now to requests and suggestions concerning appropriations of money, your considerate attention is asked to the following items, whether or not hereinbefore mentioned:

APPROPRIATIONS ASKED.

From state appropriation for buildings and grounds—

For care of grounds	$155 71

From current funds—

For care of grounds	$144 29
For physical laboratory	105 00
For band instruments	69 00
For commencement expenses	200 00

From appropriation for military department—

For repair of rifles	$41 00

From appropriation for horticultural department—

For painting greenhouse	$60 00

In concluding this report to you, the last in my present position, I have only to express my high appreciation of the honor conferred upon me by your appointment, and to thank you for the many kindnesses received at your hands.

I am very respectfully yours,

T. J. BURRILL, Acting Regent.

EVENING SESSION.

When the Board met in the evening at the Doane House, pursuant to adjournment, the same members were present as in the afternoon, and also Mr. McKay.

The recommendations of the Regent's report and other University matters were discussed.

The Business Agent's report was received as follows:

UNIVERSITY OF ILLINOIS, March 11, 1890.

Alexander McLean, Esq., Pres. Board of Trustees, University of Illinois,

SIR: I have the honor to hand you herewith the financial statements due from me at this time.

Paper A is a showing of the current appropriations for the past six months.

Paper B gives the condition of the state appropriations March 1, 1890.

Paper C is a list of vouchers presented for audit, being 201 to 450, inclusive.

Paper D is an estimate of receipts and expenses, current funds, for the six months ending September 1, 1890.

The Board is requested to appropriate the amount for the estimated expenses.

I also present with inclosed papers, at the request of Mr. F. Felkel, a communication from him marked *E*.

Respectfully submitted,

S. W. SHATTUCK, Business Agent.

PAPER A—CURRENT APPROPRIATIONS.

Of Sept. 10, and Dec. 10, 1889.	Appropriated	Receipts also appropriated.	Expended.	Balance.
Board expense	$300 00		$236 02	$63 98
Salaries for instruction {Current	22,700 00		5,239 98	1,893 82
" " {State.			15,566 20	
" " services	1,900 00		1,879 61	20 39
Buildings and grounds	200 00	$93 00	273 81	19 19
Fuel and lights	2,000 00	147 71	1,225 78	921 93
Stationery and printing	350 00		343 51	6 49
Mechanical department	300 00	530 34	738 79	91 55
Architectural "	300 00	2,387 05	2,583 73	103 32
Agricultural "	200 00	2,204 96	1,241 37	1,163 59
Horticultural "	200 00	205 50	189 75	215 75
Military "	50 00	54 00	96 73	7 27
Laboratories	200 00	807 54	704 14	303 40
Library and apparatus	50 00		37 94	12 06
Incidentals	323 42		288 75	34 67
Sundries—				
Furniture and fixtures	250 00		227 04	22 96
Water supply	200 00		200 00	
Boiler repairs	600 00		518 79	81 21
Drill hall	4,000 00		2,904 94	1,095 06
Farm barn	1,500 00		1,327 67	172 33
Minnesota and Nebraska lands	66 18		66 18	
Preparatory year		1,192 50	1,183 28	9 22
University students' fees		7,881 50		7,881 50
Music fees		108 00	108 00	
New engine	150 00		53 85	96 15

PAPER B—STATE APPROPRIATIONS.

	Appropriated	Received.	Expended.	Balance.
Taxes on lands (⅛ per annum)	$3,400 00	$1,543 62	$1,543 62	
Buildings and grounds (½ per annum)	5,000 00	2,500 00	2,344 29	$155 71
Mech. and Ag. ch. shops (½ per annum)	3,000 00	1,500 00	870 00	630 00
Books and publications (½ per annum)	2,000 00	1,000 00	516 90	483 10
Cabinets (½ per annum)	1,000 00	500 00	91 77	408 23
Expenses of instruction (½ per annum)	40,000 00	20,000 00	15,566 20	4,433 80
Apparatus and material (½ per annum)	3,000 00	1,500 00	1,336 61	163 39
Metallurgical laboratory (½ per annum)	4,000 00	4,000 00	2,626 98	1,373 02
Drill hall	10,000 00	10,000 00	10,000 00	
New boiler for machine shops	1,250 00	1,250 00		1,250 00
	$72,650 00	$43,793 62	$34,896 37	$8,897 25
Illinois State Laboratory of Natural History	15,123 62	9,873 62	5,604 48	4,269 14

The Board adjourned to meet at the University parlor at 9 o'clock a. m.

SESSION OF WEDNESDAY.

The Board met pursuant to adjournment, and, Mr. Haskell having arrived, there was a quorum present.

The minutes of the last meeting were approved.

The Treasurer's report was received and referred to the Committee on Auditing and Finance.

JOHN W. BUNN, TREASURER, IN ACCOUNT WITH THE UNIVERSITY OF ILLINOIS.

1889.	*Dr.*		
December 10	To balance		$31,009 08
" 16	" interest on Sangamon county school bonds		168 00
1890.			
January 2	" " " Chicago water bonds		875 00
" 2	" " from treasurer		2,130 00
" 15	" " on Champaign school bonds		360 00
" 21	" amount received on account fuel and lights	30 00	
	" " " " " laboratories	21 25	
			51 25
	To interest on land contract No. 1, A. Hubka	92 80	
	" " " 5, D. C. Bashor & A. Ault, assignee	92 00	
	" " " 6, John J. Middleton assignee	40 00	
	" " " 9, C. M. Dawson	40 00	
	" " " 11, Jacob Stambaugh, assignee	120 00	
	" " " 13, H. T. Willis & A. W. Mills	120 00	
	" " " 14, W. L. Collins	121 33	
	" " " 15, P. A. Moore, assignee	96 00	
	" " " 17, R. L. Gumaer	24 00	
	" " " 18, D. A. Young, assignee	96 00	
	" " " 19, L. Larsen	120 00	
	" " " 21, Dennis Wagner	51 13	
	" " " 22, H. H. Snyder & J. F. Martin	32 00	
	" " " 26, H. A. Greenwood, assignee	56 00	
	" " " 30, E. L. Baughman, assignee	81 67	
	" " " 31, J. H. Hanson	104 00	
	" " " 32, P. C. O'Brien	222 90	
	" " " 33, C. Hesse	70 20	
	" " " 34, J. & H. J. Swoboda	80 00	
	" " " 35, J. & W. Losey	96 00	
	" " " 36, W. H. Ruyle, assignee	120 00	
	" " " 38, Nelson R. Simpson	120 00	
	" " " 39, J. E. Blickenstaff	120 55	
	" " " 40, Joseph Dezort	123 70	
	" " " 41, A. L. French & U. M. Losey, assignee	120 00	
	" " " 42, F. L. Marrs & W. S. Morton	120 00	
	" " " 43, Samuel Cox	67 20	
	" " " 44, Chas. E. Baker	67 20	
	" " " 45, Blevins & Miller	124 48	
	" " " 46, W. H. Ruyle, assignee	360 80	
	" " " 47, M. Hubka	127 73	
	" " " 50, B. T. Hnizda	85 15	
	" " " 51, James Skubal & J. W. Hnizda	90 00	
	" " " 52, J. W. Hnizda	48 00	
	" " " 54, B. F. Leiby	128 40	
	" " " 57, C. Anderson	120 00	
	" " " 58, E. Muhlhausen	111 97	
	" " " 59, Frank Havlina	48 00	
	" " " 60, James Havlina	48 00	
	" " " 62, R.H.&W.Muhlhaus'n	101 20	
			4,008 41

Treasurer's Report—*Continued.*

		Dr.		
1890.				
February 28	To amount received on account	buildings and grounds	$50 50	
	" "	fuel and lights	32 89	
	" "	mechanical department.	313 13	
	" "	architectural departm'nt	1,261 89	
	" "	agricultural department.	97 41	
	" "	horticultural departm'nt	65 60	
	" "	military department	54 00	
	" "	laboratories	608 29	
	" "	university students' fees	3,257 50	
	" "	preparatory year fees	485 00	
	" "	music fees	108 00	
				$6,334 21
				$44,935 95
		Cr.		
1890.				
February 28	By amount paid on account	salaries	$3,705 54	
	" "	board expense	115 75	
	" "	buildings and grounds	66 75	
	" "	fuel and lights	716 10	
	" "	stationery and printing	195 49	
	" "	preparatory year	608 30	
	" "	mechanical department	344 82	
	" "	architectural department.	1,293 45	
	" "	agricultural department.	453 79	
	" "	horticultural department.	133 09	
	" "	military department	58 50	
	" "	laboratories	347 23	
	" "	library and apparatus	7 49	
	" "	incidental expense	83 05	
				$8,129 35
	" "	furniture and fixtures	$16 69	
	" "	drill hall	1,942 84	
	" "	farm barn	450 04	
	" "	new engine	53 85	
	" "	music	108 00	
				2,571 42
	State appropriations—			
	By amount paid on account	buildings and grounds	$154 18	
	" "	mechanical & arch'l shops	450 00	
	" "	books and publications	370 68	
	" "	cabinets	68 05	
	" "	expenses of instructions.	7,766 44	
	" "	apparatus and material	263 99	
	" "	drill hall	1,471 46	
	" "	State Laboratory of Natural History	1,251 77	
				11,796 57
	Balance			22,438 61
				$44,935 95

Urbana, March 11, 1890. JOHN W. BUNN, Treasurer.

On motion of Mr. Cobb the matter of the back rent of the Griggs farm was referred to the Business Agent, with power to collect.

Mr. Bennett reported orally as to the Minnesota lands, that circulars showing terms of sale, etc., had been issued, but that so far no bids had been received. He said further that some one, with authority to lease for one year lands in Pope county already broken, should visit the lands about the time when the spring's work begins in that locality.

On motion of Mr. Edwards, the committee was instructed to send one of its members to visit the lands at the time named, and one hundred dollars was appropriated from current funds for his expenses.

The request from the students' societies for one-half hour's gas additional to what is now given them was put over, with other questions relating to the societies, until the June meeting of the Board.

The question of fire escapes was referred to the Committee on Buildings and Grounds, to report on at the next meeting.

The appropriations asked for in the Regent's report were made, as asked.

Thirty dollars was appropriated from current funds for cementing the floor of the wash-room in the basement of the main buildiug.

The Business Agent and Professor Palmer were authorized to procure bids for the apparatus and supplies for the chemical laboratory and to contract for the same upon a satisfactory bid—the total cost to be limited to $1,000, of which $500 shall come from the state appropriation for apparatus and material and $500 from the laboratory fees.

The Acting Regent was, on motion of Mr. Bennett, authorized to have the changes made in the courses of study, and in other respects, in the catalogue, as suggested in his report.

The following communication was received from Mr. Foster North, of Kewanee:

To the Board of Trustees of the University of Illinois.

The undersigned, Foster North, of Kewanee, Illinois, respectfully represents that he was matriculated as a student in the University of Illinois in September, 1879, and that after he had completed enough studies to entitle him to a certificate of graduation, and forty days before he was to graduate as a bachelor of science in school of natural history, he was suspended indefinitely, April 30, 1885, from said University; that the only charge against him was his refusal to attend religious worship in said University; and that this Board being duly petitioned, refused to restore the undersigned to his right of attendance as a student upon the University and this action of the Board is still unrevoked; that the rule requiring attendance of students upon religious worship was and is a violation of the constitution of the State of Illinois; that the undersigned has violated no lawful rule nor disobeyed any lawful authority of said University, and his suspension was wrongful and illegal. And he further says that on the 11th day of March, 1890, he applied to the Regent of the University, who is a member of the Faculty of said University and is authorized to admit students to the said University, and thereupon, the said Regent, in behalf of and for the Faculty, refused such admission; which refusal he says was wrongful and illegal.

Wherefore he asks that this Board, at the present meeting, restore to him his right of attendance as a student of said University.

And he further asks to be allowed to appear before this meeting of the Board and be heard upon the matter of this petition.

FOSTER NORTH.

Champaign, Ill., March 11, 1890.

Mr. North having asked leave to state his case to the Board, and this having been given, he said, in substance, that his application to the Supreme Court at Ottawa for a mandamus to compel the Board to reinstate him as a member of the Univer-

sity had been denied on the ground that the present Board was not the same which had refused his request for reinstatement in 1885, and had not been asked to reinstate him. He said his only object in presenting his formal request for a reinstatement was that he might have a standing in making, as he proposed doing at once, a further request for a mandamus.

When asked by Mr. Bennett whether or not he would, if reinstated, comply with the rules, for non-compliance with which he had been suspended, Mr. North answered, "I would not."

After Mr. North had retired, the Board instructed the Secretary, on motion of Mr. Bennett, to answer his communication in the following words:

"In reply to your communication to the Board of Trustees of the University of Illinois, of March 11, 1890, in relation to your suspension from the privileges of the University in 1885, the Board directs me to say:

"That, as you are aware, the facts relating to your suspension were at that time referred to the Attorney General of this state, who is the legal adviser of this Board, for his opinion thereon; that the action of the Faculty and of the Board of Trustees of the University was strictly in accordance with the opinion given by him, and that the Board knows no reason for changing its action in the premises."

The Secretary was further instructed to send to the Attorney General the papers in the Foster North case and to request him, on behalf of the Board, to represent the Board in any legal proceedings which might arise.

The Board then proceeded to the election of officers for the next year.

On motion of Mr. Cobb, Mr. McLean was elected President.

On motion of Mr. Haskell, W. L. Pillsbury was elected Corresponding Secretary and Recording Secretary.

Mr. Cobb and Mr. Bennett were named as the two members who should, with the President, constitute the Executive Committee.

On motion of Mr. Bennett, the matter of new cuts of the buildings was referred to the Committee on Publications with power to act, any amount spent by them to come from the appropriation for catalogues and advertising.

The question of preparing an exhibit for the World's Fair, if it should be determined to hold it in Chicago, was postponed to the June meeting. But the Executive Committee were instructed to take such steps as might, meanwhile, prove necessary.

The committee appointed at the last meeting to look after securing an extension of Lieut. Hoppin's detail as military instructor at this University, reported upon the matter.

The report was received, and the committee continued.

The recommendation with regard to flag-staff and flags was referred to the Committee on Buildings and Grounds, to report upon at the next regular meeting.

On motion, the Regent, Professor Forbes, and the Business Agent were charged with the proper expenditure of the balance of the state appropriation for cabinets.

On motion of Mr. Bennett, the subject of the preparatory department of the University, and of the advisability of discontinuing it at an early day, was referred to the Committee on Instruction, to report upon at the June meeting.

Messrs. E. E. Chester, of Champaign, H. M. Dunlap, of Savoy, and H. B. Gurler, of DeKalb, were, on motion of Mr. Cobb, elected to represent upon the Board of Direction of the Agricultural Experiment Station, the Illinois State Board of Agriculture, the Illinois State Horticultural Society, and the Illinois State Dairymen's Association, respectively.

Dr. S. H. Peabody was elected a member of the Board of Direction and designated as its President.

Professors Burrill and Morrow were elected members of the Board of Direction, and Professor Morrow was continued as Acting President during Dr. Peabody's absence.

Messrs. Cobb, Haskell, and Bennett, of the Board of Trustees, were also appointed members of the Board of Direction, on motion of Mr. McKay.

Dr. Peabody and Messrs. Cobb and Chester were made the Executive Committee of the Board of Direction.

The reappointment by the Board of Direction of the present staff of the Experiment Station for one year from April 1st next was confirmed, and the salaries continued as at present.

Station Staff.	Salary.
George E. Morrow, Agriculturist	$600 00
Thomas J. Burrill, Horticulturist and Botanist	600 00
Donald McIntosh, Veterinarian	.....
Thomas F. Hunt, Assistant Agriculturist	1,500 00
George W. McCluer, Assistant Horticulturist	1,200 00
Edward H. Farrington, Assistant Chemist	1,500 00
William L. Pillsbury, Secretary	2,000 00

Authority was given the Board of Direction to continue and repeat experiments, and to undertake new experiments, as asked in its report to the Acting Regent.

On motion of Dr. Edwards, appropriations of Station funds were also made, as asked in the same report, and the Board of Direction was given authority to get bids for apparatus and supplies, and to contract for the same on a satisfactory bid, as asked.

The following appropriations from current funds, as asked by the Business Agent, were made, on motion of Mr. Cobb:

APPROPRIATIONS.

Board expenses	$300 00
Salaries for instruction	20,915 00
Salaries for services	1,600 00
Buildings and grounds	400 00
Fuel and lights	1,500 00
Stationery and printing, usual, $300; catalogues and advertising, $1,000	1,300 00
Library and apparatus	50 00
Incidental expenses	200 00
Mechanical department	200 00
Architectural department	200 00
Agricultural department	200 00
Horticultural department	200 00
Military department	100 00
Laboratories	200 00
Water supply	200 00
Furniture and fixtures, balance for cases, $50; usual, $50	100 00
Drill hall, balance	1,095 06
Farm barn	172 33
New engine	96 15
	$29,028 54

On motion of Mr. McKay, the usual quarterly appropriation was made for the State Laboratory of Natural History.

The Executive Committee made the following report, which was, on motion of Mr. McKay, confirmed.

REPORT OF EXECUTIVE COMMITTEE.

To the Board of Trustees, University of Illinois.

GENTLEMEN: At a meeting of the Executive Committee of the Board of Trustees of the University of Illinois held Dec. 21, 1889, it was

Resolved, That the sum of one hundred and fifty dollars be and the same is hereby appropriated for the purpose of building a new engine, as requested by Professor Arthur T. Woods, the same to be charged to current funds.

Resolved, That the second paragraph of the section of "Rules for the Government of Students," entitled "Military Department," which now reads:

"Those who present certificates of disability signed by a physician who shall be duly appointed medical inspector for the battalion,"

be amended to read as follows:

"Those who present satisfactory evidence of physical disability."

ALEX. MCLEAN,
CHAS. BENNETT, } Executive Commttee.
EMORY COBB,

The Auditing and Finance Committee made the following reports, both of which were approved.

To the Trustees of the University of Illinois.

GENTLEMEN: Your Finance Committee has examined the vouchers of the University numbered from 201 to 450, both inclusive, and also the vouchers of the Experiment Station numbered from 536 to 599, inclusive, and also No. 530, and finds them to be correct.

March 12, 1890.

F. M. MCKAY, } Auditing and Finance
S. A. BULLARD, } Committee.

To the Trustees of the University of Illinois.

GENTLEMEN: Your Finance Committee has examined the quarterly report of John W. Bunn, Treasurer of the University, and finds the same to be correct, and that there is cash in the treasury to the amount of $22,438.61.

March 12, 1890.

F. M. McKAY, } Auditing and Finance
S. A. BULLARD, } Committee.

The Committee on Buildings and Grounds made the following report, which was approved, on motion of Mr. McKay, and $1,000 was appropriated for the completion of the building.

REPORT OF COMMITTEE ON BUILDINGS AND GROUNDS.

To the Board of Trustees of the University of Illinois.

GENTLEMEN: Your Committee on Buildings and Grounds has to report that the new drill hall is almost completed; that there remains to finish the building only the painting, drainage, grading, laying of the floors, the lumber for which is already provided, the hardware, and a few minor matters of little expense.

There is a balance in favor of the appropriation for the building of about one thousand and ninety-five dollars, and contracts yet unfinished amounting to about two hundred and eighty-eight dollars.

The work yet to be provided will cost about fifteen hundred dollars, or about seven hundred dollars more than the appropriations as now made. Your committee would respectfully represent that this expense above the appropriation is partly due to having to finish the roof during the winter weather, and asks that the necessary appropriation be made for finishing the building in a good and substantial manner.

March 12, 1890.

Respectfully submitted,
S. A. BULLARD, Chairman of Committee.

The Committee on Buildings and Grounds also made the following report, which was, on motion, approved.

To the Board of Trustees University of Illinois.

GENTLEMEN: Your Committee on Buildings and Grounds realizes that the large amount of extra work required of Professor Ricker in designing and superintending the new drill hall in the present year has been a great draft upon him both in time and care, and we recommend that he be paid three hundred and fifty dollars from current funds for such extra services, and that he be given a leave of absence from June 12 to September 12, 1890.

S. A. BULLARD, Chairman of Committee.

March 12, 1890.

Mr. Bullard moved the following resolution, which was postponed to the next regular meeting:

Resolved, That the building now known as the new drill hall be named and hereafter known as the Military building.

The communication from Mr. Felkel was referred to the Business Agent, who was instructed to reply that the Board of Trustees would not grant his request for a remittance of the

penalty exacted on account of his non-compliance with his contract to furnish iron for the drill hall.

The President announced the standing committees of the Board as follows:

STANDING COMMITTEES.

Executive—McLean, Cobb, Bennett.
Farm—Shawhan, Cobb, Haskell.
Buildings and Grounds—Bullard, Shawhan, Harker.
Finance—McKay, Clemens, Bullard.
Instruction—Bennett, Cobb, Edwards.
Publications—President, Regent, Corresponding Secretary.
Library—Regent, Business Agent, Librarian.

The matter of fences on the Griggs farm was referred to Mr. Shawhan and the Business Agent, with power to act.

Adjourned.

ALEXANDER MCLEAN,
President.

W. L. PILLSBURY,
Secretary.

MEETING OF JUNE 10, 1890.

The Board of Trustees of the University of Illinois met in the University parlor, in Urbana, at 4:30 o'clock p. m., June 10, 1890.

The members present were Messrs. Bennett, Bullard, Cobb, Harker, McKay, McLean, and Shawhan; absent, Governor Fifer, and Messrs. Clemens, Edwards, Haskell, and Millard.

The minutes of the last meeting were corrected and approved.

The Regent then presented his report, as follows:

REGENT'S REPORT.

To the Trustees of the University of Illinois.

GENTLEMEN: It is again permitted to report that the year drawing to its close may be considered the most prosperous in the history of the University. The attendance has been large, the order commendable. The influence of the large senior class has been wholesome and helpful. Thanks in a large measure are due to Professor Burrill for the prompt and kind manner in which he took upon himself the burdens laid upon him in the absence of the Regent, and for the careful and efficient discharge thereof. In this, as could have been predicted, he had the cordial aid of the whole Faculty. The condition of the University in all its departments, on the return of the Regent, was most gratifying.

The number of the graduating class, 44, has not heretofore been surpassed. Two are candidates for advanced degrees. Two take degrees in two courses, a thing which has not hitherto occurred. Seven only take certificates; this indicates that the action of the Trustees, which will not recognize this form of graduation after next year, was but following the trend of affairs already operative. Twelve received the Governor's commissions in the Illinois National Guard as diplomas in the military department.

DEGREES, CERTIFICATES AND COMMISSIONS.

The following named persons have fulfilled all conditions, and are recommended by the Faculty for graduation with the degrees appropriate to their several courses of study:

COLLEGE OF ENGINEERING. Degree of Bachelor of Science.

School of Mechanical Engineering.

James Barr.
Samuel Day Bawden.
Frank Henry Clark.
William Myers Gilliland.
Hugh Hazleton.
David Robinson Kinkead.
H. Wallace McCandless.
Will Een McKee.
Edwin Nesbitt.
Fred Walter Waterman.
Edward S. Keene.

School of Civil Engineering.

Edward Mills Benson.
James Francis Clarkson.
Robert James Cooke.
Clarence Lincoln Crabbs.
David Robinson Kinkead.
Christopher Henry Snyder.
Frank John Tresise.
John Baptiste Tscharner.
John Franklin Fisher.

School of Architecture.

James McClaren White.

COLLEGE OF NATURAL SCIENCE. Degree of Bachelor of Science.

School of Chemistry.

Robert Wilson Cornelison.
Charles H. Shamel.
Byron Llewellyn Moore.

School of Natural History.

Norman Henry Camp.
George Perkins Clinton.
Robert Conover Wilson.
George Eldorado Wilkinson.
Orla A. Proctor.

COLLEGE OF LITERATURE AND SCIENCE.

School of English and Modern Languages. Degree of Bachelor of Literature.

Cleaves Bennett.
John Beardsley.
Anna Cecilia Boyle.
Lucia Ray Brumback.
Katherine Louise Kennard.
Orla A. Proctor.
Linsley F. Terbush.
Frank Dent Wilber.
Thomas Arkle Clark.

School of Ancient Languages. Degree of Bachelor of Arts.

Jessie Ellars.

The following are recommended for Master's Degrees:

In the School of Natural History. Master of Science.

Luther Sherman Ross.

In the School of Ancient Languages. Master of Arts.

Myrtle Eva Sparks.

The following are recommended for the full certificate of completion of thirty-six or more University studies:

Columbus Austin Bowsher.
Edith Louisa Clark.
Gustavus Adolphus Hanssen.
U. J. Lincoln Peoples.
Philemon A. Schaefer.
Fred Worthley Stevens.
Walter Isham Manny.

To the following the Governor of the state has granted commissions by brevet as Captains in the Illinois National Guard:

James Barr.
Samuel Day Bawden.
Frank Henry Clark.
James Francis Clarkson.
Robert James Cooke.
Clarence Lincoln Crabbs.
John Franklin Fisher.
Hugh Hazleton.
Frank John Tresise.
Fred Walter Waterman.
James McClaren White.
George Eldorado Wilkinson.

INSTRUCTORS.

The recommendations following are made because of the worth of successful teachers, the needs of the several departments, and the adjustment of courses, as will be explained in the several cases. I have to advise:

1. That the course of civil engineering be extended to include the following subjects: the consideration of roads, streets, and pavements, water supply and hydraulics, sewers and sewerage. I recommend that Assistant Professor Arthur N. Talbot be made a full professor with the title of Professor of Municipal Engineering. It might not be desirable in the assignment of subjects to draw lines too sharply between this chair and that of civil engineering occupied by Professor Baker. The titles will be sufficiently distinctive and the work may be adjusted between the professors as convenience may require.

2. As this will draw Professor Talbot away from part or all of the mathematical work which he has heretofore done, while the classes in that line of subjects are much crowded and demand divison, I recommend that Mr. George W. Myers be made Assistant Professor of Mathematics, to take such classes as may be assigned.

3. The work of Assistant Professor Arthur W. Palmer, now in charge of the school of chemistry, has been successful and satisfactory. I recommend that he be appointed to the grade of full professor with the title of Professor of Chemistry.

4. The declination of Professor Comstock to return to the University at the end of the long vacation last year, left the work of physics unexpectedly without provision. Mr. Samuel W. Stratton had been my own assistant when that department was under my instruction, and I felt confident that the work would not suffer if intrusted to him. The year's work has proved that the selection was a safe one. Mr. Stratton is thoroughly competent, energetic and inventive. I recommend that he be appointed Assistant Professor of Physics, and that his sphere of work be enlarged from what it has hitherto covered.

5. This appointment will withdraw Mr. Stratton from the work of assistant in architecture. With the adjustments that will be offered for your approval, there will be in this place a full line of work for one instructor, pertaining partly to the school of architecture, and partly to the whole college of engineering. For this work I recommend Mr. James M. White, a graduate of the school of architecture of the present class.

6. For the place of instructor in mathematics, which will be vacated by the promotion of Mr. Myers, I recommend the appointment of Mr. Samuel D. Bawden, a graduate of the school of mechanical engineering.

7. Mr. J. V. E. Schaefer declines reappointment as instructor in the machine shop. He has done good work and we should be glad to retain him. I recommend for this place Mr. Edward S. Keene, a graduate from the same department.

8. Mr. C. Eugene Bogardus declines reappointment as first assistant in chemistry, and I recommend that Mr. H. S. Grindley be promoted to this place. Also that Mr. Robert W. Cornelison be appointed second assistant in chemistry.

I have to remind you that the chair of mining engineering was made vacant last year, and that it has not yet been filled. Before naming any person for this place I have desired to know your wishes as to continuing this department of instruction. I think that the University should maintain a department of mining engineering, but I think also that, so long as there is any question of funds, the matters already laid before you should take precedence, because they are responsive to the needs of students already here.

First Lieutenant Curtis B. Hoppin, 2d Cavalry, U. S. A., has completed the term of three years allowed by detail from the War Department. His administration of this important and difficult department has been in the most eminent degree satisfactory. He has secured the confidence of students, the support of the Faculty, and universal good will. We have sought to obtain an extension of his term of service, but without avail. He has been ordered to return presently to frontier duty. The correspondence concerning a successor will be laid before you.

THE COURSES OF STUDY.

Some modifications of the courses in the College of Engineering are advised as per schedule herewith [see page 150]. The important changes are as follows:

1. To give the subject of physics three terms instead of two, and to put it in the sophomore year instead of the junior, where it now stands. This change has long been desired. It will be possible if you shall appoint a professor of physics as has been recommended.

2. To place advanced descriptive geometry in the spring term of the freshman year, thus unifying the drawing of this department. The unlooked for complication of last year required the employment of a special teacher in the winter term. Fortunately, Mr. Lincoln Bush could be had when wanted, and his work was excellent. But we cannot rely upon such resources, and should so arrange our work that it may be provided for in more definite ways.

3. These changes will open the way for more professional work in the last two years of these several schools, thus:

In the school of mechanical engineering, for more shop construction, more drawing, and the study of estimates, etc.

In the school of civil engineering, for the study of the construction of roads and streets, masonry and sewerage, etc.

It does not seem advisable to disturb the courses in the other colleges now, but an opportunity will be sought in the coming year to give the subject the fullest consideration. These changes have been approved by both the special faculty of the college and by the general faculty.

COLLEGE OF ENGINEERING—COURSES OF STUDY.

		FOR ALL STUDENTS IN THE COLLEGE.	IN MECHANICAL ENGINEERING.	IN CIVIL ENGINEERING.	IN ARCHITECTURE.
I.	1	Ad. Algebra; Projection drawing; French or German.	Shop practice.	Shop practice.	Shop practice.
	2	Trigonometry; Descriptive geometry " "	"	"	"
	3	Analyt. geometry " " " "	"	"	"
II.	1	Different. calculus; Physics; French or German, optional	Mechanical construction.	Land surveying.	Wood construction.
	2	Adv. Anal. geometry; " " " "	"	Theory of instruments.	Stone, etc., construction.
	3	Integral calculus " " " "	"	Topography.	Sanitary construction.
III.	1	Analytical mechanics; Chemistry	Mechanism.	Railroad engineering.	Architectural drawing.
	2	Resistance of materials "	Engineering materials.	Roads and streets.	History of architecture. Architectural drawing.
	3	.....	Mill work. Hydraulics. *And one of*— Chemistry, Geology, Astronomy.	Astronomy. Hydraulics. *And one of*— Chemistry, Geology.	History of architecture. Graphical statics. *And one of*— Astronomy, Geology. Modeling and drawing.
IV.	1	Mental science	Heat engines. Drawing.	Geodesy. Masonry.	Esthetics. Architectural perspective.
	2	Constitutional history.....	Hydraulic engines, Estimates.	Bridge analysis. Mine attack.	Designing. Heating and ventilation.
	3	Political economy	Electric motors. Drawing.	Bridge construction. Sewerage.	Designing Estimates.

THE NEW MILITARY HALL

is completed and ready for occupation. The commencement exercises of to-morrow will be held there, preceded by brief dedicatory ceremonies. The Inspector General of the Division of the Missouri, U. S. A., reports this to be by far the best building for its purpose in the territory under his official observation.

THE IMPROVEMENTS IN THE MACHINE SHOP.

In my report of one year ago I presented an outline of the changes which would follow the opening of the military hall, which you approved. The new building is now ready and the military equipments should be moved thither, with the gun-racks. The guns may be stored as is usual during the long vacation.

The new boiler for the shops, for which a state appropriation has been made, should be placed as soon as may be. Bids have been obtained by the professor in charge, and the work waits your approval and authority. The next step is the removal of the machine shop tools to the upper floor. All preparations have been made and the work waits only for your authority. The estimate for this work, including heating coils and steam connections, is $1,400, as per statement of Professor Woods, herewith presented.

CHANGES IN SHOP.

Dr. S. H. Peabody, Regent,

DEAR SIR: I would respectfully submit the following summarized estimate of the cost of making the proposed changes in the mechanical shops, viz., moving the machine tools into the former drill hall, using the present blacksmith shop for a boiler room, and converting the present machine shop and boiler space into smith shop and foundry.

The state appropriation of $1,250 for a new boiler is estimated to be sufficient to cover the cost of boiler and setting in place, the chimney connections, changes in piping, removing old boiler, and whatever may be found necessary in the way of repairs and renewals of return tank and feed water heater.

The estimated cost of the changes is for—	
Erecting posts, plates, etc., for shafting	$120 00
Cost of new shafting, hangers, pulleys, and belting, net	230 00
Removing tools and counter-shafting, and re-erecting	140 00
Partition across front of platform	90 00
Partitions and shelves for tool room	70 00
Stairs between upper and lower shops	50 00
Total cost of moving tools and equipping upper shop	$700 00
Material for heating, coils, and piping, net	618 00
Labor in erecting heaters and piping	25 00
Total necessary this summer in addition to boiler	$1,343 00
To complete the work there will be required for—	
Taking down forges and rebuilding	103 00
Taking down cupola and rebuilding	40 00
Removing part of brick wall of boiler room, etc	77 00
Removing floor from present machine shop	100 00
Changes at doors, steps, etc	29 00
Brick floor	136 00
Moving partitions	48 00
Wash-rooms and fittings	65 00
Engine foundations	60 00
Partition around engine	63 00
Connecting up engine	25 00
Total	$2,089 00

The prices of materials in the above estimate are net. The chief additional cost is for labor in moving and has been carefully estimated, but it is not possible to predetermine with exactness the time necessary and therefore the cost of repairs of this character. In estimating for steam heating, I have allowed about 117 cubic feet of space to each square foot of radiating surface, which is a large proportion for an exposed building with many windows. If this radiating surface is found to be insufficient, it would be well to ceil the room on the line of the ties of the roof trusses.

Summary.—An appropriation of $1,400, in addition to the state appropriation of $1,250 for a boiler, is asked for now, leaving the balance of the work to be done during the next college year.

Very respectfully,

ARTHUR T. WOODS,

Professor of Mechanical Engineering.

June 9, 1890.

This provides only for the equipment of the upper room. The rearrangement of the lower room may wait until so much is finished, perhaps until next year. The estimate for the whole is $2,100.

HEATING APPARATUS OF THE MAIN AND CHEMICAL BUILDINGS.

I present the report of Professor Woods on this subject, and fully concur in these recommendations, and ask that the appropriations called for may be made:

HEATING.

Dr. S. H. Peabody, Regent,

DEAR SIR: I would submit the following statement of the present condition and needs of the steam heating apparatus of the University.

The main building boilers have been opened and found to be in good condition. The only expenditure necessary for them this summer will be about $15 for gaskets and perhaps $5 for cleaning and painting.

The heating boiler in the chemical building was known to be in bad condition and has been taken down in order that a thorough examination could be made. The furnace lining must be rebuilt, twenty-five new tubes are necessary, and also a number of the small fittings such as caps, bridge-blocks, gaskets, etc. Altogether it will require an expenditure of about $310 to put this boiler in order for next winter's work. It may be noted that very little has been spent on this boiler since its erection.

The return tank in the basement of the main building has been in bad condition for some time, and has been shored up, cemented, etc., the past winter, to enable us to keep it in operation. It has now been removed from the pit and is found to be not worth repairing. A new tank will cost, in place, about $100. I find that we can get a tank made from an old boiler shell, which would probably last for five years, for $65.

The appropriation now necessary to put the heating apparatus in order is, then:

Main building heaters	$20 00
Chemical building boiler	310 00
New tank	100 00
Total	$430 00

which may be reduced to $395 by buying a tank made from an old boiler, as above.

Very respectfully,

ARTHUR T. WOODS,

Professor Mechanical Engineering.

June 7, 1890.

THE LIBRARY.

This department has again overtaken the provision made for the accom modation of books. I recommend that the gallery be extended across the north wall of the library room, and that the space above this wall be fitted with shelving. This will provide room for 2,500 to 3,000 volumes. Shelving beneath the gallery would encroach upon the floor space for students, which is already too much crowded. I ask the assignment of $400 from state appropriations for buildings and grounds, or so much thereof as may be necessary, for this improvement.

The experiment made last year, of putting an assistant into the library, who should give most of his time to duty there, has proved very useful. The order has been improved, and the attendant has done much service in showing students what the library contains and where it may be found. I recommend that Mr. Cleaves Bennett be retained for the coming year.

From state appropriation for buildings and grounds I ask that $500 be assigned for ordinary cleaning, and for painting and minor repairs in the main and chemical buildings. Also $150 for care of grounds for the rest of the current season.

THE FARMS.

I present the usual quarterly farm report of Professor Morrow:

FARM REPORT.

UNIVERSITY, June 9, 1890.

Dr. S. H. Peabody, Regent,
DEAR SIR:

The receipts from the University farms during the three months ending June 1st have been	$743 31
The expenses have been	526 86

The receipts may be classified as follows:	
Corn	$176 12
Hay	127 30
Pasturage	165 00
Cattle	172 00
Hogs	82 08
Miscellaneous	20 91
The expenditures may be classified thus:	
Labor	384 33
Pigs	80 40
Blacksmithing	15 65
Grinding feed	14 60
Machinery	14 00
Miscellaneous	17 88

The work of the farms is well up for the season. The live stock is in good health, and the present promise for the grass and grain crops is good.

Respectfully submitted,

G. E. MORROW.

THE EXPERIMENT STATION.

I present the quarterly report of the Experiment Station, and ask that it be concurred in:

REPORT OF EXPERIMENT STATION.

To the Regent of the University of Illinois.

SIR: The Board of Direction of the Agricultural Experiment Station of the University of Illinois presents these papers:

Paper A is a list of vouchers, Nos. 600 to 676, inclusive, for audit.

Paper B is a statement of the Station expenditures for the quarter ending March 31, 1890.

Paper C is a statement of the appropriations, expenditures, and balances June 1st for the quarter ending June 30, 1890.

Paper D is a statement of appropriations asked for the purpose of carrying on the work of the Station for the quarter ending September 30, 1890.

Estimates for the quarter ending Sept. 30, 1890:

Buildings and repairs	$10 00
Board expenses	40 00
Books and periodicals	25 00
Botanical apparatus	50 00
Bulletins	250 00
Chemical apparatus	275 00
Fertilizers	5 00
Fuel and lights	80 00
Incidentals	25 00
Printing, stationery and postage	25 00
Salaries	1,900 00
Tools and supplies	35 00
Wages and teams	1,250 00
Sundry—	
Dairying experiments	25 00
Experiment with broom corn seed	25 00
Wheat experiments	60 00
Total	$4,080 00

The Board of Direction asks authority to use, for such purposes as may best subserve the interests of the Station, any unexpended balances of the Station funds appropriated for this fiscal year.

Authority is asked to continue the outside wheat experiments, sowings to be made at some four points and the expense for the whole to be limited to $125.00 for the year 1890-91.

Authority is further asked to undertake investigations—

1. To determine the feeding value of broom corn seed.
2. To determine the feeding value of apple pomace.

The Trustees are also requested to confirm the appointment of Mr. G. P. Clinton as Assistant Botanist, at a salary of $50 per month from Sept. 1, 1890.

SELIM H. PEABODY, President Board of Direction.

THE STATE LABORATORY OF NATURAL HISTORY.

The Director presents the following nominations of assistants for the coming year and asks that they be approved:

Field entomologist, John Marten	Salary	$900	per annum
Office entomologist, Charles A. Hart	"	600	"
Botanist, Prof. T. J. Burrill	"	200	"
Stenographer, Mary J. Snyder	"	600	"

He also asks for the usual appropriations for the coming quarter.

ASSIGNMENTS.

An assignment from state appropriation for books and publications for the next year is asked for binding	$180 00
From state appropriation for apparatus and material, as follows:	
For apparatus for the physical laboratory	250 00
For engineering instruments	250 00

I recommend that authority be given to employ a janitor for the department of chemistry, at the rate of twenty-five dollars per month.

All which is respectfully submitted.

SELIM H. PEABODY, *Regent.*

On motion of Mr. Bennett, the Board of Trustees authorized conferring degrees and granting certificates as recommended by the Faculty of the University, and approved the recommendations for commissions. [For lists see Regent's report.]

On motion of Mr. Cobb, the matter of putting in the new boiler and making the changes in the mechanical hall was referred to the Regent, Professor Woods, and Mr. Bullard, with power to act, expending moneys up to the limit of the estimates presented in the Regent's report.

Also, on motion of Mr. Cobb, the matter of making the repairs on the heating apparatus of the main building and the chemical building was referred to the same gentlemen, with power to act, expending moneys up to the limit of the estimates presented in the Regent's report.

The Building Committee presented the following communication from Professor Ricker as its report on the new military hall, and the communication was received for record:

URBANA, ILL., June 9, 1890.

To the Building Committee of the Board of Trustees.

GENTLEMEN: As the drill hall is now practically completed, a very brief report will be sufficient.

It has not been found possible to get in all the bills for labor and materials, so as to give a definite and final statement of the expenditures, but I do not think the estimated cost of any part of the work ordered at the last meeting of the Board of Trustees has been exceeded, excepting in the allowance for grading around the building, which was quite insufficient to do the work as executed, since sodding, cinder walks, steps, etc., were not included. Still the margin allowed in the appropriation will more than cover this. The drains to the shops have not been put in, chiefly from lack of time, but partly because it was thought best to finish the drill hall first, and then extend the sewers to the shops during the summer. A balance will remain from the last appropriation for drill hall sufficient to do this, if it is ordered to be done.

It is only just to say that the successful construction of the drill hall is largely due to Mr. G. W. Parker, who has acted as foreman on the building in addition to his other duties.

Very respectfully submitted,

N. CLIFFORD RICKER.

The farm report was referred to the Farm Committee.

On motion of Mr. Shawhan, it was voted that the askings of the Board of Direction of the Experiment Station as presented by the Regent be granted, including the requests for appropriations of Station funds for the ensuing quarter.

On motion of Mr. Cobb, appropriations were made:

From the state appropriation for buildings and grounds—	
For cleaning and minor repairs	$500 00
For care of grounds for the next quarter	150 00

It was voted that there be appropriated:

From the state appropriation for buildings and grounds—	
For improvements in the library	$400 00

And the Regent, the Librarian, and Mr. Bullard were empowered to make the improvements in the manner recommended in the Regent's report.

The Board then adjourned to meet at the Doane House, in Champaign, at 8:30 o'clock p. m.

EVENING SESSION.

The Board met at the Doane House, in Champaign, at 9 o'clock p. m., the same members being present as in the afternoon.

The following report of the Committee on Instruction was adopted:

To the Board of Trustees University of Illinois.

GENTLEMEN: The Committee on Instruction to which was referred the matter of the preparatory department of the University begs leave to report: That in the opinion of the committee the interests of the University require that said department be dispensed with as soon as adequate provision for doing its work is made by some public or private iustitution located in the vicinity of the University. But until such facilities are provided this committee does not deem it advisable to suspend the work of this department.

CHARLES BENNETT, } Committee on
EMORY COBB, } Instruction.

Prof. Shattuck, Business Agent, reported that to secure the rent of the Griggs farm he had bought corn to be delivered in August, and his agency in the matter was continued.

Mr. John W. Bunn, Treasurer, presented the following report, which was referred to the Finance Committee:

JOHN W. BUNN, TREASURER, IN ACCOUNT WITH THE UNIVERSITY OF ILLINOIS, DR.

1890.				
March	11	To balance		$22,438 61
"	31	" amount received on account University students' fees	$885 00	
		" " " preparatory year	125 00	
		" " " laboratories	2 00	
				1,012 00
April	1	To interest on Champaign county bonds	$337 50	
		" " Sangamon county school bonds	90 00	
				427 50
April	1	To amount received on account mechanical department	$3 50	
		" " " architectural "	15 96	
		" " " fuel and lights	42 54	
				62 00
May	1	To interest on Sangamon county school bonds		195 00
		" " land contract No. 10, John Ellis, assignee	$127 00	
		" " " 23, James Lowe	360 00	
		" " " 25, Peter Mooney, assignee	96 00	
		" " " 28, A. L. Wright	94 41	
		" " " 40, Joseph Dezort	2 33	
		" " " 51 J. Skubal and J. W. Hnizda	9 05	
				688 79

Treasurer's Report—*Continued.*

May	31	To amount received on account buildings and grounds..	$27 00		
		" " " fuel and lights.....	26 09		
		" " " Minnesota lands.....	64 00		
		" " " mechanical department	210 51		
		" " " architectural "	704 05		
		" " " agricultural "	743 33		
		" " " horticultural "	153 50		
		" " " military "	32 00		
		" " " laboratories.....	452 71		
		" " " University stud'nts'fees	2,024 00		
		" " " preparatory year fees.	292 50		
		" " " music fees	140 60		
					$4,870 29
					$29,694 19
		Cr.			
1890.					
May	31	By amount paid on account board expense.....	$75 20		
		" " " salaries.....	6,949 00		
		" " " buildings and grounds....	155 69		
		" " " fuel and lights	490 49		
		" " " stationery and printing....	298 00		
		" " " preparatory year.....	624 96		
		" " " mechanical department....	330 12		
		" " " architectural " ..	781 78		
		" " " agricu tural " ..	526 86		
		" " " horticultural " ..	89 46		
		" " " military " ..	196 76		
		" " " laboratories.....	636 41		
		" " " library and apparatus.....	18 47		
		" " " incidental expense	82 08		
		" " " Minnesota lands.....	71 47		
					$11,326 75
May	31	By amount paid on account drill hall.....	$1,828 24		
		" " " water supply.....	100 00		
		" " " furniture and fixtures	59 12		
		" " " music fees	140 60		
					2,127 96
		State appropriations—			
1890.					
May	31	By am't paid on acc't buildings and grounds	$155 71		
		" " " mechanical and arch'l shops.....	450 00		
		" " " books and publications	422 22		
		" " " cabinets.....	35 91		
		" " " expenses of instruction	4,433 80		
		" " " apparatus and material	117 53		
		" " " State Laboratory of Nat. Hist...	1,088 52		
					6,703 69
		Balance	.....		9,535 79
					$29,694 19

Urbana, June 11, 1890. JOHN W. BUNN, Treasurer.

Prof. Shattuck presented his report, which was referred to the Finance Committee:

URBANA, ILL., June 10, 1890.

Alexander McLean, Esq., Pres. Board of Trustees, University of Illinois,

SIR; I have the honor to hand you herewith the financial statements due from me at this time.

Paper A is a statement of the current appropriations, with receipts under the same, for the three months ending June 1, 1890.

Paper B is a showing of the state appropriations June 1, 1890.

Paper C is a list of the vouchers presented for audit, being 451 to 700, inclusive.

Paper D is an estimate of receipts and expenses for the three months ending September 1, 1890.

Paper E is an estimate of receipts and expenses for the twelve months ending September 1, 1891.

Respectfully submitted,

S. W. SHATTUCK, Business Agent.

PAPER A—CURRENT APPROPRIATIONS.

March 11, 1890.	Appropriated	Receipts also Appropriated	Expended.	Balance.
Board expense	$300 00		$75 20	$224 80
Salaries for instruction { Current.			6,105 97	
Salaries for instruction { State	20,915 00		4,433 80	10,375 23
" " services	1,600 00		843 03	756 97
Buildings and grounds	400 00	$27 00	155 69	271 31
Fuel and lights	1,500 00	68 63	490 49	1,078 14
Stationery and printing	1,300 00		298 00	1,002 00
Mechanical department	200 00	214 01	330 12	83 89
Architectural "	200 00	720 01	781 78	138 23
Agricultural "	200 00	743 33	526 86	416 47
Horticultural "	200 00	153 50	89 46	264 04
Military "	169 00	32 00	196 76	4 24
Laboratories	305 00	454 71	636 41	123 30
Library and apparatus	50 00		18 47	31 53
Incidentals	200 00		82 08	117 92
Sundries—				
Furniture and fixtures	100 00		59 12	40 88
Water supply	200 00		100 00	100 00
Drill hall	2,095 06		1,828 24	266 82
Farm barn	172 33			172 33
Minnesota lands	100 00	64 00	71 47	92 53
Preparatory year		417 50	624 96	
University students' fees		2,909 00		2,909 00
Music fees		140 60	140 60	
New engine	96 15			96 15
Commencement expenses	200 00			200 00

PAPER B—STATE APPROPRIATIONS.

	Appropriated.	Received.	Expended	Balance.
Taxes on lands (½ per annum)	$3,400 00	$1,543 62	$1,543 62	
Buildings and grounds (½ per annum)	5,000 00	2,500 00	2,500 00	
Mechanical and arch'l shops (½ per annum)	3,000 00	1,500 00	1,320 00	$180 00
Books and publications (½ per annum	2,000 00	1,000 00	939 12	60 88
Cabinets (½ per annum)	1,000 00	500 00	127 68	372 32
Expenses of instruction (½ per annum)	40,000 00	20,000 00	20,000 00	
Apparatus and material (½ per annum)	3,000 00	1,500 00	1,454 14	45 86
Metallurgical laboratory (½ per annum)	4,000 00	4,000 00	2,626 98	1,373 02
Drill hall	10,000 00	10,000 00	10,000 00	
New boiler for machine shops	1,250 00	1,250 00		1,250 00
	$72,650 00	$43,793 62	$40,511 54	$3,282 08
Illinois State Laboratory of Natural History	15,123 62	9,873 62	6,693 00	3,180 62

The Committee on Minnesota Lands reported as follows, and the report was approved for record.

JUNE 10, 1890.

To the Board of Trustees University of Illinois.

GENTLEMEN: As directed by you, the Committee on Minnesota lands sent one of its number to Minnesota the middle of April last. He went over all of the University lands in Pope county, and found only small tracts of them in use except for pasture. In several instances fences had been put up for that purpose. The parties were notified that they must remove them or pay 10 cents per acre. Several persons paid this amount. The grass on several quarter sections were sold. The cash receipts from these two sources amount to $64.

The land which had been plowed was rented when possible, notes secured by mortgages on the crop being taken. These are due October 15, 1890, and should bring in about $400 more; but much trouble has been found in having the business of the committee completed after the visit.

No lands have been sold, and no applications for buying in tracts larger than 80 acres have been received. In most cases 40 acres is the amount wanted.

It is thought that a portion of the lands would sell at $12 or more per acre in 40 acre tracts.

Respectfully submitted,

CHAS. BENNETT, S. W. SHATTUCK, } Committee.

On motion of Judge Harker, it was moved that Messrs. Peabody, Bennett, and Shattuck constitute the Committee on Minnesota lands; that the committee be authorized to subdivide and sell the lands, and that no lands be sold for less than $6 per acre.

The matter of granting the literary societies of the University longer time for their meetings was referred to the Faculty, with power to act.

The Committee on Buildings and Grounds reported informally upon the matter of fire escapes and the matter of flags and flagstaff, and was directed to give both subjects further consideration and to report at the next meeting.

Messrs. Bennett, McKay, and Harker were appointed a committee to prepare a resolution expressive of the Board's regard and good wishes for Lieut. Hoppin.

On motion of Judge Harker, ten dollars was appropriated from current funds to pay the University's membership fee in the Association of American Agricultural Colleges and Experiment Stations.

On motion of Mr. Bullard, there was assigned

From state appropriation for books and publications— For binding	$180 00

On motion of Mr. Cobb, the Board adopted the following list of appointments and salaries for the ensuing year beginning Sept. 1, 1890:

List of Appointments and salaries.

NAMES.	POSITION.	SALARY.
Thomas J. Burrill	Professor of Botany and Horticulture	$2,300 00
Samuel W. Shattuck	Professor of Mathematics and Business Agent	2,300 00
Edward Snyder	Professor of Modern Languages	2,000 00
N. Clifford Ricker	Professor of Architecture	2,000 00
J. D. Crawford	Professor of History and Ancient Languages	2,000 00
George E. Morrow	Professor of Agriculture	2,300 00
I. O. Baker	Professor of Civil Engineering	2,000 00
Stephen A. Forbes	Professor of Entomology and Zoology	1,000 00
James H. Brownlee	Professor of Rhetoric and Oratory	2,000 00
Charles W. Rolfe	Professor of Geology	2,000 00
Donald McIntosh	Professor of Veterinary Science	1,800 00
Nathaniel Butler, Jr	Professor of English Literature	2,000 00
Arthur T. Woods	Professor of Mechanical Engineering	2,000 00
S. Robertson Winchell	Professor of Latin	2,000 00
Arthur N. Talbot	Professor of Municipal Engineering	1,800 00
Arthur W. Palmer	Professor of Chemistry	1,800 00

NAMES.	POSITION.	SALARY.
.....	Professor of Industrial Art and Designing.....	$1,800 00
Samuel W. Stratton.....	Assistant Professor in Physics.....	1,400 00
George W. Myers.....	Assistant Professor in Mathematics.....	1,000 00
George W. Park r.....	Instructor in Wood work and Foreman.....	1,200 00
Fanny M. Ryan.....	Instructor in Modern Languages.....	800 00
Rufus Anderson.....	Instructor in Iron work and Foreman.....	1,600 06
Howard S. Brode.....	Assistant in Zoölogy.....	900 00
Harry S. Grindley.....	First Assistant in Chemistry.....	900 00
Robert W. Cornelison.....	Second Assistant in Chemistry.....	600 00
Edward S. Keene.....	Assistant in Machine shop.....	750 00
James M. White.....	Assistant in Architecture.....	750 00
Samu l D. Bawden.....	Assistant in Mathematics [Preparatory Department]	750 00
.....	Assistant in Drawing.....	.....
Cleaves Bennett.....	Assistant Librarian.....	750 00
A. B. Baker.....	Janitor.....	840 00

The Regent was, on motion of Mr. Cobb, given power to fill the vacancies.

The course of study for the College of Engineering was approved, as presented by the Regent.

The following list of appointments and salaries for the State Laboratory of Natural History was approved for the year beginning July 1, 1890:

NAMES.	POSITION.	SALARY.
Thomas J. Burrill, Ph. D..	Botanist.....	$200 00
Charles A. Hart.....	Office Entomologist.....	600 00
John Marten.....	Field Entomologist.....	900 00
Mary J. Snyder.....	Stenographer.....	600 00

The following appropriations were made of funds of the State Laboratory of Natural History for the quarter beginning July 1, 1890:

For field work, office and incidental expenses.....	$250 00
For salaries and assistants.....	750 00
For improvement of the library.....	125 00

The Regent's bill for traveling expenses, $31.60, was ordered paid from current funds.

The Board then adjourned to meet at the University, in Urbana, at 9 o'clock a. m. Wednesday.

Session of Wednesday.

The Board met pursuant to adjournment, the same members being present as on Tuesday.

The Finance Committee presented these three reports, each of which was approved for record:

URBANA, June 11, 1890.

To the Board of Trustees of the University of Illinois.

GENTLEMEN: Your Finance Committee has examined the quarterly report of Jon W. Bunn, Treasurer of the University, and finds the same to be correct, and that there is cash in the treasury to the amount of $9,535.79.

F. M. McKAY,
S. A. BULLARD, } Finance Committee.

URBANA, June 11, 1890.

To the Board of Trustees of the University of Illinois.

GENTLEMEN: Your Finance Committee would respectfully report that it has examined and compared the books of the Treasurer with the warrants drawn upon him for the year beginning March 1, 1889, with Nos. 426 to 873, to September 1, 1889, and Nos. 1 to 500 to March 1, 1890, and found all to be in order and correct.

The warrants have been cancelled and left in the hands of the Treasurer.

F. M. McKAY,
S. A. BULLARD, } Finance Committee.

URBANA, June 11, 1890.

To the Board of Trustees of the University of Illinois.

GENTLEMEN: Your Finance Committee has examined the vouchers of the University, numbered from 450 to 700, both inclusive, also vouchers of the Experiment Station Nos. 600 to 676, both inclusive, and finds them correct.

F. M. McKAY,
S. A. BULLARD, } Finance Committee.

The committee appointed to prepare a resolution in regard to Lieut. Hoppin's departure, reported as follows:

Resolved, That the Board of Trustees of the University of Illinois sincerely regrets that the rules of the War Department require that Lieut. Curtis B. Hoppin shall sever his connection with the University.

He has brought to the discharge of all his official duties a degree of ability, tact, and fidelity, that has made his services eminently satisfactory to the students, to the Faculty, and to this Board.

His influence over the students in raising the standard of deportment and discipline has been of the most salutary character.

He leaves the University with the best wishes of this Board for his future welfare.

CHAS. BENNETT,
F. M. McKAY,
O. A. HARKER, } Committee.

The report was adopted for record, and the Secretary was instructed to send a copy to Lieut. Hoppin.

The Farm Committee, to whom had been referred the farm report, returned it with the recommendation that it be filed.

Approved.

There was appropriated

From current funds—	
For moving gun racks	$25 00
For committee on Minnesota lands	100 00
From state appropriation for apparatus and material—	
For physical apparatus	$250 00
For engineering instruments	250 00

The matter of the appointment of a professor of military science and tactics was referred to the Regent and the Executive Committee, with the direction that no one lower in rank than a first lieutenant be selected.

The Board adjourned.

W. L. PILLSBURY,
Secretary.

ALEXANDER MCLEAN,
President.

List of Warrants for Year Ending August 31, 1890.

No.	Date.	To Whom.	For What.	Amount.
	1889.			
1	Sept. 11	A. McLean	Expense to Board Meeting	$47 10
2	" 11	R. Edwards	" " "	3 50
3	" 11	S. A. Bullard	" " "	23 31
4	" 11	O. A. Harker	" " "	15 50
5	" 11	W. W. Clemens	" " "	17 00
6	" 11	C. Bennett	" " "	11 36
7	" 11	E. Cobb	" " "	2 50
8	" 30	S. H. Peabody	Salary, September, 1889	333 33
9	" 30	T. J. Burrill	" "	141 66
10	" 30	S. W. Shattuck	" "	166 66
11	" 30	E. Snyder	" "	166 66
12	" 30	N. C. Ricker	" "	166 69
13	" 30	J. D. Crawford	" "	166 69
14	" 30	G. E. Morrow	" "	141 69
15	" 30	P. Roos	" "	150 00
16	" 30	I. O. Baker	" "	166 66
17	" 30	S. A. Forbes	" "	83 33
18	" 30	J. H. Brownlee	" "	166 66
19	" 30	C. W. Rolfe	" "	150 00
20	" 30	D. McIntosh	" "	150 00
21	" 30	N. Butler, Jr	" "	166 66
22	" 30	A. T. Woods	" "	166 66
23	" 30	S. R. Winchell	" "	166 66
24	" 30	A. N. Talbot	" "	133 33
25	" 30	A. W. Palmer	" "	133 33
26	" 30	G. W. Parker	" "	100 00
27	" 30	R Anderson	" "	133 33
28	" 30	F. M. Ryan	" "	80 00
29	" 30	H. S. Brode	" "	100 00
30	" 30	G. W. Myers	" "	75 00
31	" 30	C. E. Bogardus	" "	90 00
32	" 30	J. V. E. Schaefer	" "	80 00
33	" 30	H. S. Grindley	" "	60 00
34	" 30	E. Beach	" "	25 00
35	" 30	C. Bennett	" "	40 00
36	" 30	A. B. Baker	" "	70 00
37	" 30	S. W. Stratton	" "	100 00
38	" 30	J. Marten	" "	75 00
39	" 30	M. J. Snyder	" "	50 00
40	" 30	C. A. Hart	" "	50 00
41	" 30	S. H. Peabody	Expenses	123 42
42	" 30	A. J. Stoneburner	Salary, ½ September, 1889	20 00
43	" 30	Union Water Supply Co	Water, July 1—September 30, 1889	100 00
44	" 30	A. Barr	Lumber	22 16
45	" 30	N. C. Ricker	Expenses	6 39
46	" 30	Hubbard & Son	Hardware	9 75
47	" 30	A. Iten	Labor	17 70
48	" 30	H. Trevett	Hardware	21 25
49	" 30	G. Besore	Lumber	565 51
50	" 30	Kerr Bros	Brick work on drill hall	1,234 95
51	Oct. 15	U. S. Express Co	Charges	2 35
52	" 15	N. D. C. Hodges	Subscription to Science	3 50
53	" 15	S. H. Scudder	Scudder's Butterflies	10 00
54	" 15	Northern Distilling Co	Alcohol	46 00
55	" 15	Champaign & Urbana Gas Co.	Gas, July 1 to September 30, 1889	46 00
56	" 15	West Electric Co	Carbon, clamps, and bell	7 83
57	" 15	F. K. Robeson	Crash	9 60
58	" 15	A. H. Andrews & Co	Settees	54 00
59	" 15	Enterprise Coal Co	Coal	46 75
60	" 15	D. A. Stewart & Co	Oil	10 10
61	" 15	Kellogg, Johnson & Bliss	Hardware	57 88
62	" 15	A. Bevis	Paints, etc	6 75
63	" 15	J. B. Clow & Son	Fittings	11 74

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1889.			
64	Oct. 15....	McDonald & Ferrin	Vermin exterminator	$8 00
65	" 15....	A. C. McClurg & Co.	Stationery	24 34
66	" 15....	J. W. Spalding	Postage	10 00
67	" 15....	West. Union Telegraph Co..	Telegrams	11 58
68	" 15....	T. R. Leal	Excavation at drill hall	156 65
69	" 15....	Tobey Furnishing Co	Desk	48 00
70	" 15....	Illinois Central R. R. Co....	Charges	111 44
71	" 15....	Agricultural department.....	Expenses, September, 1889	276 51
72	" 15....	Horticultural department....	" "	13 45
73	" 15....	Grace Peabody	Services in office Sept	11 31
74	" 15....	Pay roll of men, Sept., 1889..	Labor	243 19
75	" 15....	Pay roll of students, "	Labor	190 50
76	Oct. 31....	S. H. Peabody	Salary, October, 1889	333 33
77	" 31....	T. J. Burrill	" "	141 66
78	" 31....	S. W. Shattuck	" "	166 66
79	" 31....	E. Snyder	" "	166 66
80	" 31....	N. C. Ricker	" "	166 66
81	" 31....	J. D. Crawford	" "	166 66
82	" 31....	G. E. Morrow	" "	141 66
83	" 31....	P. Roos	" "	150 00
84	" 31....	I. O. Baker	" "	166 66
85	" 31....	S. A. Forbes	" "	83 33
86	" 31....	J. H. Brownlee	" "	166 66
87	" 31....	C. W. Rolfe	" "	150 00
88	" 31....	D. McIntosh	" "	150 00
89	" 31....	N. Butler, Jr	" "	166 66
90	" 31....	A. T. Woods	" "	166 66
91	" 31....	S. R. Winchell	" "	166 66
92	" 31....	A. N. Talbot	" "	133 00
93	" 31....	A. W. Palmer	" "	133 00
94	" 31....	S. W. Stratton	" "	140 00
95	" 31....	G. W. Parker	" "	100 00
96	" 31....	R. Anderson	" "	133 33
97	" 31....	F. M. Ryan	" "	80 00
98	" 31....	H. S. Brode	" "	100 00
99	" 31....	G. W. Myers	" "	75 00
100	" 31....	C. E. Bogardus	" "	90 00
101	" 31....	J. V. E. Schaefer	" "	80 00
102	" 31....	H. S. Grindley	" "	60 00
103	" 31....	E. L. Beach	" "	25 00
104	" 31....	C. Bennett	" "	40 00
105	" 31....	A. B. Baker	" "	70 00
106	" 31....	A. J. Stoneburner	" "	40 00
107	" 31....	J. Marten	" "	75 00
108	" 31....	M. J. Snyder	" "	50 00
109	" 31....	C. A. Hart	" "	50 00
110	" 31....	Bernard Quaritch	Books	30 95
111	" 31....	Heliotype Printing Co	Prints of drawings	144 00
112	" 31....	Nat'nl R'y Publishing Co....	Official Railway Guide	5 00
113	" 31....	F. H. King	Relief Map of the United States....	8 00
114	" 31....	American Express Co	Charges	3 40
115	" 31....	I. O. Baker	Field book, etc	4 36
116	" 31....	J. Hamilton	Lumber	22 39
117	" 31....	O., I. & W. R. R	Charges	3 23
118	" 31....	Fuller & Fuller Co	Glass, etc	34 11
119	" 31....	Eimer & Amend	Chemical supplies	580 35
120	Nov. 15....	Maltby & Wallace	Heating apparatus	164 95
121	" 15....	J. Marten	Traveling expenses	20 00
122	" 15....	Rand, McNally & Co	Engraving	4 00
123	" 15....	Melchior Bros	Repairs	1 10
124	" 15....	D. H. Lloyde & Son	Stationery	25 95
125	" 15....	Pantagraph Stationery Co...	"	24 00
126	" 15....	Heliotype Printing Co	Zinc plates	25 84
127	" 15....	F. W. Mally	Salary, October, 1889	23 10
128	" 15....	J. Marten	Expenses	20 00
129	" 15....	S. A. Forbes	"	10 50
130	" 15....	A. L. Cassino	Insect pins	8 00
131	" 15....	American Express Co	Charges	9 60
132	" 15....	American Express Co	"	2 00
133	" 15....	School of Mines Quarterly ..	Subscription	2 00
134	" 15....	H. J. Green	Aneroid and Thermometers	38 50
135	" 15....	Central Union Telephone Co	Rent, Oct. 1—Dec. 31, 1889	15 00
136	" 15....	Nason Manufacturing Co....	Grate	4 90
137	" 15....	Crane Bros. M'f'g. Co	Steam gauges	14 95
138	" 15....	A. H. Andrews & Co	Black slating	3 00
139	" 15....	H. S. Piatt	Pamphlets	10 00
140	" 15....	C. Stange	Acids	15 03
141	" 15....	Yale & Towne M'f'g Co	Locks and Keys	9 90

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1889.			
142	Nov. 15....	Goodyear Rubber Co.....	Tubing	$7 41
143	" 15....	G. Besore.....	Lumber	859 09
144	" 15....	Kerr Bros	Masonry.....	223 26
145	" 15....	Ohio, Indiana & Western Ry.	Charges.....	16 73
146	" 15....	Illinois Central R. R. Co.....	"	84 65
147	" 15....	Agricultural department.....	Expenses, October, 1889.....	257 47
148	" 15....	Grace Peabody.....	Services, October, 1889.....	15 06
149	" 15....	Pay roll of men, Oct. 1889,	Labor.....	415 85
150	" 15....	Pay roll of students, "	"	250 27
151	Nov. 30....	S. H. Peabody	Salary, November, 1889.....	333 33
152	" 30....	T. J. Burrill	" "	141 66
153	" 30....	S. W. Shattuck.....	" "	166 66
154	" 30....	E. Snyder	" "	166 66
155	" 30....	N. C. Ricker.....	" "	166 66
156	" 30....	J. D. Crawford.....	" "	166 66
157	" 30....	G. E. Morrow	" "	141 66
158	" 30....	P. Roos	" "	150 00
159	" 30....	I. O. Baker.....	" "	166 66
160	" 39....	S. A. Forbes.....	" "	83 33
161	" 30....	J. H. Brownlee.....	" "	166 66
162	" 30....	C. W. Rolfe.....	" "	150 00
163	" 30....	D. McIntosh.....	" "	150 00
164	" 30....	N. Butler, Jr	" "	166 66
165	" 30....	A. T. Woods.....	" "	166 66
166	" 30....	S. R. Winchell.....	" "	166 66
167	" 30....	A. N. Talbot.....	" "	133 33
168	" 30....	A. W. Palmer.....	" "	133 33
169	" 30....	S. W. Stratton.....	" "	120 00
170	" 30....	G. W. Parker	" "	100 00
171	" 30....	R. Anderson.....	" "	133 33
172	" 30....	F. M. Ryan.....	" "	80 00
173	" 30....	H. S. Brode.....	" "	100 00
174	" 30....	G. W. Myers	" "	75 00
175	" 30....	C. E. Bogardus.....	" "	90 00
176	" 30....	J. V. E. Schaefer.....	" "	80 00
177	" 30....	H. S. Grindley	" "	60 00
178	" 30....	E. L. Beach	" "	25 00
179	" 30....	Chas. Bennett.....	" "	40 00
180	" 30....	A. B. Baker.....	" "	70 00
181	" 30....	A. J. Stoneburner	" "	40 00
182	" 30....	John Marten	" "	75 00
183	" 30....	M. J. Snyder.....	" "	50 00
184	" 30....	C. A. Hart.....	" "	50 00
185	" 30....	F. W. Mally	" "	30 00
186	" 30....	C. S. Hill.....	Repairs on clock	1 00
187	" 30....	J. W. Spalding.....	Postage	10 00
188	" 30....	The Patriot.....	Advertising	4 00
189	" 30....	Lyon & Healy	Music	10 00
190	" 30....	James B. Clow & Sons.....	Air cocks.....	1 26
191	" 30....	Whitall, Tatum & Co.....	Glass tubing.....	14 55
192	" 30....	Charles Bros.....	Kalsomining.....	5 80
193	" 30....	J. D. Crawford.....	Expenses	5 08
194	" 30....	Crescent Steel Co	Bar steel.....	29 94
195	" 30....	Frasse & Co.....	Drill, gauge, etc	113 23
196	" 30....	F. R. Allen	Fish fossils.....	19 00
197	" 30....	R. Friedlander & Son.....	Books and periodicals.....	175 56
198	" 30....	G. W. McCluer.....	Trees and plants.....	18 00
199	" 30....	Kerr Bros.....	Masonry.....	600 00
200	" 30....	C. Bennett.....	Expenses	66 18
201	" 30....	Maltby & Wallace.....	Repairs.....	23 90
202	" 30....	Kellogg, Johnson & Bliss....	Hardware.....	7 93
203	" 30....	A. Barr.....	Walnut lumber	205 20
204	" 30....	Yale & Towne M'f'g. Co.....	Padlocks	8 06
205	" 30....	ames Lindsay	Sand	7 50
206	" 30....	H. S. Piatt.....	Stationery.....	2 60
207	" 30....	Crane Bros. M'f'g. Co	Wrenches	2 86
208	" 30....	Enterprise Coal Co	Coal.....	40 75
209	" 30....	Champaign & Urbana Gas Co.	Gas, October, 1889.	55 00
210	" 30....	O. I. & W. R. R. Co.....	Freight charges	16 92
211	" 30....	Eimer & Amend.....	Chemical supplies	67 77
212	" 30....	Bausch & Lomb Optical Co.	Microscope	54 51
213	" 30....	Buff & Berger	Level.....	95 15
214	" 30....	Heer & Seelig	Level and rod	143 50
215	" 30....	Pacific Express Co.....	Charges.....	6 05
216	" 30....	Oscar Miller.....	Iron and labor	8 00
217	" 30....	Fuller & Fuller Co.....	Soap and glass.....	15 98
218	" 30....	C. B. Hoppin.....	Expenses to Galesburg	9 17
219	" 30....	F. Miller	Tuning	5 50

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1889.			
220	Nov. 30....	F. K. Robeson & Bro.....	Toweling.....	$4 40
221	" 30....	Union Water Supply Co.....	Water, Oct. 1—Dec. 31, 1889.....	100 00
222	" 30....	Heller & Toy	Drayage.....	4 00
223	" 30....	Abendroth & Root M'f'g Co.	Boiler tubes	574 52
224	" 30....	American Express Co.....	Charges	34 67
225	" 30....	T. Wright & Son.	Castings.....	17 11
226	" 30....	Grace Peabody.....	Services, Nov. 1889.....	11 81
227	" 30....	C. M. Kimball.....	Services, fall term, 1889	50 00
228	" 30....	W. E. Sandford.....	Services as band leader.....	15 00
229	" 30....	S. W. Shattuck.....	Salary as Business Agent 3 months	75 00
230	" 30....	Agricultural department.....	Expenses, Nov., 1889.....	113 80
231	" 30....	H. Trevett.....	Hardware	92 71
232	" 30....	R. S. Wilber.....	Hauling	40 00
233	" 30....	D. H. Lloyde & Son.....	Stationery.....	6 31
234	" 30....	Illinois Central Railroad Co.	Charges	67 90
235	" 30....	Champaign & Urbana Gas Co	Gas, Nov., 1889.....	95 60
236	" 30....	Enterprise Coal & Coke Co.	Coal.....	54 00
237	" 30....	G. Besore.....	Lumber	586 98
238	" 30....	O. I. & W. R. R. Co.....	Charges	4 94
239	" 30....	Kerr Bros.....	Brick and stone work.....	122 80
240	" 30....	J. Dickerson.....	Carpenter work.....	300 00
241	" 30....	Champaign Co. Gazette.....	Stationery and printing.....	48 60
242	" 30....	A. C. McClurg & Co	Books	142 22
243	" 30....	E. Troll.....	Janitor work.....	24 90
244	" 30....	H. W. Rokker	Vol. 1 Ornithology.....	1,154 47
245	" 30....	Robinson & Burr.....	Repairs, etc.....	42 63
246	" 30....	Pay roll of men, Nov., 1889..	Labor.....	245 29
247	" 30....	Pay roll of students "	"	192 91
248	" 30....	S. W. Shattuck.....	Expenses 3 months.....	48 14
249	" 30....	Mechanical department.....	Labor, etc.....	217 21
250	" 30....	Architectural department....	"	1,017 05
251	Dec. 10....	C. Bennett.....	Expenses to Board meetings.....	18 50
252	" 10....	S. A. Bullard.....	" "	15 80
253	" 10....	W. W. Clemens.....	" "	17 00
254	" 10....	E. Cobb.....	" "	5 00
255	" 10....	G. S. Haskell.....	" "	4 00
256	" 10....	F. M. McKay	" "	12 50
257	" 10....	A. McLean.....	" "	42 95
258	" 10....	F. Felkel	Steel and iron for drill hall.....	848 00
259	" 10....	E. H. Sargent & Co.....	Bottles, etc	4 55
260	" 10....	Ticknor & Co	American Architect.....	25 00
261	" 10....	Forum Publishing Co.	Forum, 4 months.....	2 00
262	" 10....	D. Appleton & Co.....	Cyclopedia American Biography....	36 00
263	" 10....	Ormand Stone.....	Annals of Mathematics.....	2 00
264	" 10....	H. W. Smith.....	Trans. Am. Philological Society....	2 00
265	" 10....	J. A. Taylor & Co.....	Gauges, reamers, etc.....	158 91
266	" 10....	Quaker City Machine Co	Challenge ventilating apparatus	84 70
267	" 10....	S. A. Forbes	Expenses State Laboratory of Natural History.....	80 07
268	" 10....	J. W. Spalding.....	Postage, envelopes, etc.....	5 00
269	" 10....	Am. Microscopical Journal..	Subscription, 1889.....	1 00
270	" 10....	H. W. Rokker.....	Stationery, bulletins.....	81 30
271	" 10....	Link Belting & Machine Co	Pulleys	3 32
272	" 10....	T. Wright & Son	Pig iron, ladle, etc.....	20 78
273	" 10....	Public School Publishing Co	Advertising.....	6 00
274	" 10....	Hektograph Mfg. Co.....	Refilling hektograph.....	3 00
275	" 10....	A. C. McClurg & Co.....	Stationery	19 60
276	" 31....	S. H. Peabody.....	Salary, December, 1889.....	333 33
277	" 31....	T. J. Burrill.....	" "	141 66
278	" 31....	S. W. Shattuck.....	" "	166 66
279	" 31....	E. Snyder.....	" "	166 66
280	" 31....	N. C. Ricker.....	" "	166 66
281	" 31....	J. D. Crawford.....	" "	166 66
282	" 31....	G. E. Morrow.....	" "	141 66
283	" 31....	P. Roos.....	" "	150 00
284	" 31....	I. O. Baker.....	" "	166 66
285	" 31....	S. A. Forbes	" "	83 33
286	" 31....	J. H. Brownlee.....	" "	166 66
287	" 31....	C. W. Rolfe.....	" "	150 00
288	" 31....	D. McIntosh.....	" "	150 00
289	" 31....	N. Butler, Jr.....	" "	166 66
290	" 31....	A. T. Woods.....	" "	166 66
291	" 31....	S. R. Winchell	" "	166 66
292	" 31....	A. N. Talbot.....	" "	133 33
293	" 31....	A. W. Palmer.....	" "	133 33
294	" 31....	S. W. Stratton	" "	120 00
295	" 31....	G. W. Parker.....	" "	100 00

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1889.			
296	Dec. 31....	R. Anderson	Salary, December, 1889	$133 33
297	" 31....	F. M. Ryan	" "	80 00
298	" 31....	H. S. Brode	" "	100 00
299	" 31....	G. W. Myers	" "	75 00
300	" 31....	C. E. Bogardus	" "	90 00
301	" 31....	J. V. E. Schaefer	" "	80 00
302	" 31....	H. S. Grindley	" "	60 00
303	" 31....	E. L. Beach	" "	25 00
304	" 31....	C. Bennett	" "	40 00
305	" 31....	A. B. Baker	" "	70 00
306	" 31....	A. J. Stoneburner	" "	65 00
307	" 31....	J. Marten	" "	75 00
308	" 31....	M. J. Snyder	" "	50 00
309	" 31....	C. A. Hart	" "	50 00
310	" 31....	F. W. Mally	" "	30 00
	1890.			
311	Jan. 15....	U. S. Plank	Janitor	3 23
312	" 15....	Am. Microscopical Journal.	Subscription, 1890	1 00
313	" 15....	N. Bardwell	Drawing and charts	12 80
314	" 15....	Student's History and Political Science	Subscription, vol. 7	3 00
315	" 15....	J. W. Spalding	Postage	22 54
316	" 15....	R. Abernathy	Lettering directory	3 00
317	" 15....	C. M. Kimball	Music fees, fall term	108 00
318	" 15....	O. I. & W. R. R. Co	Freight charges	5 16
319	" 15....	Illinois Central R. R. Co	"	163 40
320	" 15....	Agricultural department	Expenses, December, 1889	178 14
321	" 15....	Grace Peabody	Services	19 80
322	" 15....	Shober & Carqueville	Four books of warrants	42 00
323	" 15....	H. S. Piatt	Printing	1 50
324	" 15....	Pay roll of men and women.	Labor, December, 1889	523 37
325	" 15....	Pay roll of students	" "	250 61
326	" 31....	S. H. Peabody	Salary, January, 1890	333 33
327	" 31....	T. J. Burrill	" "	141 66
328	" 31....	S. W. Shattuck	" "	166 66
329	" 31....	E. Snyder	" "	166 66
330	" 31....	N. C. Ricker	" "	166 66
331	" 31....	J. D. Crawford	" "	166 66
332	" 31....	G. E. Morrow	" "	141 66
333	" 31....	P. Roos	" "	150 00
334	" 31....	I. O. Baker	" "	166 66
335	" 31....	S. A. Forbes	" "	83 33
336	" 31....	J. H. Brownlee	" "	166 66
337	" 31....	C. W. Rolfe	" "	150 00
338	" 31....	D. McIntosh	" "	150 00
339	" 31....	N. Butler, Jr	" "	166 66
340	" 31....	A. T. Woods	" "	166 66
341	" 31....	S. R. Winchell	" "	166 66
342	" 31....	A. N. Talbot	" "	133 33
343	" 31....	A. W. Palmer	" "	133 33
344	" 31....	S. W. Stratton	" "	120 00
345	" 31....	G. W. Parker	" "	100 00
346	" 31....	R. Anderson	" "	133 33
347	" 31....	F. M. Ryan	" "	80 00
348	" 31....	H. S. Brode	" "	100 00
349	" 31....	G. W. Myers	" "	75 00
350	" 31....	C. E. Bogardus	" "	90 00
351	" 31....	J. V. E. Schaefer	" "	80 00
352	" 31....	H. S. Grindley	" "	60 00
353	" 31....	L. Bush	" "	80 00
354	" 31....	E. L. Beach	" "	25 00
355	" 31....	C. Bennett	" "	40 00
356	" 31....	A. B. Baker	" "	70 00
357	" 31....	A. J. Stoneburner	" "	65 00
358	" 31....	J. Marten	" "	75 00
359	" 31....	M. J. Snyder	" "	50 00
360	" 31....	C. A. Hart	" "	50 00
361	" 31....	Walker & Mulliken	Furniture	40 65
362	" 31....	A. P. Cuningham	Subscription and chemicals	6 38
363	" 31....	Fuller & Fuller Co	Acids and sponge	10 31
364	" 31....	Champaign & Urbana Gas Co	Gas, December, 1889	64 40
365	" 31....	Enterprise Coal Co	Coal	130 50
366	" 31....	Champaign Co. Herald	1,000 copies of Rules	23 00
367	" 31....	A. C. McClurg & Co	Books	54 33
368	" 31....	Kenyon News Agency	Subscriptions	206 75
369	" 31....	Maltby & Wallace	Labor, etc	7 35
370	" 31....	Hubbard & Son	Tin work on drill hall	330 26

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1890.			
371	Jan. 31....	J. Dickerson	Carpenter work, etc	$112 55
372	" 31....	G. Besore	Lumber	245 96
373	" 31....	Thomas Wright & Son	Door weights	6 00
374	" 31....	Central Union Telephone Co	Rent of instrument 3 months	15 00
375	" 31....	J. O. Kane	Art For All	5 50
376	Feb. 28....	King & Strahley	Carriage hire	3 00
377	" 28....	C. E. Hessel	Carriage blanket	1 25
378	" 28....	A. Bevis	Blue prints	2 15
379	" 28....	Goodyear Rubber Co	Rubber tubing	5 43
380	" 28....	A. W. Palmer	Chemical laboratory expenses	5 40
381	" 28....	American Express Co	Charges	5 15
382	" 28....	U. S. Express Co	"	4 35
383	" 28....	Illinois Central R. R. Co	"	141 80
384	" 28....	Agricultural department	Expenses, January, 1890	108 65
385	" 29....	Grace Peabody	Services	16 12
386	" 28....	C. Schoenhof	Book	3 65
387	" 28....	W. U. Telegraph Co	Charges	2 67
388	" 28....	State Laboratory Nat. Hist.	Expenses	67 32
389	" 28....	E. Troll	Janitor work	18 25
390	" 28....	John Wilske	Brick work	14 90
391	" 28....	B. C. Beach & Co	Coal	4 00
392	" 28....	R. S. Wilber	Freight and drayage	6 30
393	" 28....	U. S. Express Co	Freight charges	6 76
394	" 28....	American Express Co	Freight charges	19 15
395	" 28....	S. A. Forbes	Instruments	13 50
396	" 28....	J. W. Spalding	Postage	10 00
397	" 28....	Hubbard & Sons	Tin work on drill hall	281 75
398	" 28....	Kerr Bros	Brick work on "	267 16
399	" 28....	Pay roll of men	Labor, Jan., 1890	513 95
400	" 28....	Pay roll of students	" "	222 45
401	" 28....	S. H. Peabody	Salary, February, 1890	333 33
402	" 28....	T. J. Burrill	" "	141 66
403	" 28....	S. W. Shattuck	" "	166 66
404	" 28....	E. Snyder	" "	166 66
405	" 28....	N. C. Ricker	" "	166 66
406	" 28....	J. D. Crawford	" "	166 66
407	" 28....	G. E. Morrow	" "	141 66
408	" 28....	P. Roos	" "	150 00
409	" 28....	I. O. Baker	" "	166 66
410	" 28....	S. A. Forbes	" "	83 33
411	" 28....	J. H. Brownlee	" "	166 66
412	" 28....	C. W. Rolfe	" "	150 00
413	" 28....	D. McIntosh	" "	150 00
414	" 28....	N. Butler, Jr	" "	166 66
415	" 28....	A. T. Woods	" "	166 66
416	" 28....	S. R. Winchell	" "	166 66
417	" 28....	A. N. Talbot	" "	133 33
418	" 28....	A. W. Palmer	" "	133 33
419	" 28....	S. W. Stratton	" "	120 00
420	" 28....	G. W. Parker	" "	100 00
421	" 28....	R. Anderson	" "	133 33
422	" 28....	F. M. Ryan	" "	80 00
423	" 28....	H. S Brode	" "	100 00
424	" 28....	G. W. Myers	" "	75 00
425	" 28....	C. E. Bogardus	" "	90 00
426	" 28....	J. V. E. Schaefer	" "	80 00
427	" 28....	H. S. Grindley	" "	60 00
428	" 28....	L. Bush	" "	80 00
429	" 28....	E. L. Beach	" "	25 00
430	" 28....	C. Bennett	" "	40 00
431	" 28....	A. B. Baker	" "	70 00
432	" 28....	A. J. Stoneburner	" "	65 00
433	" 28....	S. W. Shattuck	" as business agent, three months.	75 00
434	" 28....	J. Marten	" February, 1890	75 00
435	" 28....	M. J. Snyder	" "	50 00
436	" 28....	C. A. Hart	" "	50 00
437	" 28....	F. W. Mally	" "	30 00
438	" 28....	Champaign Co. Herald	Postal cards and printing	5 75
439	" 28....	Champaign Co. Gazette	Printing and stationery	25 18
440	" 28....	D. H. Lloyde & Son	" "	15 75
441	" 28....	Southwick & Jencks	Insect labels and pins	12 20
442	" 28....	A. B. Seymour	Printing outfit	1 47
443	" 28....	Entomological Society of Ont	Subscription, 1890	1 00
444	" 28....	G. C. Willis	Pins, etc	2 97
445	" 28....	Skeen & Stuart Stationery	Pins	2 00
446	" 28....	Heller & Toy	Coal	14 05
447	" 28....	G. W. Miller	Greenhouse stock	9 25

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1890.			
448	Feb. 28....	Hill & Co	Greenhouse stock	$27 39
449	" 28....	Brown & Sharpe M'f'g. Co..	Micrometer calipers	4 68
450	" 28....	Darling Brown & Sharpe ...	American standard wire gauge	2 25
451	" 28....	C. M. Kimball	Salary as organist, winter term	50 00
452	" 28....	W. E. Sandford	" " band leader, "	15 00
453	" 28....	Riehle Bros	Cement grips	6 00
454	" 28....	H. Swannell	Paints, oils, and chemicals	56 63
455	" 28....	F. K. Robeson & Bro	Toweling	5 00
456	" 28....	Studies in Hist. and Pol. S..	Subscription, 1890	3 00
457	" 28....	McDonnell Bros	Books	42 50
458	" 28....	Robinson & Burr	Fittings and labor	64 26
459	" 28....	Henry Trevett	Hardware	98 58
460	" 28....	A. P. Cunningham	Drugs	1 50
461	" 28....	J. C. Sedgwick	Table	3 00
462	" 28....	Cambridge Entomological Club	Subscription, 1888-91	5 00
463	" 28....	Melchoir Bros	Grinding section knives	1 45
464	" 28....	C. W. Strombe:g	Insect boxes	34 75
465	" 28....	Ferris Bros	American Naturalist, 1890	4 00
466	" 28....	F. L. Stebbins	Farrow's Military Encyclopedia	12 00
467	" 28....	E. H. Sargent & Co	Scissors and forceps	5 00
468	" 28....	H. A. Ward	Skeleton	45 00
469	" 28....	Eimer & Amend	Laboratory supplies and apparatus	157 22
470	" 28....	Kenyon News Agency	Subscriptions	15 25
471	" 28....	Pond Engineering Co	Stand and revolving counter	5 40
472	" 28....	S. W. Conant	Hardware	55 74
473	" 28....	Champaign Co. Gazette	Blanks, etc	43 00
474	" 28....	R. S. Wilber	Drayage	95 25
475	" 28....	A. Bevis	Blue prints, etc	5 40
476	" 28....	Fuller & Fuller Co	Glass	11 45
477	" 28....	Enterprise Coal Co	Coal	85 50
478	" 28....	Jones & Laughlins	Iron	18 24
479	" 28....	D. A. Stewart & Co	Journal oil	10 20
480	" 28....	J. Hamilton & Co	Lumber	51 62
481	" 28....	G. Besore	"	547 35
482	" 28....	T. H. Trevett	Hardware	87 31
483	" 28....	Champaign & Urbana Gas Co	Gas, coke, and tar	72 75
484	" 28....	Champaign Co. Herald	Circulars and postals	32 00
485	" 28....	H. Swannell	Chemical supplies	7 75
486	" 28....	J. L. Kerr	Mason work and stone	13 00
487	" 28....	S.W. Shattuck, Business Ag't	Petty expenses 3 months	38 55
488	" 28....	Ball Engine Co	Castings	53 85
489	" 28....	Illinois Central R. R. Co....	Freight charges	50 40
490	" 28....	Enterprise Coal Co	Coal	40 50
491	" 28....	R. S. Wilber	Drayage	27 25
492	" 28....	Horticultural department....	Expenses, February, 1890	10 79
493	" 28....	Agricultural department....	" " "	67 85
494	" 28....	Grace Peabody	Services in office	13 88
495	" 28....	Pay roll men, Feb. '90....	Labor,	139 98
496	" 28....	" students, "	"	156 82
497	" 28....	Mechanical department....	Labor, and material, and power	77 75
498	" 28....	" " "	" " "	109 33
499	" 28....	Architectural department....	" " "	187 15
500	" 28....	" " "	" "	1,106 87
501	Mar. 12....	A. McLean	Expense to Board meetings	22 60
502	" 12....	Emory Cobb	" "	2 50
503	" 12....	F. M. McKay	" "	16 50
504	" 12....	R. Edwards	" "	3 00
505	" 12....	S. A. Bullard	" "	15 60
506	" 12....	Chas. Bennett	" "	6 00
507	" 12....	G. S. Haskell	" "	6 00
508	" 12....	W. T. Purtill	Circulars and supplies	4 50
509	" 31....	S. H. Peabody	Salary, March, 1890	333 33
510	" 31....	T. J. Burrill	" "	141 66
511	" 31....	S. W. Shattuck	" "	166 66
512	" 31....	E. Snyder	" "	166 66
513	" 31....	N. C. Ricker	" "	166 66
514	" 31....	J. D. Crawford	" "	166 66
515	" 31....	G. E Morrow	" "	141 66
516	" 31....	P. Roos	" "	150 00
517	" 31....	I. O. Baker	" "	166 66
518	" 31....	S. A. Forbes	" "	83 33
519	" 31....	J. H. Brownlee	" "	166 66
520	" 31....	C. W. Rolfe	" "	150 00
521	" 31....	D. McIntosh	" "	150 00
522	" 31....	N. Butler, Jr	" "	166 66
523	" 31....	A. T. Woods	" "	166 66
524	" 31....	S. R. Winchell	" "	166 66

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1889.			
525	Mar. 31....	A. N. Talbot	Salary, March, 1890	$133 33
526	" 31....	A. W. Palmer	" "	133 33
527	" 31....	S. W. Stratton	" "	120 00
528	" 31....	G. W. Parker	" "	100 00
529	" 31....	R. Anderson	" "	133 33
530	" 31....	F. M. Ryan	" "	80 00
531	" 31....	H. S. Brode	" "	100 00
532	" 31....	G. W. Myers	" "	75 00
533	" 31....	C. E. Bogardus	" "	90 00
534	" 31....	J. V. E. Schaefer	" "	80 00
535	" 31....	H. S. Grindley	" "	60 00
536	" 31....	L. Bush	" "	80 00
537	" 31....	E. L. Beach	" "	25 00
538	" 31....	C. Bennett	" "	40 00
539	" 31....	A. B. Baker	" "	70 00
540	" 31....	A. J. Stoneburner	" "	65 00
541	" 31....	J. Marten	" "	75 00
542	" 31....	M. J. Snyder	" "	50 00
543	" 31....	C. A. Hart	" "	50 00
544	" 31....	F. W. Mally	" "	30 00
545	" 31....	Hubbard & Son	Tin work on drill hall	215 10
546	" 31....	N. C. Ricker	Services as architect on drill hall	350 00
547	" 31....	The United M'f'g Co	Water service 3 months	100 00
548	" 31....	U. S. Patent Office	Binding	31 20
549	" 31....	Franklin Institute	Index to Journal	5 00
550	" 31....	W. C. Piatt	Book	5 00
551	Apr. 15....	Illini	Advertising	33 00
552	" 15....	J. W. Spalding	Postage	20 00
553	" 15....	A. T. Woods	Expenses	6 69
554	" 15....	The United States	Firing pins, etc	28 86
555	" 15....	Thos. Wright & Son	Castings, etc	31 11
556	" 15....	Agricultural department	Expenses, March 1890	138 80
557	" 15....	Central Union Telephone Co.	Rent, 3 months	15 00
558	" 15....	C. M. Kimball	Music fees, winter term, 1890	140 60
559	" 15....	Goodyear Rubber Co	Rubber tubing, etc	3 56
560	" 15....	Lyon & Healy	Instruments, music	69 96
561	" 15....	F. P. Rush & Co	Coal	10 00
562	" 15....	Inland Pub. Co	Subscription	6 75
563	" 15....	The Machinists' Supply Co.	Iron plates	12 53
564	" 15....	John Ludwick	Sand	2 50
565	" 15....	C. W. Rolfe	For cast	2 30
566	" 15....	Pacific Express Co	Charges	2 65
567	" 15....	Brown & Co	Index	5 50
568	" 15....	H. S. Piatt	Printing	6 00
569	" 15....	Grace Peabody	Services, March, 1890	19 06
570	" 15....	O. I. & W. R. R. Co	Freight charges	7 77
571	" 15....	U. S. Express Co	" "	12 35
572	" 15....	American Express Co	" "	11 80
573	" 15....	Illinois Central R. R. Co	" "	148 39
574	" 15....	Pay roll of men	Labor, March, 1890	195 08
575	" 15....	Pay roll of students	" "	241 48
576	" 30....	S. H. Peabody	Salary, April, 1889	333 33
577	" 30....	T. J. Burrill	" "	141 66
578	" 30....	S. W. Shattuck	" "	166 66
579	" 30....	E. Snyder	" "	166 66
580	" 30....	N. C. Ricker	" "	166 66
581	" 30....	J. D. Crawford	" "	166 66
582	" 30....	G. E. Morrow	" "	141 66
583	" 30....	P. Roos	" "	150 00
584	" 30....	I. O. Baker	" "	166 66
585	" 30....	S. A. Forbes	" "	83 33
586	" 30....	J. H. Brownlee	" "	166 66
587	" 30....	C. W. Rolfe	" "	150 00
588	" 30....	D. McIntosh	" "	150 00
589	" 30....	N. Butler, Jr	" "	166 66
590	" 30....	A. T. Woods	" "	166 66
591	" 30....	S. R. Winchell	" "	166 66
592	" 30....	A. N. Talbot	" "	133 33
593	" 30....	A. W. Palmer	" "	133 33
594	" 30....	S. W. Stratton	" "	120 00
595	" 30....	G. W. Parker	" "	100 00
596	" 30....	R. Anderson	" "	133 33
597	" 30....	F. M. Ryan	" "	80 00
598	" 30....	H. S. Brode	" "	100 00
599	" 30....	G. W. Myers	" "	75 00
600	" 30....	C. E. Bogardus	" "	90 00

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1890.			
601	Apr. 30....	J. V. E. Schaefer	Salary, April, 1890	$80 00
602	" 30....	H. S. Grindley	" "	60 00
603	" 30....	E. L. Beach	" "	25 00
604	" 30....	C. Bennett	" "	40 00
605	" 30....	A. B. Baker	" "	70 00
606	" 30....	A. J. Stoneburner	" "	40 00
607	" 30....	J. Marten	" "	75 00
608	" 30 ...	M. J. Snyder	" "	50 00
609	" 30....	C. A. Hart	" "	50 00
610	" 30....	F. W. Mally	" "	30 00
611	" 30....	H. F. Wilson	Carriage hire	4 00
612	" 30....	Champaign & Urbana Gas Co	Gas, February and March	88 00
613	" 30....	Champaign Tile Co	Brick	4 80
614	" 30....	Abendroth & Root M'f'g Co.	Boiler tubes	17 40
615	" 30....	G. W. Miller	Standards	37 43
616	" 30....	C. S. Hill	Repairs on clock	2 50
617	" 30....	N. W. Calcium Light Co	Rent for cylinders, etc	6 83
618	" 30....	L. C. Garwood	Repairs on instrument	2 50
619	" 30....	Fergus Printing Co	Vol. 1 Moses' History of Illinois	4 50
620	" 30....	l'Abbe Provancher	Books	6 50
621	" 30....	H. C. McCook	Vol. Spiders	10 00
622	" 30....	E. O. Vaile	Directory of Illinois Schools	1 00
623	" 30....	Cambridge Entomological Club	Cuts	5 58
624	" 30....	F. B. Webster	Ornithologist, '90	1 00
625	" 30....	S. R. Roberts	Manual of Conchology	12 00
626	May 31....	G. A. Bort	Painting on drill hall	180 00
627	" 31....	S. A. Forbes	Expenses of school visitation	23 49
628	" 31....	J. D. Crawford	" "	2 60
629	" 31....	S. W. Shattuck	Expenses of trip to Minn. lands	58 15
630	" 31....	Grace Peabody	Services in Regent's office	14 69
631	" 31....	J. W. Spaulding	Postage	10 00
632	" 31....	Jas. W. Queen & Co	Laboratory supplies	1 96
633	" 31....	Western Electric Co	Carbon battery jars	4 67
634	" 31....	Henry J. Green	Repairs of barometer	4 00
635	" 31....	Eichberg & Baer	Cotton flannel	2 25
636	" 31....	Goodyear Rubber Company	Rubber tubing, etc	13 76
637	" 31....	Champaign M'f'g C	Cherry lumber	53 69
638	" 31....	Society for Political Education	Tracts and subscription	3 87
639	" 31....	McDonnell Bros	Century Dictionary, pts. 10-11	5 00
640	" 31....	C. W. Bardeen	Minutes International Conference	5 00
641	" 31....	Publishers' Weekly	American Catalogue, '84-'90	10 00
642	" 31....	A. S. Clark	Periodicals	2 83
643	" 31....	Bernard Quaritch	Books	35 25
644	" 31....	Ent. Society o Ontario	"	25 22
645	" 31....	H. W. Rokker	Letter heads	11 00
646	" 31....	J. W. Franks & Sons	Printing	51 35
647	" 31....	Illinois Central Railroad Co.	Freight charges	48 50
648	" 31....	Agricultural department	Expenses, April, 1890	127 67
649	" 31....	Pay rolls of men	Labor, April, 1890	252 12
650	" 31....	Pay rolls of students	" "	145 84
651	" 31....	S. H. Peabody	Salary, May, 1890	333 33
652	" 31....	T. J. Burrill	" "	141 66
653	" 31....	S. W. Shattuck	" "	166 66
654	" 31....	E. Snyder	" "	166 66
655	" 31....	N. C. Ricker	" "	166 66
656	" 31....	J. D. Crawford	" "	166 66
657	" 31....	G. E. Morrow	" "	141 66
658	" 31....	P. Roos	" "	150 00
659	" 31....	I. O. Baker	" "	166 66
660	" 31....	S. A. Forbes	" "	83 33
661	" 31....	J. H. Brownlee	" "	166 66
662	" 31....	C. W. Rolfe	" "	150 00
663	" 31....	D. McIntosh	" "	150 00
664	" 31....	N. Butler, Jr	" "	166 66
665	" 31....	A. T. Wo ds	" "	166 66
666	" 31....	S. R. Winchell	" "	166 66
667	" 31....	A. N. Talbot	" "	133 33
668	" 31....	A. W. Palmer	" "	133 33
669	" 31....	S. W. Stratton	" "	120 00
670	" 31....	G. W. Parker	" "	100 00
671	" 31....	R. Anderson	" "	133 33
672	" 31....	F. M. Ryan	" "	80 00
673	" 31....	H. S. Brode	" "	100 00
674	" 31....	G. W. Myers	" "	75 00
675	" 31....	C. E. Bogardus	" "	90 00
676	" 31....	J. V. E. Schaefer	" "	80 00

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1890.			
677	May 31....	H. S. Grindley	Salary, May, 1890	$60 00
678	" 31....	E. L. Beach	" "	25 00
679	" 31....	C. Bennett	" "	40 00
680	" 31....	A. B. Baker	" "	70 00
681	" 31....	A. J. Stoneburner	" "	40 00
682	" 31....	S. W. Shattuck	" Business Agent	75 00
683	" 31....	John Marten	" May, 1890	75 00
684	" 31....	M. J. Snyder	" "	50 00
685	" 31....	C. A. Hart	" "	50 00
686	" 31....	F. W. Mally	" "	30 00
687	" 31....	Ernest Troll	Janitor work	20 25
688	" 31....	F. K. Robeson & Bro	Carpet	15 75
689	" 31....	U. S. Ex ress Co	Freight charges	6 72
690	" 31....	J. B. Clow & Co	Gas valve	2 25
691	" 31....	C. L. Crabbs	Assistant in Physical Laboratory	37 50
692	" 31....	C. H. Snyder	" " "	37 50
693	" 31....	W. E. Sandford	Salary as band leader	15 00
694	" 31....	C. M. Kimball,	" organist	50 00
695	" 31....	J. W. Spalding	Postage stamps	18 40
696	" 31....	Albon Bevis	Paper	5 70
697	" 31....	The Illini	Advertising	17 00
698	" 31....	Am. Express Co	Freight charges	18 58
699	" 31....	Daniel J. Ryan	Vol. 6, Geology of Ohio	1 60
700	" 31....	N. Munoy	Index to American Chemical Journal	1 00
701	" 31....	D. Appleton & Co	Annual American Cyclopedia, 1890	6 00
702	" 31....	Carl Schoenhof	Books	60 84
703	" 31....	G. E. Stechert	"	79 81
704	" 31....	A. C. McClurg & Co	" and stationery	109 37
705	" 31....	Elwanger & Barry	Trees	2 25
706	" 31....	Pantagraph Pr. & St. Co	Printing and paper	29 95
707	" 31....	Joseph Bridgham	Entomological drawing	57 00
708	" 31....	Bausch & Lomb Opt. Co	Instruments	106 62
709	" 31....	E. H. Sargent & Co	Chemical apparatus and supplies	22 14
710	" 31....	C. F. Adams	Mounting animals and birds	12 00
711	" 31....	Oscar Miller	Labor and material	13 20
712	" 31....	E. O. Vaile	Advertising	10 00
713	" 31....	Public School Publishing Co	"	6 00
714	" 31....	C. A. Lyman	"	2 00
715	" 31....	W. Bank Note & Eng. Co	Diplomas	62 50
716	" 31....	Enterprise Coal and Coke Co	Coal	142 25
717	" 31....	Crane Company	Pipe and fittings	43 80
718	" 31....	Champaign & Urbana Gas Co	Gas, March and April, 1890	179 00
719	" 31....	Eimer & Amend	Chemical apparatus and supplies	73 35
720	" 31....	Northwe n Calcium Light Co	Cylinders, etc	82 00
721	" 31....	Mathiessen & Hegeler	Zinc plates	1 68
722	" 31....	L. V. Manspeaker	Sund ies	18 16
723	" 31....	Fuller & Fuller Co	Oil, glass, etc	169 42
724	" 31....	Illinois Machine Works	Labor and materia	13 96
725	" 31....	Geo. Besore	Lumber, etc	241 12
726	" 31....	Pecora Paint Co	Paints, etc	4 73
727	" 31....	J. E. Hunt	"	59 35
728	" 31....	James Lindsay	Sand	1 50
729	" 31....	Bliss, Bullard & Gormley	Hardware	75 30
730	" 31....	Hubbard & Sons	Labor	4 00
731	" 31....	Am. Society of Civil Engineers	Transactions	63 00
732	" 31....	McDonnell Bros	Books	16 00
733	" 31....	Am. Shorthorn Association	Registers, 4 vols	11 75
734	" 31....	Wm. Carrick	Blanks	4 25
735	" 31....	H. S. Piatt	Printing	5 50
736	" 31....	Champaign Co. Gazette	Printing and stationery	40 50
737	" 31....	E. Henry	Paints, oils, etc	71 38
738	" 31....	Bausch & Lomb Opt. Co	Apparatus	58 25
739	" 31....	Henry Trevett	Hardware	274 57
740	" 31....	R. S. Wilber	Drayage	67 50
741	" 31....	Illinois Central R. R. Co	Freight charges	45 45
742	" 31....	C. C. C. & St. L. R'y. Co	"	2 55
743	" 31....	Agricultural depa tment	Expenses, May, 1890	198 90
744	" 31....	S. W. Shattuck	Petty expense, 3 months	40 95
745	" 31....	Mechanical department	Labor, material and power	195 86
746	" 31....	Architectural department	" " "	673 51
747	" 31....	Grace Peabody	Services in Regent's office, May, 1890	12 31
748	" 31....	N.Y. Engraving & Printing Co	Plates of building	37 50
749	" 31....	Pay roll of men and women	Labor, May, 1890	375 69
750	" 31....	Pay roll of student	" "	150 51

List of Warrants—Continued.

No.	Date.	To Whom.	For What.	Amount.
	1890.			
751	June 11....	Alexander McLean	Expense to Board meeting	$24 26
752	" 11....	Emory Cobb	" " "	2 50
753	" 11....	Chas. Bennett	" " "	8 36
754	" 11....	W. W. Clemens	" " "	16 00
755	" 11....	O. A. Harker	" " "	15 20
756	" 11....	Geo. R. Shawhan	" " "	1 00
757	" 11....	S. A. Bullard	" " "	10 45
758	" 11....	F. M. McKay	" " "	18 50
759	" 11....	G. A. Bort	Painting on drill hall	255 95
760	" 11....	Mechanical departm't U. of I.	Expense of setting machine	80 00
761	" 11....	McDonnell Bros	Section 12-13 Century Dictionary	5 90
762	" 11....	N. C. Ricker	Board and plates for cabinets	45 86
763	" 11....	Caroline McElroy	Washing towels	1 30
764	" 11....	S. A. Forbes	Crayfish and owl	3 00
765	" 11....	H. S. Brode	Expenses	5 17
766	" 11....	G. C. Willis	Cotton goods, etc	6 79
767	" 11....	N. O. Stromberg	Insect boxes,	40 25
768	" 11....	S. Raymond Roberts	Manual of Conchology	6 00
769	" 11....	Rosenstock & Co	Grinding knives	2 25
770	" 11....	J. W. Spalding	Postage	25 00
771	" 11....	S. A. Forbes	Expenses,	47 95
772	" 11....	F. W. Mally	"	11 77
773	" 11....	John Marten	"	40 86
774	" 11....	Ernest Troll	Work in laboratory	7 85
775	" 11....	U. S. Express	Freight charges	4 28
776	" 11....	S. H. Peabody	Salary, June, 1890	333 33
777	" 30....	T. J. Burrill	" " "	141 66
778	" 30....	S. W. Shattuck	" " "	166 66
779	" 30....	E. Snyder	" " "	166 66
780	" 30....	N. C. Ricker	" " "	166 66
781	" 30....	J. D. Crawford	" " "	166 66
782	" 30....	G. E. Morrow	" " "	141 66
783	" 30....	P. Roos	" " "	150 00
784	" 30....	I. O. Baker	" " "	166 66
785	" 30....	S. A. Forbes	" " "	83 33
786	" 30....	J. H. Brownlee	" " "	166 66
787	" 30....	C. W. Rolfe	" " "	150 00
788	" 30....	D. McIntosh	" " "	150 00
789	" 30....	N. Butler, Jr	" " "	166 66
790	" 30....	A. T. Woods	" " "	166 66
791	" 30....	R. S. Winchell	" " "	166 66
792	" 30....	A. N. Talbot	" " "	133 33
793	" 30....	A. W. Palmer	" " "	133 33
794	" 30....	S. W. Stratton	" " "	120 00
795	" 30....	G. W. Parker	" " "	100 00
796	" 30....	R. Anderson	" " "	133 33
797	" 30....	F. M. Ryan	" " "	80 00
798	" 30....	G. W. Myers	" " "	75 00
799	" 30....	C. E. Bogardus	" " "	90 00
800	" 30....	H. S. Grindley	" " "	60 00
801	" 30....	E. L. Beach	" " "	25 00
802	" 30....	C. Bennett	" " "	40 00
803	" 30....	A. B. Baker	" " "	70 00
804	" 30....	J. Marten	" " "	75 00
805	" 30....	M. J. Snyder	" " "	50 00
806	" 30....	C. A. Hart	" " "	50 00
807	" 30....	F. W. Mally	" " "	30 00
808	" 30....	J. W Bunn	Taxes Minnesota lands	1,545 05
809	" 30....	S. W. Stratton	Expenses	6 10
810	" 30....	F. K. Robeson & Bro	Ribbon	4 50
811	" 30....	W. L. Pillsbury	Expense of trip to Homer	4 00
812	" 30....	United Manufacturing Co.	Water supply, three months	100 00
813	" 30....	J. E. Hunt	Paints	24 88
814	" 30....	Champaign & Urbana Gas Co.	Gas, May, '90	90 60
815	" 30....	Champaign Co. Herald	Printing programmes	42 00
816	" 30....	Machine Supply Co	Acme wrench bit	3 31
817	" 30....	Northwestern Directory Co.	Directory and advertising	10 00
818	" 30....	Linden Quartette	Music at commencement	90 64
819	" 30....	D. McLennan	Police service	8 00
820	" 30....	Hornstein Bros	Catalogue	331 25
821	" 30....	T. R. Leal	Grading, drill hall	74 25
822	" 30....	L. C. Garwood	Target pasters, etc	1 40
823	" 30....	I. O. Baker	Stationery	4 70
824	" 30....	Clara Maud Kimball	Music fees, etc	176 50
825	" 30....	C. B. Hoppin	Expenses	14 16

List of Warrants.—Continued.

No.	Date.	To Whom.	For Whom.	Amount.
	1890.			
826	June 30....	D. H. Lloyde & Son.....	Stationery, etc.....	$20 25
827	" 30....	H. Swannell.....	Glass, etc.....	14 91
828	" 30....	E. H. Sargent & Co.....	Bottles, etc.....	40 69
829	" 30....	F. H. Mally.....	Services in Laboratory.....	4 80
830	" 30....	R. Friedlander & Son.....	Books and periodicals.....	73 76
831	" 30....	G. E. Stechert.....	" "	56 86
832	" 30....	T. J. Burrill.....	Services as botanist.....	200 00
833	" 30....	S. W. Shattuck.....	" " business agent.....	50 00
834	" 30....	John Marten.....	Traveling expenses.....	1 92
835	" 30....	S. A. Forbes.....	Stationery.....	68
836	July 15....	S. H. Peabody.....	Traveling expenses.....	31 60
837	" 15....	Association of Amer. Agricultural College.....	Membership '89-90.....	10 00
838	" 15....	J. E. Hunt.....	Paints.....	1 50
839	" 15....	Yale & Towne M'f'g Co.....	Locks.....	20 00
840	" 15....	Champaign tile factory.....	Tile.....	24 02
841	" 15....	T. H. Trevett.....	Scythe, etc.....	1 35
842	" 15....	J. B. Clow & Son.....	Fittings.....	1 97
843	" 15....	The N. W. Distillery.....	Alcohol.....	22 50
844	" 15....	C. C. C. & St. L. R'y Co....	Freight charges.....	9 04
845	" 15....	Hornstein Bros.....	Folders and engravings.....	26 00
846	" 15....	J. W. Spaulding.....	Postage.....	48 50
847	" 15....	Grace Peabody.....	Services in Regent's office.....	15 18
848	" 15....	Agricultural department.....	Expenses June, '90.....	186 86
849	" 15....	Pay roll of men and women.	Labor, June, '90.....	415 88
850	" 15....	Pay roll of students.....	" " "	317 39
851	" 31....	S. H. Peabody.....	Salary, July, 1890.....	333 33
852	" 31....	T. J. Burrill.....	" "	141 66
853	" 31....	S. W. Shattuck.....	" "	166 66
854	" 31....	E. Snyder.....	" "	166 66
855	" 31....	N. C. Ricker.....	" "	166 66
856	" 31....	J. D. Crawford.....	" "	166 66
857	" 31....	G. E. Morrow.....	" "	141 66
858	" 31....	P. Roos.....	" "	150 00
859	" 31....	I. O. Baker.....	" "	166 66
860	" 31....	S. A. Forbes.....	" "	83 33
861	" 31....	J. H. Brownlee.....	" "	166 66
862	" 31....	C. W. Rolfe.....	" "	150 00
863	" 31....	D. McIntosh.....	" "	150 00
864	" 31....	N. Butler Jr.....	" "	166 66
865	" 31....	A. T. Woods.....	" "	166 66
866	" 31....	S. R. Winchell.....	" "	166 66
867	" 31....	A. N. Talbot.....	" "	133 33
868	" 31....	A. W. Palmer.....	" "	133 33
869	" 31....	G. W. Parker.....	" "	100 00
870	" 31....	R. Anderson.....	" "	133 33
871	" 31....	A. B. Baker.....	" "	70 00
872	" 31....	John Marten.....	" "	75 00
873	" 31....	M. J. Snyder.....	" "	50 00
874	" 31....	C. A. Hart.....	" "	50 00
875	" 31....	F. W. Mally.....	" part of "	12 00
876	" 31....	S. A. Forbes.....	7 volumes of Auk.....	21 00
877	" 31....	A. P. Cunningham.....	Subscription for Nature.....	4 68
878	" 31....	Boston Photo. Co.....	Plates.....	28 00
879	" 31....	Jas. W. Queen & Co.....	Apparatus.....	197 28
880	" 31....	H. J. Kenney.....	Assistance in survey.....	10 00
881	" 31....	Champaign & Urbana Gas Co	Gas, June, '90.....	28 40
882	" 31....	Kellogg, Johnson & Bliss...	Hardware.....	32 79
883	" 31....	Thos. Wright & Son.....	Iron and grate.....	19 00
884	" 31....	Robinson & Burr.....	Coal and fittings.....	44 24
885	" 31....	The Dial.....	Advertising.....	5 00
886	" 31....	Fruit Grower's Journal.....	Advertisement.....	5 00
887	" 31....	Public School Journal.....	Advertising.....	6 00
888	" 31....	Abendroth & Root M'f'g Co.	Tubes and fittings.....	257 15
889	" 31....	J. A. Fay & Co.....	Belting.....	72 66
890	" 31....	Jones & Laughlins.....	Shafting.....	121 47
891	" 31....	Crane Company.....	Iron pipe, etc.....	117 34
892	ug. 15....	Fuller & Fuller Co.....	Glass.....	10 14
893	" 15....	Illinois Central R. R. Co....	Freight charges.....	24 90
894	" 15....	Clark & Zugalla.....	Proceedings Am. Breeders' Ass'n..	6 00
895	" 15....	Central Union Telephone Co	Rent, 3 months from date.....	15 00
896	" 15....	J. W. Spaulding.....	Postage stamps.....	26 00
897	" 15....	Agricultural department.....	Expenses, July, '90.....	332 59
898	" 15....	Grace Peabody.....	Services in Regent's office.....	13 25
899	" 15....	Pay roll of men.....	Labor, July, '90.....	542 78
900	" 15....	" students.....	" "	174 42
901	" 30....	S. H. Peabody.....	Salary, August, 1890.....	333 33
902	" 30....	T. J. Burrill.....	" "	141 66

List of Warrants—Concluded.

No.	Date.	To Whom.	For What.	Amount.
	1890.			
903	Aug. 30....	S. W. Shattuck	Salary, August, 1890	$166 66
904	" 30....	E. Snyder	" "	166 66
905	" 30....	N. C. Ricker	" "	166 66
906	" 30....	J. D. Crawford	" "	166 66
907	" 30....	G. E. Morrow	" "	141 66
908	" 30....	P. Roos	" "	150 00
909	" 30....	I. O. Baker	" "	166 66
910	" 30....	S. A. Forbes	" "	83 33
911	" 30....	J. H. Brownlee	" "	166 66
912	" 30....	C. W. Rolfe	" "	150 00
913	" 30....	D. McIntosh	" "	150 00
914	" 30....	N. Butler, Jr.	" "	166 66
915	" 30....	A. T. Woods	" "	166 66
916	" 30....	S. R. Winchell	" "	166 66
917	" 30....	A. N. Talbot	" "	133 33
918	" 30....	A. W. Palmer	" "	133 33
919	" 30....	G. W. Parker	" "	100 00
920	" 30....	R. Anderson	" "	133 33
921	" 30....	A. B. Baker	" "	70 00
922	" 30....	S. W. Shattuck	" as Business Agent	75 00
923	" 30....	John Marten	" August, 1890	75 00
924	" 30....	M. J. Snyder	" "	50 00
925	" 30....	C. A. Hart	" "	50 00
926	" 30....	Grace Peabody	Services in Regent's office	6 75
927	" 30....	Western Valve Co	Faucet, etc	2 75
928	" 30....	A. H. Andrew & Co	Black slating and brush	9 83
929	" 30....	Maltby & Wallace	Pipe, fittings, and repairs	13 30
930	" 30....	Crane Company	Ornamental coils, etc	469 96
931	" 30....	Enterprise Coal & Coke Co.	Coal	36 11
932	" 30....	Sangamon Coal Association.	Coal	168 00
933	" 30....	G. E. Marshall & Co	Records	10 00
934	" 30....	The Patriot	Advertising	4 00
935	" 30....	A. N. Kellogg Newspaper Co	Advertising	220 00
936	" 30....	D. H. Lloyde & Son	Stationery	7 62
937	" 30....	Champaign Co. Gazette	Stationery and printing	56 50
938	" 30....	R. S. Wilber	Drayage	93 25
939	" 30....	H. Trevett	Hardware	131 51
940	" 30....	Hubbard & Sons	Screws	1 80
941	" 30....	J. C. Vaughn & Co	Moss, labels, etc	4 72
942	" 30....	Walker & Mulliken	Cupboard, chairs, etc	14 50
943	" 30....	Eimer & Amend	Repair of objective	4 50
944	" 30....	J. Bishop & Co	Repairs of platinum dishes	23 58
945	" 30....	H. Swannell	Chemicals, paints, etc	30 16
946	" 30....	E. H. Sargent & Co	Chemical apparatus and supplies	366 46
947	" 30....	A. G. Manns	Acids	1 35
948	" 30....	Fuller & Fuller Co	Acid	3 94
949	" 30....	Jas. Lindsay	Sand	9 25
950	" 30....	George Besore	Lumber	387 92
951	" 30....	Sheldon Brick Co	Brick and sand	20 75
952	" 30....	Moses Craig	Salary, 2 months, to Sept. 4, 1890	112 00
953	" 30....	Friel Miller	Piano tuning	5 50
954	" 30....	Western Union Telegraph Co	Telegraph charges	5 70
955	" 30....	C. C. C. & St. L. R'y. Co	Freight charges	4 05
956	" 30....	Illinois Central R. R. Co	" "	212 30
957	" 30....	Wabash Railroad Co	" "	1 21
958	" 30....	United States Express Co	" "	2 90
959	" 30....	American Express Co	" "	8 92
960	" 30....	Agricultural department	Expenses, August, 1890	121 60
961	" 30....	S. W. Shattuck, Business Ag't	Petty expenses, 3 months, to date	31 73
962	" 30....	Pay rolls of men and women, August, 1890	Labor	417 92
963	" 30....	Pay rolls of students	Labor	106 65
964	" 30....	Mechanical department	Labor, material, and power	108 55
965	" 30....	Architectural department	Labor and material	544 65
966	" 30....	Architectural department	Labor and material	530 97
967	" 30....	Agricultural department	Seed, labor, and kindling	4 75

Financial statement of the University of Illinois [not including State Laboratory of Natural History or the Agricultural Experiment Station] for the year ending August 31, 1890.

RECEIPTS, SEPTEMBER 1, 1889—AUGUST 31, 1890.		
Balance		$40,479 45
From State Appropriations—		
For taxes on lands in Minnesota and Nebraska	$1,545 05	
For buildings and grounds	2,500 00	
For mechanical shops	1,500 00	
For books and publications	1,000 00	
For current expenses of instruction	20,000 00	
For apparatus and material	1,500 00	
		28,045 05
From other Sources—		
Interest	$25,890 70	
Rents	663 00	
Fees of University students	11,294 84	
Fees of preparatory students	1,687 50	
Gross receipts of business departments	11,332 61	
Miscellaneous	6 00	50,874 65
		$119,399 15
EXPENDITURES, SEPTEMBER 1, 1889—AUGUST 31, 1890.		
From State Appropriations—		
Taxes on lands in Minnesota and Nebraska	$1,545 05	
Buildings and grounds	1,586 76	
Mechanical shops	1,650 00	
Books and publications	1,000 00	
Cabinets	132 43	
Current expenses of instruction	20,000 00	
Apparatus and material	1,700 18	
Metallurgical laboratory	2 80	
Drill hall	5,011 66	
New boiler	40 32	
		$32,669 20
From other Funds—		
Expenses of Board of Trustees	$407 49	
Salaries for instruction	20,804 43	
Salaries for services	3,150 51	
Buildings and grounds	624 78	
Fuel and lights	1,940 25	
Stationery, printing and postage	1,470 91	
Preparatory department	1,808 24	
Gross expenses of business departments	10,832 67	
Water supply	400 00	
Boiler repairs	884 36	
Miscellaneous	937 26	
Incidentals	506 49	
Drill hall	5,220 29	
Farm barn	1,330 31	
New engine	53 85	
Moving machine shop	1,337 07	
		51,708 91
Balance		35,021 04
		$119,399 15

Financial statement of the Illinois State Laboratory of Natural History, for the fiscal year ending June 30, 1890.

RECEIPTS.		
Balance from last report	$500 00	
For field, office and incidental expenses	1,000 00	
Improvement of library	500 00	
Pay of assistants	3,000 00	
Entomological laboratory	1,000 00	
Publication of bulletins	500 00	
EXPENDITURES.		
For field, office, and incidental expenses		$1,000 00
Improvement of library		500 00
Pay of assistants		3,000 00
Entomological laboratory		1,000 00
Balance		1,000 00
	$6,500 00	$6,500 00

Financial statement of the Agricultural Experiment Station, of the University of Illinois, for the year ending June 30, 1890.

Dr.		
To appropriation by Congress	$15,000 00	
Cr.		
By paid for buildings and repairs		$54 91
" Board expense		78 41
" books and publications		443 78
" botanical apparatus, and supplies		135 72
" bulletins and report		1,251 63
" chemical apparatus and supplies		359 99
" fertilizers		35 25
" fuel and lights		363 24
" incidentals		88 28
" meteorological apparatus		7 15
" printing, stationery, and postage		86 88
" salaries		7,370 00
" seeds and trees		113 19
" tools and supplies		361 16
" wages and teams		3,822 78
" sundry special expenditures on certain experiments		427 63
Total	$15,000 00	$15,000 00

UNIVERSITY OF ILLINOIS.

COURSES OF STUDY; ADMINISTRATION. ILLINOIS STATE LABORATORY OF NATURAL HISTORY. AGRICULTURAL EXPERIMENT STATION.

UNIVERSITY OF ILLINOIS.

HISTORY.

The University of Illinois had its origin in a movement for the higher education of the industrial classes, begun in Illinois in 1851, and resulting in the congressional grant of lands for this purpose, made to the several states in 1862, and amounting in this state to 480,000 acres. The University was chartered in February, 1867, and opened to students in March, 1868. In addition to the endowment from the land grant, over $400,000 was donated by Champaign county in bonds, buildings, and farms. The state also has made large appropriations for fitting up and stocking the farms, for library and apparatus, and for buildings, including the large main building erected in 1872 and 1873, the mechanical building, the chemical laboratory, and a commodious military building finished in 1890. Successive colleges and schools have been added, as required, until four colleges, including eleven distinct schools, have been organized.

The whole number matriculated as students since the opening is 2,486. The number graduated from the several colleges, including the class of 1889, is 600. In 1871 the University was opened for lady students, on the same terms as to gentlemen. In 1874 a fine art gallery was established.

The University has a beautiful and healthful situation on the high grounds between the cities of Champaign and Urbana, within the corporate limits of the latter. It is one hundred and twenty-eight miles south from Chicago, at the junction of the Illinois Central, the Cleveland, Cincinnati, Chicago & St. Louis, and the Wabash railways. The country is a region of beautiful rolling prairies, with large belts of timber along the streams, and is one of the richest farming districts of the state.

BUILDINGS AND GROUNDS.

The land occupied by the University and its several departments embraces about 610 acres, including stock farm, experiment farm, orchards, forest plantation, arboretum, ornamental grounds and military parade grounds.

The main University building, designed wholly for public uses, occupies three sides of a quadrangle, measuring 214 feet in front and 122 feet upon the wings. The library wing contains in

spacious halls the museum of natural history, the library, the art gallery, and the museum of industrial art. The chapel wing contains the chapel, the physical laboratory and lecture room, and rooms occupied by the schools of architecture and of art and design. In the main front are convenient class rooms with, in the upper floor, elegant halls for literary societies. The building is warmed by steam.

The mechanical building is of brick, 126 feet in length, and 88 feet in width. It contains a boiler-room, a machine shop, furnished for practical use with a steam engine and lathes, and other machinery; pattern and finishing shop; testing laboratory; shops for carpentry and cabinet work, furnished with wood-working machinery. The blacksmith shop, 32 by 36 feet, contains sixteen forges with anvils and tools, and a cupola for melting iron.

The chemical building, erected in 1878, at a cost, including furniture, of $40,000, contains five laboratories, and is one of the best and largest in the United States.

A new military building, erected in 1889-90, 100 by 150 feet in one grand hall, gives ample space for company and battalion maneuvers and for large audiences upon special occasions.

There are, in addition, a veterinary hall, a small astronomical observatory, two dormitories, three dwellings, two large barns, and a greenhouse.

MUSEUMS AND COLLECTIONS.

The museum of zoölogy and geology occupies a hall sixty-one by seventy-nine feet, with a gallery on three sides, and is completely furnished with wall, table and alcove cases. It already contains interesting and important collections, equaled at few, if any, of the colleges of the West. They have been specially selected and prepared to illustrate the courses of study in the school of natural history, and to present a synoptical view of the zoölogy of the state.

Zoölogy.—The mounted *mammals* comprise an unusually large and instructive collection of the ruminants of our country, including male and female moose, elk, bison, deer, antelope, etc., and also several quadrumana, large carnivora, and fur-bearing animals, numerous rodents, and good representative marsupials, cetaceans, edentates, and monotremes. Fifty species of this class are represented by eighty specimens.

The collection of mounted *birds* (about five hundred and fifty specimens, of three hundred species) includes representatives of all the orders and families of North America, together with a number of characteristic tropical forms. Many of these specimens are excellent examples of artistic taxidermy. A series of several hundred unmounted skins is available for the practical study of species.

The set of *skeletons* contains examples of all the orders of mammals and birds except proboscidæ, together with typical representatives of the principal groups of reptiles, amphibians and fishes.

The *cold-blooded vertebrates* are also represented by a very useful collection of alcoholic specimens, plaster casts, and mounted skins of the larger species, both terrestrial and marine.

Embryology is illustrated by a set of Ziegler wax models, and several series of slides, sections and other preparations.

Conchology is illustrated by several thousand shells belonging to seventeen hundred species; together with alcoholic specimens of all classes and orders. The collection of Illinois shells is fair, but incomplete.

The *entomological cabinet* contains about three thousand species (principally American) named, labeled, and systematically arranged.

The *lower invertebrates* are represented by several hundred dried specimens and alcoholics, and by a large series of the famous Blaschka glass models.

Geology.—The geological collection comprises many of the largest and most remarkable fossils hitherto discovered in the various geological formations, illustrating the general progress of life in the mollusks, fishes, reptiles and mammals, from the oldest palæozoic time to the present. A fine set of fossils from Germany, and collections suitably arranged for practical study, from this and other states, illustrate the different formations. There is a good collection of foot-prints from the Connecticut river sand-stones.

Botany.—The herbarium contains about one thousand species of plants indigenous to Illinois, including nearly complete sets of grasses and sedges. There are, besides, many other North American plants and some exotics. A collection of fungi, includes a very full set of those most injurious to other plants, causing rusts, smuts, moulds, etc. A collection of wood specimens from two hundred species of North American trees, well illustrates the varieties of native wood. The trees and shrubs of Stephenson county, Illinois, are represented by a distinct collection.

Plaster casts represent fruits of many of the leading varieties, as well as interesting specimens of morphology, showing peculiarities of growth, effects of cross-fertilization, etc.

Lithology.—This collection embraces the principal kinds of metamorphic and volcanic rocks; examples of stratification in the limestone and fragmental kinds, with many samples of such rocks as are found most valuable for building purposes.

Mineralogy.—The specimens of minerals show all the groups, and all the important and typical species. All the metals are

represented, also many of their most important combinations. Many of the specimens are finely crystalized; these, with a complete set of imported models, fully illustrate crystalography.

Agriculture.—A collection of soils from different portions of Illinois and other states; many varieties of corn, wheat, and other cereals and seeds; specimens illustrating the official state inspection of grains at Chicago, showing the quality of the different grades recognized; models of agricultural inventions; models illustrating modes and materials for drains; casts of ancient plows; engravings, lithographs and photographs of typical animals of noted breeds.

The farms give good illustrations of farm buildings, implements, machinery, modes of culture, and of domestic animals of various classes.

Physics.—The cabinets of the physical laboratory contain a collection of apparatus from the most celebrated European and American makers, illustrating the subjects of mechanics, pneumatics, optics, and electricity. Ample facilities are afforded to students for performing experiments of precision by which the theories of physical science may be tested and original work may be done.

A five-light Weston dynamo at the machine shop is connected with the physical and chemical laboratories for experimental purposes, and is supplemented by a valuable series of instruments for accurate electrical measurements.

A series of standard weights and measures from the office of the Coast and Geodetic Survey of the United States may be consulted at the physical laboratory.

The Mechanical Laboratory is provided with a steam engine, engine and hand lathes, planer, shapers, milling machine, drill presses, and the requisite hand tools, benches, vises, anvils, etc., for pattern shop, blacksmith shop, moulding-room, and bench work. Its cabinets contain several hundred models of elements of mechanism and machines from Schroeder, Riggs, the Patent Office, and from the workshops of the University. Important additions to the equipment of tools and machines have lately been made, including a testing machine of most approved design, having a capacity of 100,000 pounds and a mercury column for accurate testing of water and steam-gauges.

Mining Engineering is illustrated by a valuable series of models, obtained from Freiburg, illustrating sections of mines, machinery for elevating and breaking ore, with furnaces and machinery for metallurgical processes.

An extensive mining and metallurgical laboratory is in process of arrangement. A considerable portion of the machinery is already in working condition.

ART GALLERY.

The University art gallery was the gift of citizens of Champaign and Urbana. It occupies a beautiful hall, 61 by 79 feet, and the large display of art objects has surprised and delighted all visitors. In sculpture it embraces thirteen full sized casts of celebrated statues, including the Laocoön group, the Venus of Milo, etc., forty statues of reduced size, and a large number of busts, ancient and modern, bas reliefs, etc., making over four hundred pieces. It includes also hundreds of large autotypes, photographs, and fine engravings, representing many of the great masterpieces of painting of nearly all the modern schools. Also a gallery of historical portraits, mostly large French lithographs of peculiar fineness, copied from the great national portrait galleries of France. The value of this splendid collection, as a means of education, is shown in the work of the school of drawing and design of the University.

MUSEUM OF INDUSTRIAL ARTS.

A large room is devoted to a museum of practical art, the materials for which are constantly accumulating in the various schools of science. Prominent among the agricultural specimens here exhibited is an excellent collection of the sub-species and varieties of Indian corn, including the best of their kinds, a considerable collection of small grains and of grasses, a collection of fibers in various states of manufacture, and a series of analyses of grains showing at a glance the elements and proportion of structure. The museum contains full lines of illustrations of the work of the shops; models made at the University or purchased abroad; drawings in all departments; Patent Office models, etc.; samples of building materials, natural and artificial; a large collection illustrating the forestry of Illinois, Florida and California; with whatever may be secured that will teach or illustrate in this most important phase of University work. The elegant exhibit made by the University at the Centennial and Cotton Exposition at New Orleans finds a permanent abode in this apartment.

A notable feature of this collection is the gift of Henry Lord Gay, architect, of Chicago. It consists of a model in plaster and a complete set of drawings, of a competitive design for a monument to be erected in Rome, commemorative of Victor Emanuel, first king of Italy. The monument was to be of white marble, an elaborate gothic structure, beautifully ornamented, and 300 feet high. Its estimated cost was to have been seven and a quarter millions of francs. The design was placed by the art committee second on a list of 289 competitors; but both the first and second were set aside for political reasons. Mr. Gay's generous gift occupies the place of honor in the museum of industrial arts.

LIBRARY.

The library, selected with reference to the literary and scientific studies required in the several courses, includes about 19,000 volumes, and additions are made every year.

The large library hall fitted up as a reading room, is open throughout the day for study, reading and consulting authorities. It is intended that the use of the library shall largely supplement the class room instruction in all departments. Constant reference is made in classes to works contained in the library, and their study is encouraged or required. The reading room is well provided with American, English, French and German papers and periodicals, embracing some of the most important publications in science and art.

GEOGRAPHICAL POSITION OF THE UNIVERSITY.

The Observatory has the following position:
Latitude, 40° 6′ 29″.66.
Longitude, west of Washington, 11° 10′ 37″.5, or 44m. 42.5s.
Elevation above sea level, 720 feet.

ORGANIZATION OF THE UNIVERSITY.

The institution is a university in the American sense, though differing designedly in the character of some of its colleges from the older institutions of this country. It embraces four colleges, which are subdivided into schools. A school is understood to embrace the course of instruction needful for some one profession or vocation. Schools that are cognate in character and studies, are grouped in the same college. The following are the colleges and schools:

I. COLLEGE OF AGRICULTURE.

II. COLLEGE OF ENGINEERING.

School of Mechanical Engineering.
School of Civil Engineering.
School of Mining Engineering.
School of Architecture.

III. COLLEGE OF NATURAL SCIENCE.

School of Chemistry. School of Natural History.

IV. COLLEGE OF LITERATURE AND SCIENCE.

School of English and Modern Languages.
School of Ancient Languages.

V. ADDITIONAL SCHOOLS.

School of Military Science. School of Art and Design.

Vocal and instrumental music are also taught, but not as parts of any regular course.

PREPARATORY CLASSES.

To meet an urgent demand, the Trustees have temporarily provided for teaching the preparatory studies lying between the work of some of the common schools and that of the University.

COLLEGE OF AGRICULTURE.

FACULTY AND INSTRUCTORS.

SELIM H. PEABODY, PH. D., LL. D., REGENT.
GEORGE E. MORROW, A. M., *Dean*, Agriculture.
THOMAS J. BURRILL, PH. D., Botany and Horticulture.
SAMUEL W. SHATTUCK, C. E., Mathematics.
EDWARD SNYDER, A. M., Modern Languages.
JAMES D. CRAWFORD, A. M., History.
PETER ROOS, Industrial Art.
STEPHEN A. FORBES, PH. D., Zoölogy and Entomology.
JAMES H. BROWNLEE, A. M., Rhetoric and Oratory.
ARTHUR W. PALMER, SC. D., Chemistry.
DONALD MCINTOSH, V. S., Veterinary Science.
CHARLES W. ROLFE, M. S., Geology.
NATHANIEL BUTLER, JR., A. M., English Language and Literature.
CURTIS B. HOPPIN, Lt. U. S. A., Military Science.
GEORGE W. PARKER, Wood-work.

ADMISSION.

Candidates for admission to the College of Agriculture must be at least fifteen years of age, and must pass satisfactory examinations in the common school branches and in the studies of the preliminary year. While by law students may be admitted at fifteen years of age, in general, it is much better that they shall be eighteen or twenty. It will be well if candidates shall have pursued other studies besides those required for admission. The better the preparation the more profitable the course.

OBJECT OF THE COLLEGE.

The aim of this college is to educate scientific agriculturists and horticulturists. The frequency with which this aim is misunderstood, demands that it shall be fully explained. Many, who look upon agriculture as consisting merely in the manual work of plowing, planting, cultivating and harvesting, and in the care of stock, justly ridicule the idea of teaching these arts in a college. The practical farmer, who has spent his life in farm labors, laughs at the notion of sending his son to learn these from a set of scientific professors. But all this implies a gross misunderstanding of the real object of agricultural science. It

is not simply to teach *how* to plow, but the reason for plowing at all—to teach the composition and nature of soils, the philosophy of plowing, of manures, and the adaptation of the different soils to different crops and cultures. It is not simply to teach *how* to feed, but to show the composition, action and value of the several kinds of food and the laws of feeding, fattening and healthful growth. In short, it is the aim of the true agricultural college to enable the student to understand thoroughly all that man can know about soils and seeds, plants and animals, and the influences of light, heat, and moisture on his fields, his crops, and his stock; so that he may both understand the reason of the processes he uses, and intelligently work for the improvement of those processes. Not "book farming" but a knowledge of the real nature of all true farming, of the great natural laws of the farm and its phenomena—this is the true aim of agricultural education. Agriculture involves a larger number of sciences than any other human employment, and becomes a fit sequence to any collegiate training.

The steady aim of the trustees has been to give the College of Agriculture the largest development practicable, and to meet the full demand for agricultural education, as fast as it shall arise. Agricultural students are especially invited to the University.

Boards of agriculture and agricultural and horticultural associations are invited to coöperate with the University in its efforts to awaken a more general appreciation of the value of education, and to aid those who desire to avail themselves of its facilities for instruction.

INSTRUCTION.

The instruction unites, as far as possible, theory and practice—theory explaining practice and practice illustrating theory. The technical studies are taught mainly by lectures with readings of standard agricultural books and periodicals, and frequent discussions, oral and written, of the principles taught. These are also illustrated by demonstrations and observations in the fields, stables, orchards, gardens, plant-houses, etc.

SPECIAL STUDIES.

Elements of Agriculture.—Outline of the general principles underlying agriculture in its theory and practice, introductory to the technical and scientific studies of the course.

Agricultural Engineering and Architecture.—Arrangement of the farm; its improvement by mechanical means, as drainage and irrigation; its divisions, fences, hedges, etc.; its water supply; the construction of roads; arrangement, planning, and construction of farm buildings; the construction, selection, care and use of farm implements and machinery.

Animal Husbandry.—Principles of breeding and management of our domestic animals; description of all important breeds and varieties, giving their history and adaptations.

Rural Economy.—Relation of agriculture to other industries and to national prosperity; influences which should determine the class of farming to be adopted; comparisons of special and general systems; uniting of manufacturing with farming; culture of the various farm crops—cereals, grasses, etc.; farm accounts.

History of Agriculture.—Progress and present condition in this and in other countries; influence of climate, civilization, and legislation in advancing or retarding; agricultural literature and organizations.

Rural Law.—Business law; laws especially affecting agriculture—tenures of real estate; road, fence, drainage laws, etc.

Elements of Horticulture.—The following topics are discussed: Orchard sites; the age of trees to plant; the season to plant; how to plant; what to plant; the management of the soil; pruning and care of trees; gathering and preserving fruit; diseases and injuries; the nursery; ornamental trees and shrubs; flower gardens; vegetable gardens, including propagating beds and houses; the vineyard and small fruits, and timber tree plantation. Students have instruction and practice in grafting, budding, propagation by cuttings, etc. Each student has usually grafted from two hundred to one thousand root-grafts of apples.

Landscape Gardening.—Lectures are given upon the general principles of the art, the history, and the styles, the kinds and uses of trees, shrubs, grasses, and flowers, the introduction and management of water, the construction and laying out of drives and walks, fences, buildings, etc. The class draw first from copy, then, after the actual study of some locality with its environments, design and draw full plans for its improvement, indicating positions of all prominent objects, including the kinds and groups of trees and other plants. These plans, with specifications, are to be deposited in the library of the school. Excursions are made when found practicable, for the study of public and private grounds.

The three following studies constitute a year's work designed for those who wish to prepare themselves for special horticultural pursuits, and may be taken as substitutes for agricultural or veterinary studies:

Floriculture.—The study of the kinds, propagation, growth and care of flowering and other ornamental plants. Each student has practice in propagating by cuttings and otherwise, in potting and shifting, and in care of plants requiring various treatments. Insects and diseases, with the remedies, are thoroughly treated, and the means of securing vigor of growth and abundance of flowers are studied and illustrated by practice.

Pomology and Forestry.—Much of the first half of the term is spent in the orchards, nurseries, and forests, making observations and collections, and in the laboratory work determining species, varieties, etc. A large collection of apples, pears, grapes, peaches, etc., is made each year, and the chief characteristics of each are pointed out. Practice is had in making drawings and plaster casts. Written descriptions of the fruits are carefully made and compared with those given in the books, and systems of analysis and classification are put to practical tests. Students see and perform the skilled operations usually practiced in the propagation and growth of trees. Various methods of pruning and training, especially of grapes, are discussed in the class-room, and illustrated upon the grounds. Students study the injurious insects and fungi which cause or accompany diseases of trees and fruits, and the methods of preventing or diminishing their ravages. The native forests of the vicinity and of the country at large are studied as a foundation for the lessons upon the influence and value of timber and other trees and their artificial culture. For the latter the forest tree plantation on the University grounds, and the arboretum, afford practical illustrations.

Plant-houses and Management.—This study includes gardening and landscape architecture; the methods of construction, heating and ventilation, and general management, so as to secure, under the different cir-

cumstances, the best plant growth. The class-room work consists of lectures and architectural designing and drawing. Illustration and practice are afforded by the plant-houses of the University.

VETERINARY SCIENCE.

This science is taught during the third year. In the first term the anatomy and physiology of the domestic animals are taught by lectures, demonstrations, and dissections. Post-mortems of healthy and diseased animals are made, so that the students may become practically acquainted with the tissues in health and in disease. The second term is devoted to the study of veterinary medicines, their action and uses, and to lectures on the principles and practice of veterinary science. During the entire year practical instruction is given in clinical work at the veterinary infirmary, where animals are treated or operated on free of charge, for the instruction of the students. Lectures are given on veterinary sanitary science and the principles and practice of veterinary surgery.

A veterinary hall and stable have been provided and a clinic is held to illustrate the lectures on veterinary science. The department has Dr. Auzoux's celebrated complete model of the horse in 97 pieces, exhibiting 3,000 details of structure; also *papier maché* models of the foot and the teeth of the horse at different ages.

Students desiring to pursue the study of veterinary science further than is laid down in the agricultural course, will find ample facilities for so doing.

LABORATORY WORK.

Experiments and special investigations by each student. A thesis is required embodying the results of original observation and research.

For details as to the study of botany, chemistry, zoölogy, entomology, geology and meteorology, see statements in *College of Natural Science.*

APPARATUS.

The college has, for the illustration of practical agriculture, a stock farm of 400 acres, provided with a large stock barn fitted up with stables, pens, yards, etc.; also, an experiment farm of 180 acres, furnished with all necessary apparatus to illustrate the problems of breeding and feeding. It has fine specimens of neat cattle, Shorthorns, Herefords, Holsteins, and Jerseys, and of Poland-China swine. The Agricultural Experiment Station, recently established as a department of the University, exhibits field experiments in the testing of the different varieties and modes of culture of field crops and in the comparison and treatment of soils. It includes experiments in agriculture and

horticulture, under the direction of the professors of agriculture and horticulture, and experiments in feeding animals of different ages and development, upon the various kinds of food. In common with similar departments in the several agricultural colleges of the country, it attempts to create positive knowledge towards the development of an agricultural science.

Surveying and drainage are illustrated by field practice, with instruments and by models. Agricultural chemistry is pursued in connection with laboratory practice, in the analysis of soils, fertilizers, foods, etc. The college has fine collections of soils, seeds, plants, implements, skeletons of domestic animals, charts, and other apparatus, including a large number of models of agricultural machinery.

Upon the grounds devoted to the use of the college there are:

A very large specimen apple orchard, planted in 1869, and originally containing about 1,000 varieties—many varieties of pears, cherries, grapes, and small fruits.

A forest tree plantation, embracing the most useful kinds of timber.

An arboretum, in which all hardy indigenous and exotic trees are planted as fast as they can be secured, and which now contains nearly 100 varieties. The ornamental grounds which surround the University building contain about twenty acres, and are kept in neat and attractive style. These, with all the adjuncts of trees and flowering shrubs, lawns, beds of flowers and foliage plants, walks of different materials and styles of laying out, give illustration to the class-room work in landscape gardening. A greenhouse contains a collection of plants of great value for the classes in floriculture and landscape gardening, besides furnishing students with practice in greenhouse management.

The cabinet contains a series of colored plaster-casts of fruits prepared at the University; models of fruits and flowers by Auzoux, of Paris; collections of seeds of native and exotic plants; of specimens of native and foreign woods; of beneficial and injurious insects, and specimens showing their work; numerous dry and alcoholic specimens and preparations; maps, charts, diagrams, drawings, etc.

The college has a supply of compound microscopes and apparatus, and students have opportunity to learn their use, and to make practical investigations with them. The herbarium is rich in specimens of useful and noxious plants, including many of the fungous parasites which cause disease to cultivated crops.

AGRICULTURAL COURSE.

Required for the degree of B. S., in College of Agriculture.

FIRST YEAR.

1. Elements of Agriculture; Chemistry; Trigonometry; Shop practice (optional).

2. Elements of Horticulture; Chemistry; British Authors, or Free-hand Drawing.
3. Economic Entomology; Chemistry; Rhetoric.

SECOND YEAR.

1. Chemistry and Laboratory Practice; Botany; German.
2. Agricultural Chemistry (Soils and Plants); Zoölogy or Botany; German.
3. Agricultural Chemistry (Tillage, Fertilizers, Foods); Vegetable Physiology; German.

THIRD YEAR.

1. Agricultural Engineering and Architecture; Animal Anatomy and Physiology; German.
2. Animal Husbandry; Veterinary Science; Veterinary Materia Medica (optional, extra); Physics or Geology.
3. Landscape Gardening; Veterinary Science; Physics or Geology.

FOURTH YEAR.

1. Physiography; Mental Science; History of Civilization.
2. Rural Economy; Constitutional History; Logic.
3. History of Agriculture and Rural Law; Political Economy; Laboratory Work.

N. B.—Students in horticulture will take the special branches in horticulture described on pages 190 and 191.

FARMERS' SHORT COURSE.

Students who have not the time necessary for the full course, and yet desire better to fit themselves to be successful farmers, may give exclusive attention to the technical agricultural studies, including veterinary science, and complete these in one year.

The studies of the second, or winter term of this course, are arranged so as to be studied profitably by those who can be in attendance only during that term.

Students will be admitted to this course on passing a satisfactory examination in the common school branches, but they will receive greater benefit from it if they have made better preparation, especially if they have a good knowledge of botany and chemistry. They should not be less than eighteen years of age. Special fee, $5 per term.

They will be admitted to the following classes:

1. Elements of Agriculture; Agricultural Engineering and Architecture; Animal Anatomy and Physiology; Shop Practice.
2. Animal Husbandry; Rural Economy; Veterinary Science.
3. History of Agriculture and Rural Law; Veterinary Science; Economic Entomology or Landscape Gardening.

COLLEGE OF ENGINEERING.

SCHOOLS.

MECHANICAL ENGINEERING; CIVIL ENGINEERING; MINING ENGINEERING; ARCHITECTURE.

FACULTY AND INSTRUCTORS.

SELIM H. PEABODY, PH. D., LL. D., REGENT.
N. CLIFFORD RICKER, M. Arch., *Dean;* Architecture.
SAMUEL W. SHATTUCK, C. E., Mathematics.
EDWARD SNYDER, A. M., Modern Languages.
JAMES D. CRAWFORD, A. M., History.
PETER ROOS, Industrial Art and Design.
IRA O. BAKER, C. E., Civil Engineering.
ARTHUR W. PALMER, Sc. D., Chemistry.
JAMES H. BROWNLEE, A. M., Rhetoric and Oratory.
CHARLES W. ROLFE, M. S., Geology.
ARTHUR T. WOODS, Mechanical Engineering.
ARTHUR N. TALBOT, C. E., Engineering and Mathematics.
RUFUS ANDERSON, M. E., Iron Work.
GEORGE W. PARKER, Wood Work.
CURTIS B. HOPPIN, U. S. A., Military Science.

ADMISSION.

Applicants should be at least eighteen years of age. None are admitted under fifteen. The requirements for admission embrace the common school branches and the studies of the preliminary year. The examinations in mathematics are especially thorough.

Those who make further preparation than that required before entering can make their course more extensive and profitable. The following suggestions are offered to such as wish to make thorough work:

Either French or German are studied during two years; some preparation in Latin will be of great assistance in these languages. The engineer and architect should be adepts in the various departments of drawing, and some previous study of this branch will be of great advantage. Faunce's Mechanical Drawing may be used as a text book, and the drawings made on smooth paper, eight by ten inches.

The subjects common to all the schools in the College of Engineering are here described; the topics peculiar to each will be noticed under their specific names.

PURE MATHEMATICS, FIRST YEAR.

Trigonometry.—Plane and spherical. Fundamental relations between trigonometrical functions of angles or arcs; construction and use of tables; solution of triangles; projection of spherical triangles; angles as functions of sides and sides as functions of angles; general formulas; applications.

Analytical Geometry.—The point and right line in a plane; conic sections, their equations and properties; the tangent and sub-tangent, normal and sub-normal, pole and polar, supplementary chords, conjugate diameters, etc. Discussion of the general equation of the second degree containing two variables.

Advanced Algebra.—Functions and their notation; series and the theories of limits; imaginary quantities; general theory of equations.

PURE MATHEMATICS, SECOND YEAR.

Differential Calculus.—Rules for the differentiation of functions of a single variable; successive differentiation; development of functions; maxima and minima of functions of a single variable; differentials of an arc, plane area, surface and volume of revolution; elementary discussion of higher plane curves; the spirals, logarithmic curve, trochoid, etc.; algebraic curves.

Integral Calculus.—Integration of elementary forms and rational fractions; rectification of plane curves; quadrature of plane areas and surfaces of revolution; cubature of solids of revolution.

Advanced Analytical Geometry.—Loci in space, in point, right line, plane, and surfaces of the second order.

Advanced Calculus.—Development of the second state of functions of any number of variables; differential equations; maxima and minima of functions of two or more variables; construction and discussion of curves and surfaces; integration of irrational and transcendental differentials and of differential equations of the higher orders and degrees; applications; elements of elliptic integrals.

APPLIED MATHEMATICS.

Analytical Mechanics.—Nature and measure of force; composition and resolution of forces; moments; conditions of equilibrium; resultant of systems of forces; center of gravity; moment of inertia; rectilinear and curvilinear motion and the relation between such motion and the constraining and accelerating forces; dynamics of a rigid body; momentum and impact; work, energy, and power; mechanical advantage; friction; application of these principles and methods to the solution of numerous and varied engineering problems.

Resistance of Materials.—Elasticity of materials; stresses and strains; experimental laws; working strength for different materials; resistance of pipes and riveted joints; bending and resisting moment; shear, and elastic curve of cantilever, simple, restrained, and continuous beams; column formulas; torsion, and shafts; maximum internal stresses in beams; fatigue of metals; working strength for repeated stresses; resilience; reliability of the common theory of flexure as shown by actual experiment; design and strength of rolled and built beams and columns; specifications for materials and methods of testing.

Hydraulics.—Weight and pressure of water; head; center of pressure, velocity and discharge through orifices, weirs, tubes, pipes, conduits, canals, and rivers; measurement of pressure, velocity, and discharge; water power.

Projection Drawing.—Use of drafting instruments in the elements of mechanical drawing; geometric constructions; orthographic projection and representation of objects; sections; isometric drawing; cabinet projection and false perspective; use of water colors; conventional signs; drawings finished by line shading and by colors; miscellaneous plans and drawings.

Free-Hand Drawing.—Outline sketches; drawing from casts; sketches of machines, etc.

Lettering.—Plain and ornamental alphabets; titles and title pages; round and stump writing.

Descriptive Geometry.—Problems on the point, right line, and plane; single-curved surfaces; double-curved surfaces; development and intersections; shades and shadows; perspective; numerous and varied practical problems requiring the application of these principles and methods.

PHYSICS.

The course of physics embraces the kinds of work following:

1. Recitations, in which a text book is used as a guide.

2. Experiments in the physical laboratory, in which the student uses the instruments in testing the principles taught.

3. Illustrated experiments once each week, in which the more costly apparatus is used before the whole class in such experiments as are difficult to perform, and which are more effective when prepared for an audience.

4. Higher physical experiments by advanced classes, consisting either of researches, or of reviews of careful and elaborate experiments previously worked up by others.

The department of physics is provided with illustrative apparatus for use in the lecture-room, and with an extensive physical laboratory. The collection of instruments embraces acoustic apparatus from R. Koenig, of Paris; apparatus for heat and molecular physics from J. Salleron, of Paris; for light, optics, and electricity from Stoehrer, of Leipsic, and Browning and Newton, of London; pneumatic and electrical apparatus from E. S. Ritchie, of Boston; and a large number of pieces prepared at the mechanical shops of the University. It includes, also, Browning's electric lamp; and from Eliot Brothers, and other makers, London, resistance coils, galvanometers, ammeters, and voltmeters for higher researches in electricity.

A large dynamo in the machine shops is connected with the laboratory. A room on the ground floor is especially devoted to instruction in electrical measurements.

FRENCH AND GERMAN.

See *College of Literature and Science.*

THESIS.

In all the schools in this College a thesis is required as a condition of graduation. It must be an original composition of suitable length, upon a subject appropriate to the school, and approved by the professor in charge. It must be upon regulation

paper; must be illustrated with such photographs, drawings and sketches as may be needed; and embellished with a title page neatly printed or lettered with India ink or colors. It will be prepared during the latter part of the fourth year, and presented at the close of the course, after which it will be deposited in the library of the University.

CONTRIBUTIONS.

Our friends and students are invited to send us specimens of material and manufactures, and drawings, models, or photographs of machinery, bridges, and other engineering and architectural works. Finished and detailed working drawings, perhaps otherwise useless, may be of great value for instruction. Illustrated circulars and price lists of manufacturing firms are desired. Contributions will be labeled with donors' names, and placed in the museum of industrial arts for the inspection of students and the illustration of lectures.

SCHOOL OF MECHANICAL ENGINEERING.

OBJECT OF THE SCHOOL.

This school seeks to prepare students for the profession of mechanical engineering. It aims to fit them to invent, design, construct and manage machinery for any branch of manufactures. The state needs men who, to a thorough knowledge of the principles of machinery and of the various motors, add the practical skill necessary to design and construct the machines by which these motors are made to do work.

INSTRUCTION.

The instruction, while severely scientific, is thoroughly practical. It aims at a clear understanding and mastery of all mechanical principles and devices. Practice in the work-shop is required as one of the studies of the course.

In *principles* instruction is imparted by lectures, illustrated plates, and text books. Examples are given, showing the application of the theories and principles taught. Experiments in the testing of machines and motors are undertaken by the student.

In *practice* elementary forms are produced and projects are executed, in which the student constructs machines, or parts thereof, of his own designing, and from his own working drawings.

In *designing* the student begins with elements and proceeds with progressive exercises till he is able to design and represent complete machines.

MECHANICAL ART AND DESIGN.

An elementary course of shop practice has been carefully arranged, to familiarize the student with the forms of the parts of machines, and the mode of producing them. He is made familiar with all the ordinary cutting tools for iron or wood; with the form and condition for most effective work; with the machines and appliances by which they are put in action, and the instruments by which desired dimensions of product are obtained. This practice is obtained in the mechanical laboratory, and represents five different shops, viz.:

1. Pattern making.
2. Blacksmithing.
3. Foundry work.
4. Bench work for iron.
5. Machine tool work for iron.

In the 1st, the practice consists in planing, turning, chiseling, etc., in producing true surfaces in various forms in wood, and also in combining pieces by glue joint, etc., preliminary to correct pattern making. Patterns are finally made from which are cast pieces in iron, brass, etc., to be worked in the subsequent shops.

In the 2d, the student uses the forge and performs the various elementary operations, such as drawing, upsetting, bending, welding, etc.

In the 3d, the processes of moulding and casting are fully illustrated.

In the 4th there is first a course of free-hand bench work, the cold chisel and file being the only tools. After the hand and eye are sufficiently trained, fitting is begun, and the square, bevel, rule, compasses, and other auxiliary bench tools are used. Pieces are then fitted together by the file, with surfaces carefully finished.

In the 5th shop, the ordinary machine tools of the machine shop are used. The first practice employs these machines with their cutting tools or bits, in common operations, such as turning cylinders, discs, grooves, and fillets; boring, drilling, hand-turning, milling, planing, etc. Following this is a course of practice in fitting and finishing, in which calipers, rules, etc., are introduced and many of the various fittings employed in machinery are produced.

Previous to the shop-work, drawings of the pieces are made by the student, and the exact thing to be done is indicated; thus mistakes are avoided and practice facilitated.

The designing of such machine elements as pulleys, journal boxes, cranks, stuffing boxes, etc., cultivates a knowledge of proportion, and of its proper representation on paper. This course of elementary practice fits the student for the advanced shop practice in designing and construction of complete machines undertaken later in the course.

SPECIAL STUDIES.

Principles of Mechanism.—Relative motion of points in a system of connected pieces; motion independent of force; velocity ratio; investigation of motion of elementary parts of machines, as friction and non-circular wheels in rolling contact, cams and curves in sliding contact; teeth of wheels; spur, bevel, and screw gearing; link work; quick return motions; escapements; trains of mechanism; epicyclic trains; straight line motions.

Heat Engines.—The theories of air, gas, and steam engines; discussion of the various types; efficiency; proportions of steam boilers.

Hydraulic Engines and Wind Wheels.—Water-pressure engines; turbines and other water wheels; principles of design and efficiency. Theory of wind wheels; types and methods of governing; applications and comparative economy.

Machine Drawing.—Detailed designs of machines in whole or in part, such as links and valve motions, governors, steam boilers and engines, hydraulic presses, etc., with due consideration of strength, economy of construction, accessibility for repairs, etc.

Millwork and Machinery.—Methods of transmitting power; calculations for shafting, gearing, pulleys, belts, chains, wire and hemp rope; efficiency of various modes of transmission; best forms for long and short distances.

Dynamo-Electric Machinery.—The theory of dynamos and motors; principles of design; discussion of different types; efficiency; methods of governing; electric distribution of power; long distance transmission.

PROJECTS AND PRACTICE.

The shop practice of the first year has already been described. The second-year practice has for its object the production of some model or machine. The students, under the immediate direction of the teachers, carefully determine the dimensions and shapes best suited for the parts of some machine, produce them in neat and accurate working drawings, and make tracings for shop use. No student will commence his advanced shop practice without working drawings. The designs are such as require execution in iron, brass, and wood, for the purpose of giving variety of practice. The student is required to make the patterns and castings, finish the parts, and put them together in accordance with the working drawings and the required standard of workmanship. This acquaints him with the manner in which the mechanical engineer carries his design into execution, and teaches him so to shape, proportion, and dispose the parts of a machine as to secure the greatest economy of construction and durability in use. The practice of the third year includes the careful construction of mechanical movements, strictly in accordance with the theoretical determination of the form of the parts.

The steam engine, large drill press, one engine lathe, the hand lathes, the milling machine, and other machinery now in use, were designed here, and built in the shop by students in the department.

Besides these practical exercises, students of sufficient skill may be employed in such commercial work as is undertaken by the shop.

Experiments and Practical Problems —Experiments in the testing of prime movers and other machines, are undertaken by the students. They take indicator diagrams from the engines of the mechanical laboratories, analyze them, and by means of the friction brake determine the loss in engine friction. They make evaporative tests of boilers and determine the percentage of moisture in the steam by the use of the calorimeter.

APPARATUS.

This school is provided with plates and a cabinet of models illustrating mechanical movements and elementary combinations of mechanism. This collection is rapidly increasing by our own manufacture, and by purchase from abroad. It includes many of Rigg's models, and others from the celebrated manufactory of J. Schroeder, of Darmstadt, Germany. About two hundred valuable models from the United States Patent Office are also included in the cabinet.

The state has provided a large mechanical laboratory and workshop, furnished with complete sets of tools, benches, vises, and forges, with flasks, for moulding in sand, and cupola for melting iron.

STUDIES.

The studies are given by the year and term in the tabular view of the course. The order there indicated should be closely followed, that the student may avoid interference of his hours of recitation.

MECHANICAL ENGINEERING COURSE.

Required for the Degree of B. S., in School of Mechanical Engineering.

FRESHMAN YEAR.

1. Advanced Algebra; Projection Drawing; French or German; Shop Practice.
2. Trigonometry; Descriptive Geometry and Lettering; French or German; Shop Practice.
3. Analytical Geometry; Advanced Descriptive Geometry; French or German; Shop Practice.

SOPHOMORE YEAR.

1. Differential Calculus; Physics; French or German (optional); Mechanical Construction.
2. Advanced Analytical Geometry; Physics; French or German (optional); Mechanical Construction.
3. Integral Calculus; Physics; French or German (optional); Mechanical Construction.

JUNIOR YEAR.

1. Analytical Mechanics; Chemistry; Mechanism.
2. Resistance of Materials; Chemistry; Enginering Materials.
3. Millwork; Hydraulics; Chemistry or Geology or Astronomy.

SENIOR YEAR.

1. Mental Science; Heat Engines; Machine Drawing.
2. Constitutional History; Hydraulic Engines and Wind Wheels; Estimates.
3. Political Economy; Dynamo-Electric Machinery; Machine Drawing.

For the Junior class in the current year the course will not be changed, but remains as follows:

1. Mechanism; Analytical; Mechanics; Chemistry.
2. Physics; Resistance of Materials; Chemistry.
3. Physics; Advanced Descriptive Geometry and Hydraulics; Astronomy.

In this course the student will take two years of either French or German, but not one year of each.

SCHOOL OF CIVIL ENGINEERING.

OBJECTS OF THE SCHOOL.

The school is designed to furnish a course of theoretical instruction, accompanied and illustrated by a large amount of practice, which will enable the student to enter intelligently upon the various and important duties of the civil engineer.

INSTRUCTION.

While the instruction aims to be practical by giving the student information and practice directly applicable in his future professional work, the prime object is the development of the mental faculties. The power to acquire information and the ability to use it, is held to be of far greater value than any amount of so-called practical acquirements. The method of instruction consists in coupling the development of intellectual power with the acquisition of information directly useful to the civil engineer in his profession.

The instruction is given by lectures, text books, and reading, to which are added numerous problems and practical exercises, as will serve best to explain principles completely and fix them in mind. Models and instruments are continually used, both in lectures and by the students themselves.

APPARATUS.

For Field Practice.—The school is provided with the instruments necessary for the different branches of engineering field practice, including chains, tapes, compasses, plane tables, stadias, transits, levels, barometers, base rods and comparing apparatus, sextants, engineer's transits arranged for astronomical observation, and solar compass attachments for transit.

A portable altitude and azimuth instrument of the latest and best form, from the celebrated makers, Troughton & Simms, of London, is used for instruction in geodesy and practical astronomy. It is read by micrometer microscopes to single seconds, both of altitude and of azimuth. The astronomical observatory is provided with an equatorial telescope, an astronomical transit, with attachment for zenith telescope work, a chronometer, and a set of meteorological instruments.

To facilitate practice in surveying, an area has been specially prepared in which the difficulties of plane surveying are presented to the beginner as he is able to meet them, and where he is taught practical methods of overcoming them. All possible distances, directions, areas, and elevations are accurately known; hence the instructor knows beforehand the precise result which the student should obtain. Not a single problem or exercise is given in which there is wanting an absolute check upon the accuracy of the work. This is an incentive to the student and enables the teacher to show him the degree of accuracy attained and also to point out errors.

For the Lecture Room.—The school has numerous models for illustrating its specialties, including models of bridges, roofs, joints, and connections; a large collection of drawings, photographs, and photo-lithographs of bridges, roofs, and engineering structures, numerous railway maps, profiles, etc.; maps of government surveys, and plans and specifications. It has access to a complete set of lithographs of the lectures and drawings used in the government polytechnic schools of France. The industrial museum contains a large collection of building materials, of wood, brick, stone, and iron. The testing laboratory has a machine with a capacity of a hundred thousand pounds for tension, compression, or bending; also a cement-testing machine.

The library is well supplied with the best and latest periodicals and books upon engineering subjects, to which the students have full access.

PRACTICE.

In the fall term of the second year the class solves numerous problems in distances, areas, etc., using the chain, compass, and plane table. During the winter term the students have practice with all the engineering instruments and solve problems with the transit, stadia, level, and sextant. In the spring term the class makes a topographical survey of a locality, using the stadia and plane table as in the United States surveys.

In the fall term of the third year the class executes a project in railroad engineering, which consists of preliminary surveys, location, staking out, drawings, computation of earth work, etc. The preliminary survey consists in an examination of the locality, and in running tangent lines, with leveling and topographical sketching. The location consists in running the line over the route decided upon, with all the necessary measurements and calculations for establishing the grade, setting slope stakes, etc. The drawings include alignment, profile, etc.

In the fall of the fourth year the student has practice with the alt-azimuth instrument in reading horizontal and vertical angles, and in determining latitude; with the astronomical transit in finding time; with the sextant in getting time and latitude; with the aneroid and mercurial barometers in measuring heights, and with the precise level in leveling.

SPECIAL STUDIES.

Astronomy.—Descriptive astronomy is given with a text book. The equatorial telescope is in constant use during favorable weather. Practical astronomy is given by lectures and the use of the alt-azimuth instrument, the astronomical transit, the sextant, and the engineer's transit, adapted to astronomical calculations. The work includes the use and adjustment of instruments, and the determination of time, latitude, longitude, and azimuth.

Bridges.—The instruction in bridges occupies two terms. The first is devoted to the calculations of the strains in the various forms of bridging, by algebraic and graphical methods, consideration being given to weights of bridge and train, and force of wind. The second is devoted to designing trusses, proportioning sections, and working out of details. Each student designs and makes a full set of drawings of a bridge.

Geodesy.—From a text book studies are made upon the instruments, methods, formulas, etc., employed in spirit, barometrical, and trigometrical leveling; the apparatus, methods, etc., used in measuring base lines; the location and construction of stations; the method of measuring the angles and reducing the triangulations; the principles of projecting maps; the means employed in running parallels and meridians.

Land Surveying.—Areas and distances by chain, compass, and plane table; U. S. public land surveys, including legal points involved in the re-establishment of boundaries; magnetic variation and determination of true meridian.

Masonry Construction.—Requirements and methods of testing stone, brick, cement, and lime; composition, preparation and strength of mortar and concrete; classification, construction, strength, cost of stone and brick masonry; foundations under water; theory of stability; cost, etc., of dams, retaining walls, bridge piers, bridge abutments, culverts, and arches.

Railroad Engineering.—Instruction is given from text book and by field practice. In the former are studied the principles of economic location, particularly the effect of distance, grade, and curve upon operation; the inter-adjustment of grades and curves; also the mathematical theory of curves, turnouts, crossings, and the calculation of earth work. In field work the class makes at least two preliminary surveys and one location of a short line, of which each student is to present a complete set of notes, calculations, maps, etc.

Topography.—Use of stadia, plane table, and level in topographical surveying. Topographical drawing includes sketching, platting field notes, conventional signs, and city and county maps.

Theory of Engineering Instruments.—Examination of workmanship and design; testing instrument maker's adjustments; making engineer's adjustments; determination of areas with transit; inaccessible and air line distances with transit; profiles and practice with level; heights and distances with stadia; measurement of angles with sextant, etc.

COURSE OF STUDY.

The complete course occupies four years. The several subjects included therein are shown in the list below. Each study requires five recitations per week, and should receive daily from three to four hours of the student's time. Some of the class exercises occupy one hour daily, while others require two hours; as a rule the latter require less time for preparation. The order of studies as given by the year and term in the tabular view of the course, should be closely followed to avoid interference in hours of recitation, and because the studies are there given in the order which best meets the preparation of the student.

CIVIL ENGINEERING COURSE.

Required for the degree of B. S., in School of Civil Engineering.

FRESHMAN YEAR.

1. Advanced Algebra; Projection Drawing; French or German; Shop Practice.
2. Trigonometry; Descriptive Geometry and Lettering; French or German; Shop Practice.
3. Analytical Geometry; Advanced Descriptive Geometry; French or German; Shop Practice.

SOPHOMORE YEAR.

1. Differential Calculus; Physics; French or German (optional); Land Surveying.
2. Advanced Analytical Geometry; Physics; French or German (optional); Theory of Instruments.
3. Integral Calculus; Physics; French or German (optional); Topography.

JUNIOR YEAR.

1. Analytical Mechanics; Chemistry; Railroad Engineering.
2. Resistance of Materials; Chemistry; Roads and Streets.
3. Astronomy; Hydraulics; Chemistry or Geology.

SENIOR YEAR.

1. Mental Science; Geodesy; Masonry Construction.
2. Constitutional History; Bridge Analysis; Mine Attack.
3. Political Economy; Bridge Construction; Sewerage.

For the Junior class in the current year the course will not be changed, but remains as follows:

1. Analytical Mechanics; Chemistry; Railroad Engineering.
2. Resistance of Materials; Chemistry; Physics.
3. Advanced Descriptive Geometry and Hydraulics; Astronomy; Physics.

In this course the student will take two years of either French or German, but not one year of each.

SCHOOL OF MINING ENGINEERING.

OBJECT OF THE SCHOOL.

The school has been established to meet the growing demand of a very important industry for thoroughly trained engineers, fitted to solve the numerous perplexing problems which are constantly arising in all mining work. The subjects of the discovery, opening, economical working and proper ventilation of mines, the prevention of accidents, transportation above and below ground, treatment of products, with many others which fall within the scope of the mining engineer, can be mastered only by a careful study of facts and principles. This is the proper foundation for the practical work of the profession, and it is the aim of this school to present this in the most complete and thorough manner.

INSTRUCTION.

It is important that a broad basis be laid by way of general preparation for the more technical studies here included. Whatever of general culture the student may obtain before entering the University will not come amiss, and, although the requirement is not made, it is advised that all who can do so should acquire a reading knowledge of French or German before beginning this course.

The course comprises the greater part of the pure and applied mathematics of the course in mechanical and civil engineering. Much time is devoted to chemistry and geology, with the addition of metallurgy and other technical studies peculiar to mining engineering.

Students who are graduated from this school are not supposed to be familiar with all the details of mine management from actual experience, but they will have obtained such a knowledge of the principles underlying all successful practice, and such familiarity with the science of mining in all its branches, that the art may be acquired with the minimum of practice.

Lectures are given when desirable, but these are to be regarded as supplementary to other modes of instruction which are made to conform as closely as possible to the routine of the engineer in practice. In every detail the student is made to feel that he is dealing with the actual problems which he will meet in his professional work.

Plans, estimates, drawings, reports, and calculations, based upon data obtained in the student's own experience, are constantly required, and no pains is spared to familiarize each member of the class with the duties and responsibilities of every grade, from miner to manager.

COURSE OF STUDIES.

In the first two years the work is similar to that required in the course of civil engineering, but more time is given to chemistry. In the third year geology and mining engineering, with assaying and metallurgy, take the place of special technical studies in the other engineering courses. In the fourth year, with the exception of two terms of prime movers taken with the students in mechanical engineering and some studies of general character, the work is strictly technical.

SPECIAL STUDIES.

Mine Surveying and Reconnoitering.—History, uses and adjustments of instruments; solar compass and various solar attachments; practical problems involving the running of surface lines and lines under ground; connecting of surface and underground surveys; practice of U. S. deputy surveyors. Details of mine surveys, setting of bench marks; lines through shafts, drifts, stopes, etc.; keeping of records, plans, etc. Surveys required to determine best locations for test borings, shafts, adits, etc.; methods of reconnoitering.

Mining Engineering.—1. Attack.—Tools, implements, machinery and explosives, with principles governing their use. Methods of boring, sinking and driving through hard, soft, wet, dry, loose, or compact material.

2. *Timbering.*—Objects, methods, etc.; framing, fitting, bracing.

3. *Transportation.*—Underground haulage, hoisting, use of chutes; apparatus and applicances, cars, tracks, switches, cables, cages, motive power, connections; haulage in inclines, "man-engines," etc.

4. *Drainage.*—Pumps, pumping, sumps, ditches; drainage of working shafts and inclines.

5. *Ventilation.*—Means and appliances. Importance of subject; laws of various states and countries. Discussion of fundamental principles and practical applications, with results.

6. *Buildings and Machinery.*—Hoisting apparatus, air compressors, power drills, etc.

7. *Exploration.*—To determine general character and extent of deposits in advance of development: methods and aims.

8. *Development.*—Blocking out of deposits to prove values of partly explored ground, and to prepare for further explorations.

Exploitation.—Laying out work; winning of coal, ore, etc.; stoping, overhand and underhand; winzes and intermediate levels; economical handling of product. Methods to be employed under various conditions.

Dislocations.—Faults, upthrows, downthrows, feeders, leaders, rolls, swells, etc. Means of overcoming difficulties.

Dressing of Products.—Coal screening and washing; sampling and grading ore; assorting, crushing, spalling, cobbing, concentrating.

Mining Machinery.—Elements of construction, designing of plant, combination of parts; setting, arranging, adjusting. Preservation and operation, general economy.

Organization—Economy of management. Secondary superintendence; division of labor and adjustment of responsibility. Prevention of accidents.

Administration.—Review of principles. System of reports from sub-officers, and tabulation of records. Accounts, forms, analyses, pay-rolls, cost sheets, etc. Letting and measuring contracts. Miscellaneous details.

Engineering Geology.—Applications of geology to engineering and mining. Nature and distribution of deposits of economic value, as coal, water, metallic ores, etc.; advanced structural geology and lithology; discussion of principles underlying successful working of mines, placing of foundations, setting of machinery, and erection of structures in various situations. Relation of geological structure to drainage, economy of working, selection of points of attack, methods of exploration, etc.

APPARATUS.

The department has a valuable collection of models of mining and metallurgical machinery.

The newly equipped laboratory now contains a very complete line of illustrative machinery, designed for practical use, and covering a wide range of metallurgical processes. The machines are operated by steam power, and include apparatus for crushing, screening, washing, concentrating, leaching, precipitating, and many other methods of ore treatment of the latest modern types.

In the manipulation of these machines, and the tests made on a working scale, the student is afforded opportunity for

practice illustrative of the class-room work. The plant consists of a Dodge ore-crusher, a pair of Cornish rolls, elevator with deflecting spouts, automatic sampler, revolving screens, separators, rotating table, jigs, etc.; chlorine generator, tanks, vats and troughs, gas and blast furnace, with suitable appliances so arranged that they may be used together or separately as occasion may require.

The extensive apparatus of other departments is equally available for this.

COURSE IN MINING ENGINEERING.

Required for the Degree of B. S., in School of Mining Engineering.

1. Advanced Algebra; Projection Drawing; Chemistry; French or German.
2. Trigonometry; Descriptive Geometry and Lettering; Chemistry; French or German.
3. Analytical Geometry; Free-hand Drawing; Chemistry; French or German.

Sophomore Year.

1. Land Surveying; Differential Calculus; Physics.
2. Theory of Instruments; Advanced Analytical Geometry; Physics.
3 Topographical Surveying; Integral Calculus; Physics.

Junior Year.

1. Mine Attack; Analytical Mechanics; Mineralogy.
2. Geology; Resistance of Materials; Assaying.
3. Geology; Mining Surveying; Metallurgy.

Senior Year.

1. Mining Engineering; Heat Engine; Mental Science.
2. Engineering Geology; Hydraulic Engines and Wind Wheels; Constitutional History.
3. Mining Engineering; Mine Administration; Political Economy.

SCHOOL OF ARCHITECTURE.

OBJECT OF THE SCHOOL.

The object of this school is to prepare students for the practice of the profession of architecture. A thorough knowledge of scientific principles applied to construction, ability and refined taste in design, a technical acquaintance with the processes of the various building trades, and some skill in the use of tools, are necessary for this, and are made prominent objects of the course of instruction.

The course of study comprises the theory and practice of construction, the history and esthetics of architecture, draughtsmanship, and the usual work of office practice, so far as this can be taught in a professional school. Technical instruction is

imparted by recitations from text books, lectures, and especially by the application of principles to practical cases; engravings, photographs, and models are employed as illustrations.

Drawing is practiced during the entire course, and designing is introduced early, so that original work is done whenever possible. Drawing from casts and modeling in clay give command of the hand, facility in sketching, and a knowledge of beautiful forms.

Shop practice comprises elementary forms and joints in carpentry and joinery, and experience in cabinet-making and turning, as well as the construction of models of architectural structures at a reduced scale.

SPECIAL STUDIES.

Elements of Drawing.—Lectures; designs for specified problems; outline sketches and finished drawings from casts, in pencil, crayon, charcoal, etc.

Water Color Painting.—Practice in elementary landscape painting and sketching from nature in water colors.

Wood Construction.—Materials and tools; frames, floors, roofs, ceilings, domes, heavy frames, roof trusses, stairs, doors, windows, cornices, etc.; external and internal finish.

Stone Construction.—Materials, mortars, and cements; concrete; walls, foundations, arches, and vaults; tools and processes of stone-cutting.

Brick Construction.—Materials, bonds, walls, arches, vaults, centerings, terra cotta, tiles.

Metal Construction.—Manufacture and uses of cast iron, wrought iron, and steel; forms employed in construction; connection by joints, rivets, pins, etc.; columns, lintels, girders, and beams.

Tinners' Work, Slating, Plastering, etc.

Sanitary Construction.—Principles of sanitary science; plumbing, water supply, and sewerage; uses of engineering instruments in surveys for drains, buildings, etc.

Architectural Drawing.—Preparation of a set of drawings as practiced in offices; conventional coloring; drawing the orders; finishing drawings in line, ink, sepia, and color; architectural shades and shadows.

Architectural Perspective.—Study and application of the practical methods explained in Ware's Perspective; original designing in perspective applied to practical problems.

Architectural Designing.—Original sketches and finished designs for specific projects. Several problems are given each term, progressing from simple to complex. Drawings neatly finished in shade and colors.

History of Architecture.—Careful study of the leading historical styles, their derivation, characteristics, construction, applications; most important monuments of each style. Especial prominence is given to those ideas in design which might be useful and suggestive in the development of American architecture.

Esthetics of Architecture.—Study of principles of esthetics as applied to architecture and allied arts; proper treatment of buiding materials and of the different portions of a building, as well as of its general form; problems requiring original design.

Estimates.—Methods of measuring builders' work; cost of labor and materials; preparation of estimates for numerous practical examples.

Agreements and Specifications.—Study of principles and examples; preparation of a set of papers for letting contracts for building.

Heating and Ventilation.—Heat, production, losses through walls; flow of air in ducts; obstructions; heating by fireplaces, furnaces, stoves, steam,

and hot water. Ventilation, requirements and methods; application to numerous problems.

Graphical Statics.—Elements; equilibrium polygon and its applications; loads and wind pressures on roofs: typical forms of roof trusses; examples; determination of strains in members, sectional dimensions, and details of connections at the joints; construction and use of graphical tables.

SPECIAL EXERCISES.

Specimen plates or tracings are required of each student at the close of each term in drawing or designing, to form a part of his record. These must be made in accordance with the materials and dimensions prescribed, and be finished as directed.

SHOP PRACTICE.

To give a practical knowledge of various kinds of work, three terms are devoted to a course of instruction, which all architectural students are required to pursue, unless they have previously had equivalent practice and obtain credit therefor.

First Term.—Carpentry and Joinery; planing flat, square, and octagonal prisms and cylinders; framing with single, double, and oblique tenons; splices, straight and scarfed; mitre, lap, and gained joints; through and lap dovetails; mouldings, mitres, mitre-box, and panels.

Second Term.—Turning and Cabinet-making; glue-joints; mouldings; inlaying; ornamental veneering; turning cylinders, balusters, ornamental forms, capitals, rosettes, vases, etc.

Third Term.—Construction of portions of buildings or of complete architectural structures at a reduced scale; roof trusses, stairs, frames of wooden buildings, etc., made from drawings.

APPARATUS.

A collection of casts donated by the Spanish government, and another of casts of various architectural details from Lehr, of Berlin, belong to the Schools of Architecture and Design; models of ceilings, roof trusses, stairs and Schroeder's models of joints in wood-work and of constructions in cut-stone work, in the engineering museum.

The School of Architecture possesses a large and rapidly increasing collection of engravings and photographs illustrating the history of architecture and art and their practical applications in all ages. The collection is mounted on about 5,000 cards, 11x14 inches, and is classified in two parts, one for the use of the class in history of architecture, the other for use by the various classes in designing; both series are minutely subdivided to facilitate easy reference, and are always open for free use, thus forming a most valuable working library. The plates issued by the most important American architectural journals are to be found here.

The casts, photographs, etc., of the art gallery. In the University library are many of the best English, German, French, and American architectural works and periodicals.

A large and well-equipped carpenter and cabinet shop, containing cabinet benches and sets of fine tools for class in shop practice; foot and power lathes; machine saws, planer, moulder, tenoner, shaper, jig saw, etc.

The use of the large testing machine, capacity 50 tons.

ARCHITECTURAL COURSE.

Required for the Degree of B. S., in School of Architecture.

FRESHMAN YEAR.

1. Advanced Algebra; Projection Drawing; French or German; Shop Practice.
2. Trignometry; Descriptive Geometry and Lettering; French or German; Shop Practice.
3. Analytical Geometry; Advanced Descriptive Geometry; French or German; Shop Practice.

SOPHOMORE YEAR.

1. Differential Calculus; Physics; French or German (optional); Wood Construction.
2. Advanced Integral Geometry; Physics; French or German (optional); Stone, Brick, and Metal Construction.
3. Integral Calculus; Physics; French or German (optional); Sanitary Construction.

JUNIOR YEAR.

1. Analytical Mechanics; Chemistry; Architectural Drawing.
2. Resistance of Materials; Chemistry; History of Architecture; Architectural Drawing.
3. Graphical Statics; History of Architecture; Astronomy, or Geology, or Drawing and Modeling.

SENIOR YEAR.

1. Mental Science; Esthetics of Architecture; Architectural Perspective.
2. Constitutional History; Designing; Heating and Ventilation.
3. Political Economy; Designing; Estimates and Specifications.

For the Junior class in the current year the course will not be changed, but remains as follows:

1. Architectural Drawing; Analytical Mechanics; Chemistry.
2. History of Architecture; Resistance of Materials; Physics.
3. History of Architecture; Advanced Descriptive Geometry; Physics.

BUILDERS' COURSE.

The Trustees permit persons desiring to fit themselves for foremen and builders to take a course of a single year, pursuing only the selected studies of the architectural course prescribed in the following course of study.

For admission to the builders' course, students must pass the examinations in English grammar, arithmetic, geography, and U. S. history, but are not required to pass in the studies of the preliminary year, unless they wish to pursue the studies other than those prescribed in the following list. A special fee of $5 per term is charged in addition to the other University fees.

BUILDERS' COURSE OF STUDY.

1. Wood Construction; Projection Drawing; Shop Practice (Carpentry and Joinery).
2. Stone, Brick, and Metal Construction; Architectural Drawing; Shop Practice; (Stair Building).
3. Graphical Statics; Architectural Designing; Shop Practice (Cabinet Making).

COLLEGE OF NATURAL SCIENCE.

SCHOOLS.

CHEMISTRY, NATURAL HISTORY.

FACULTY AND INSTRUCTORS.

SELIM H. PEABODY, Ph. D., LL. D., REGENT.
STEPHEN A. FORBES, Ph. D., *Dean;* Zoölogy and Entomology.
THOMAS J. BURRILL, Ph. D., Botany and Horticulture.
SAMUEL W. SHATTUCK, C. E., Mathematics.
EDWARD SNYDER, M. A., Modern Languages.
JAMES D. CRAWFORD, M. A., History.
PETER ROOS, Industrial Art.
JAMES H. BROWNLEE, M. A., Rhetoric and Oratory.
CHARLES W. ROLFE, M. S., Geology.
CURTIS B. HOPPIN, Lt. U. S. A., Military Science.
ARTHUR W. PALMER, Sc. D., Chemistry.
HOWARD S. BRODE, Asst. in Zoölogy.
CHARLES E. BOGARDUS, B. S., Asst. in Chemistry.
HARRY S. GRINDLEY, B. S., Asst. in Chemistry.
FANNY M. RYAN, Instructor in French.

ADMISSION.

Candidates for the College of Natural Science should be eighteen years of age, and must pass satisfactory examinations in the common school branches, and in the studies of the preliminary year.

Their preparation should be especially good in the scientific studies of the preliminary year. Practice in the drawing of natural objects will greatly facilitate the students progress. A knowledge of the Latin language is a good preparation for the mastery of the scientific terms which must be learned in the course.

SCHOOL OF CHEMISTRY.

This school aims to impart such knowledge of chemistry as will enable the student to apply the principles of the science to the related arts, and as will fit him for original research, or for the business of the druggist, pharmaceutist, and practical chemist.

INSTRUCTION.

The first term of the first year is occupied by text-book instruction, lectures, and experiments in the laboratory illustrating the elementary principles of chemistry, chemical physics, and inorganic chemistry. The second term is devoted to laboratory practice in qualitative analysis. In the third term recitations upon organic chemistry and illustrative synthetic experiments alternate with laboratory practice in qualitative analysis. During the next three years, besides the required recitations, each student is expected to work two hours daily in the laboratory. Before graduation, each is required, at the end of his course, to make an original investigation and present a thesis.

Students who pursue chemistry as a part of other courses work at least two consecutive hours daily, during such time as their specialties may require.

Deposits.—At the beginning of each term of laboratory practice, each student will deposit twelve dollars with the business agent of the University. At the end of the term, the balance left, after deducting payment for gas, chemicals and apparatus used, will be refunded.

Five courses of laboratory work have been arranged, as follows:

CHEMICAL COURSE.

FIRST YEAR.

First Term.—General, theoretical, and applied chemistry. Lectures, text-book, and illustrative experiments in the laboratory.

Second Term.—Qualitative analysis. Test and separation of the bases and acids. Examination of simple substances.

Third Term.—Qualitative analysis completed. Examination of natural and artificial substances. Organic chemistry. Text book and recitations, with illustrative synthetic experiments in the laboratory.

SECOND YEAR.

First Term.—Quantitative analysis. Class room and laboratory exercises. Gravimetric analysis of salts of known composition; sodium chloride, sodium phosphate, copper sulphate, calcite, ammonium ferric sulphate. Volumetric analysis; acidimetry and alkalimetry, etc.

Second Term.—Quantitative analysis of compounds of unknown composition. Limestone, clay, feldspar, iron ore. Lectures in agricultural chemistry begun.

Third Term.—Examination of agricultural products. Analysis of soil. Valuation of commercial fertilizers—phosphates, nitrogenous matters, and potash salts. Analysis of fodders, grains, and milk. Examination of alcoholic liquors.

THIRD YEAR.

First Term.—Organic chemistry. Principles and practice of organic synthesis. Preparation of carbon compounds, and study of their composition and properties.

Second Term.—Assaying. Dry assays of gold, silver, lead, and tin ores. Valuation of bullion. Blowpipe assays of silver ores. Volumetric assays of ores of silver, lead, copper, zinc, etc. Electrolytic separation of the metals.

Third Term.—Agricultural chemistry completed. Ultimate organic analysis. Determination of carbon, hydrogen, nitrogen, chlorine, phosphorus, and sulphur in carbon compounds. Metallurgy.

FOURTH YEAR.

First Term.—Gas analysis. Calibration of eudiometers. Analysis of air from lungs, atmospheric air, artificial gaseous mixtures, crude coal gas, furnace gases, etc. Analysis of waters, mineral and potable. Chemical theory.

Second Term.—Toxicology. Micro-chemistry of poisons. Tests for mineral and vegetable poisons. Separation from organic mixtures.

Third Term.—Original research. Thesis.

PHARMACEUTICAL COURSE.

FIRST YEAR.

Same as in chemical course throughout the year.

SECOND YEAR.

First Term.—Same as in chemical course.

Second Term.—Quantitative analysis of commercial drugs, bismuth subnitrate, tartar emetic, sodium bicarbonate, potassium iodide, sodium bromide, cream of tartar, ammonium carbonate, potassium nitrate. Volumetric determinations.

Third Term.—Same as in chemical course, substituting materia medica for agricultural chemistry.

THIRD YEAR.

First Term.—Same as in chemical course.

Second Term.—Isolation and quantitative estimation of active proximate principles of vegetable drugs—oils, resins, gums, alkaloids, glucoses, etc.

Third Term.—Practice of pharmacy. Reading and compounding prescriptions. Preparation and valuation of tinctures, extracts, syrups, etc. Examination of commercial organic drugs.

FOURTH YEAR.

First Term.—Analysis of urine, normal and pathological. Examination of waters, mineral and potable. Alcoholic liquors, proprietary articles, etc.

Second Term.—Toxicology. Micro-chemistry of poisons. Separation of poisons from organic mixtures.

Third Term.—Original research. Thesis.

COURSE IN AGRICULTURAL CHEMISTRY.

A. Arranged for students who desire to make a specialty of chemistry in its application to agriculture and allied branches.

FIRST YEAR.

Same as in chemical course.

SECOND YEAR.

First Term.—Same as in chemical course.

Second Term.—Lectures and class work in agricultural chemistry. Analysis of feldspar, soil, ash of plants, drain waters.

Third Term.—Agricultural chemistry. Analysis and valuation of commercial fertilizers, and manures, and material used for manures, apatite, phosphates, guanos, nitrates, ammonia salts, animal matters, and potash salts.

THIRD YEAR.

First Term.—Proximate analysis of farm products and cattle foods; grain, roots, fodders, commercial foods, etc.

Second Term.—Analysis of milk, butter, and cheese. Determination of sugars by polariscope and by titration. Examination of alcoholic liquors.

Third Term.—Original research.

B. Arranged especially for regular students in the School of Agriculture.

FIRST YEAR.

Same as in chemical course.

SECOND YEAR.

First Term.—Same as in chemical course.

Second Term.—Agricultural chemistry. Lectures and class work. Analysis of feldspar, soil, plant ash, fertilizers and manures, and the materials used in their productions; phosphates, nitrogenous matters, and potash salts.

Third Term.—Agricultural chemistry. Lectures and class work. Analysis of farm products—grains, roots, fodders, commercial foods, milk, butter, and cheese.

METALLURGICAL COURSE.

FIRST YEAR.

First Term.—Same as in chemical course.

Second Term.—Same as in chemical course.

Third Term.—Same as first term, second year chemical course.

SECOND YEAR.

First Term.—Analysis of ores, iron, manganese, zinc, copper, lead, nickel, etc.

Second Term.—Assaying. Same as in chemical course. (Students who pursue this term's work must have one term of mineralogy.)

Third Term.—Analysis of refractory materials, fluxes, and slags.

THIRD YEAR.

First Term.—Gas analysis. Same as in chemical course. Study of furnace gases.

Second Term.—Analysis of fuels—wood, anthracite and bituminous coals, coke; determination of heating power.

Third Term.—Analysis of cast iron, wrought iron, and steel. Determinations of sulphur, silicon, manganese, phosphorus, and the forms of carbon.

The above course has been arranged for students desiring to make a specialty of chemistry in its applications to metallurgy. For students in the School of Mining Engineering the work of the first year described, together with the following, is presented:

SOPHOMORE YEAR.

First Term.—Analysis of ores—iron, zinc, copper. Analysis of crude metals—iron, determination of sulphur, silicon, manganese, phosphorus, and the forms of carbon.

JUNIOR YEAR.

Second Term.—Assaying, same as in chemical course, third term. Metallurgy, with laboratory practice. Analysis of fluxes, slags, fuels, etc.

APPARATUS.

The facilities offered for obtaining a practical knowledge of chemistry are believed to be unsurpassed by those of any other institution in the West. A large laboratory building, 75x120 feet, and four stories in height, has been erected at an expense, including furniture, of $40,000.

The basement contains furnace room for assaying and metallurgical operation; a mill room for storing and crushing ores; and a large room for the manufacture of chemicals and pharmaceutical preparations.

The first story contains a lecture room capable of seating 200 persons, and a qualitative laboratory, which, when completed, will accommodate 152 students; one hundred and four desks are now fitted, each having an evaporating hood, gas, and water. There are a spectroscope table, a blow-pipe table for general use, and a store-room stocked with apparatus and chemicals.

The second story, designed for the use of advanced students, has the following apartments: A lecture room with mineralogical cabinet and furnace models for illustrating lectures on metallurgy; laboratory for students in agricultural chemistry; large laboratory for quantitative analysis, now containing sixty-four desks; a balance room, containing chemical balances of the manufacture of Bunge (short beam), Becker & Son, Troemner; a pharmacy, furnished like a drug store, with shelves, drawers, prescription desk, balance, graduates, etc., and containing a full set of drugs and pharmaceutical preparations made in the laboratory by students in pharmacy; private laboratory for instructors; a gas analysis room, entirely cut off from the system of heating and ventilating, to avoid undue fluctuations of temperature, furnished with a table specially constructed, and containing a full set of Bunsen's gasometric apparatus, an inductive coil, battery, murcury, etc.; and a store room with apparatus for all kinds of work in quantitative analysis.

The apparatus for general use includes a large platinum retort for the preparation of hydrofluoric acid; a Geissler's mercurial air pump; Hoffman's apparatus for illustrating the com-

position of compound gases; a Soliel-Scheibler's saccharimeter; an excellent set of areometers; a Hauy's goniometer; a camera with Ross lenses, a Ruhmkorff's coil; galvanic batteries; a galvanometer; a spectroscope; microscopes; gas combustion furnaces for organic analysis, etc.

On the mansard floor ample provision has been made for the study of photography.

COURSE IN CHEMISTRY.

Required for degree of B. S., in School of Chemistry.

FIRST YEAR.

1. Chemistry, general and applied; Trigonometry; Free-hand Drawing; French.
2. Chemistry and Laboratory Practice; Conic Sections; Free-hand Drawing; French.
3. Organic Chemistry and Laboratory Practice; Free-hand Drawing; Calculus; French.

SECOND YEAR.

1. Chemistry and Laboratory Practice; Physiology or Botany; German.
2. Agricultural Chemistry and Laboratory Practice; Microscopy; German.
3. Agricultural Chemistry and Laboratory practice; Vegetable Physiology; German.

THIRD YEAR.

1. Laboratory Practice; Mineralogy; German.
2. Laboratory Practice; Physics; German.
3. Laboratory Practice; Physics; German.

FOURTH YEAR.

1. Laboratory Practice; Mental Science; Physiography.
2. Laboratory Practice; Constitutional History; Logic.
3. Laboratory Practice; Political Economy; Geology.

Students who are candidates for the degree of B. S. in the School of Chemistry must perform the laboratory work as laid down in some one of the prescribed chemical courses.

School of Natural History.

The School of Natural History is especially intended to provide a general preparation for the professions and business pursuits requiring more of an acquaintance with the methods and facts of science than with those of literature. More specifically, it is designed:

To afford a thorough and liberal education with a basis in the sciences and modern languages.

To prepare for the teaching of the natural history subjects either in the higher schools or as a professional specialty.

To lay a liberal foundation in biological work and study for a course in medicine.

To prepare for the pursuit of specialties in zoölogy, botany, general biology, and geology, as a scientific career.

The natural history course of four years leads to the degree of bachelor of science. It is distinguished by unusually full instruction in the biological subjects and in the other modern sciences, combined with a thorough course in French and German. It offers two hours a day for a year in botany, and the same each in zoölogy and general or special biology; a term each of entomology, human anatomy and physiology, microscopy, and mineralogy; two terms each of geology and physics; a year of chemistry; a term each of physiography and astronomy; a year each of free-hand drawing and French; five terms each of German and history; one term each of conic sections, trigonometry, political economy, mental science, and logic; and the equivalent of twenty-nine weeks' work, for one hour a day, in practical English composition and oratory.

In zoölogy, botany, general biology, entomology, geology, microscopy, chemistry and mineralogy, the subjects are developed by a thorough course of laboratory work and practice by the students, done under the guidance and criticism of an instructor, supplemented by lectures and the study of text.

The biological work of the senior year is rendered so far elective in character that it may be made to lead towards the study of medicine, natural history teaching, or the pursuit of a special scientific career.

Special and elective study is permitted and provided for, but does not lead to a degree.

Graduates in literary courses who wish also the advantages of a scientific course, may pursue elective work, or may usually take in two years the degree of bachelor of science by carrying the scientific studies of the course alone.

SPECIAL STUDIES.

Botany.—Candidates for admission are examined upon Gray's Lessons in Botany, or an equivalent, and are expected to be able to analyze common wild flowers. Beginning with the fall term of the sophomore year, systematic and structural botany is continued by recitations, illustrated lectures, and laboratory work upon fresh, dried, and alcoholic specimens. Students, throughout the course, are required to observe for themselves, and to make notes and drawings of their investigations. A series of these drawings, upon a uniform scale, together with the accompanying descriptions, is deposited in the laboratory. Each student provides himself with suitable pencils, drawing pens, paper, needles in handles, glass slides for mounting objects, and a razor for making thin sections.

The first half of the fall term is devoted to the study of the natural orders of flowering plants, their geographical distribution, importance, etc., together with a history of a few special plants and their products. During this time, students analyze in the laboratory flowering plants of the more difficult orders, compositæ, gramineæ, etc., especially such as are best obtained in autumn. During the last half of the term the general morphology of plants, including vegetable anatomy and histology, is studied, practical laboratory work with the microscope being the basis of the instruction.

The special morphology of the great divisions of the vegetable kingdom, their chief characteristics, their classifications, and the identification of species of flowerless plants, constitute the work of the second term. Special attention is given to injurious fungi. Aquaria furnish numerous kinds of fresh water algæ, and the greenhouses supply specimens in nearly all the groups studied.

Vegetable Physiology is studied in the third term. The instruction is given by lectures or text-book, and by experimental practice. The work includes: The food of plants and its absorption and assimilation; fluids, their kinds, uses, causes of movement, transpiration, respiration, etc.; processes, peculiarities, and results of growth; relations and effects of temperature, light, gravitation, etc.; self and cross-fertilization, movements, "sleep of plants," tendrils, climbing vines, etc.

For illustration the school has a collection of about one thousand species of the plants indigenous to the State of Illinois, including a very nearly complete set of the grasses; a collection of Rocky mountain and western plants; and many others obtained by exchange from various parts of the United States. A collection of fungi contains numerous species. The greenhouses and out-door plantations furnish a large amount of illustrative material for the classes. Enlarged *papier maché* models of flowers and fruits, exhibiting structure and development, are in the cabinet.

Throughout the course the attempt is made to introduce the students to the literature of the various subjects and to acquaint them with the authorities for the facts stated.

Microscopy.—Students have in this study further practice in the use of the compound microscope, the management of light for particular purposes, the testing of lenses, measurement of magnifying powers and angles of aperture, drawing and photographing objects, the preparation and mounting of material, etc. The application is mainly, but not exclusively, devoted to vegetable tissues and products.

The special aim is to afford the opportunity of gaining a skillful and rational use of the instrument, and an acquaintance with the best methods and processes of preparing and

mounting objects. Students provide themselves with slides and covers, needles, forceps, brushes, and razors. Microscopes, section cutters, turn tables, etc., are furnished by the University.

About thirty compound microscopes represent the best American and European makers.

Anatomy and Physiology.—The students admitted to this class have already passed an entrance examination in the elementary principles of anatomy and physiology. They have also had a year's training in zoölogy, which makes a free use of the facts of comparative anatomy possible, and aids greatly in the work of the course.

The main objects of the course are to make the student familiar with the position, structure, and healthy action of those organs most liable to become diseased; to make plain the part which the nervous system plays in both the healthy and morbid action of the various organs, and in the problems of nutrition and energy.

The subject is taught during the fall term of the junior year. The plan embraces lectures, recitations from the text book, frequent readings from standard authors, and demonstrations from fresh dissections, alcoholic specimens, microscopical preparations, skeletons and the manikin.

Zoölogy.—The object of the zoölogical course is primarily to give the students command of the methods of zoölogical research and study, and to derive from these their distinctive discipline. The subject is taught ten hours a week during the whole of the sophomore year, the course being based throughout on individual work in the zoölogical laboratory, and in the field.

The more important features of the work are comparative dissections, descriptions, drawings, and microscopic preparations of types of the greater groups, as a basis for the study of the sub-kingdoms and their more important divisions; lectures on the comparative physiology of selected forms, with especial reference to their relations to their environment, organic and inorganic, present and past; studies of the zoölogical classification, commonly introduced by analytical synopses, exhibiting the technical relations of groups; lectures and elaborate reviews directed especially to the general system of homologies by which zoölogical science is organized as a coherent whole; a course of lectures in general embryology, given with principal reference to the descent of animals, and as a preparation for later work in special embryology; and lectures on the history of zoölogical science and its final generalizations.

The *general biology* of the senior year includes comparative histology of animals, and the embryology of the chick; in plants, development and reproduction in the various groups of cryptogams and phanerogams and bacteriology.

The library and collections of the University are supplemented by those of the State Laboratory of Natural History, and of the State Entomologist, to which the students in this department have access.

Entomology.—The study of entomology, pursued during a single term of the freshman year, is necessarily made largely empirical and practical, the subject to which it is principally directed being the place of insects in the general system of organic life; and, incidentally to this, the relations of insects to the interests of man.

The foundation for a knowledge of structural entomology is laid by the discussion and detailed study of a typical insect; and for that of the orders, by a generalization of the characters of selected groups of specimens representing each.

A large part of the time is devoted to the study of the characters, life histories, habits, and economic relations of a selected list of especially important insects. Specimens of these in their different stages, together with synopses and descriptions of the families to which they belong, are furnished the students, and the essential facts, not discoverable by direct observation, are given in lectures or acquired by study of text.

Practice in field observation is given as opportunity offers, and all are taught the ordinary methods of the collection, preparation, and care of specimens, together with the approved methods of controlling the ravages of the injurious species.

A personal study, continuous for the term, of the life, history, and habits of some insect species is made by each student and is finally reported in the form of a thesis.

In both field and laboratory work, an extraordinary opportunity is offered to competent students of this course to observe and assist in practical entomological work and original research.

Geology.—The course in geology covers a period of twenty-two weeks, two hours daily. The scheme of instruction comprises: The study of a series of localities in which great surface changes have recently taken place, in order to discover the characteristics of the forces which produced the changes and the tool-marks by which their action in former times may be traced.

The mineral composition of the different kinds of rocks; the changes produced in their composition by the action of underground water; the conditions under which each species was formed and the relation between these conditions, and the structure of the resulting rock; a series of analyses covering most of the varieties of crystalline and sedimentary rocks and the collection and identification of such erratics as can be obtained from the drift.

A somewhat rapid review of the qualities and distribution of those substances found most useful in the arts, together with the conditions which have produced them.

A study of the sub-divisions of geologic time as laid down in Dana's Manual, with the physical and organic changes which characterize them, and the distribution of the rocks laid down during each period.

An analytical study of the larger groups of fossils, with many of the more common genera and species.

A second course of 11 weeks, 2 hours daily, is offered to students from the chemical, civil engineering, and language courses, in which the entire subject is outlined; detailed study is made of a few of the more important points, and some acquaintance with both rocks and fossils is gained.

A third course, one hour daily for 11 weeks, for students in mining, is devoted entirely to a detailed study of the origin, qualities, and distribution of substances having economic value.

Mineralogy.—Fourteen weeks; about six weeks are occupied in lectures on crystallography; Nauman's system of symbols is used and explained. A collection of models, comprising the most important forms and combinations in the various systems of crystalization, is used for illustration and study. The remainder of the term is occupied by the descriptive determination of minerals, and the use of the blow-pipe. The cabinet of minerals contains a valuable and extensive collection of leads of the state, and a very considerable collection of other minerals, American and foreign.

Physiography.—This name is given to the work in a term of the senior year. The purpose is to gather the lines of investigation previously followed in the development of the physical and natural sciences into a consistent whole, culminating in a natural history of the earth and its inhabitants, including anthropology; an account of the past and present distribution of plants and animals; and an explanation of the general phenomena of meteorology and climatology.

COURSE IN SCHOOL OF NATURAL HISTORY.

Required for the Degree of B. S., in School of Natural History.

FIRST YEAR.

1. Chemistry; Free-hand Drawing; Trigonometry; French.
2. Chemistry; Free-hand Drawing; Conic Sections; French.
3. Chemistry; Free-hand Drawing; Economic Entomology; French.

SECOND YEAR.

1. Zoölogy; Botany; German.
2. Zoölogy; Botany; German.
3. Zoölogy; Vegetable Physiology; German.

THIRD YEAR.

1. Anatomy and Physiology; Mineralogy; German; Ancient History (optional, extra).
2. Geology; Physics; German; Mediæval History (optional, extra).
3. Geology; Physics; Modern History.

FOURTH YEAR.

1. Physiography or Biology; History of Civilization; Mental Science.
2. Microscopy or Biology; Constitutional History; Logic.
3. Biology; Astronomy; Political Economy.

In this course three terms of University Latin will be accepted in lieu of the three terms of French; and five terms of such Latin for the five terms of German.

COLLEGE OF LITERATURE AND SCIENCE.

SCHOOLS.

ENGLISH AND MODERN LANGUAGES.

ANCIENT LANGUAGES.

FACULTY AND INSTRUCTORS.

SELIM H. PEABODY, PH. D., LL. D., REGENT.
EDWARD SNYDER, M. A., *Dean.;* Modern Languages.
THOMAS J. BURRILL, PH. D., Botany.
SAMUEL W. SHATTUCK, C. E., Mathematics.
JAMES D. CRAWFORD, M. A., History and Ancient Languages.
PETER ROOS, Industrial Art.
STEPHEN A. FORBES, PH. D., Zoölogy and Entomology.
JAMES H. BROWNLEE, M. A., Rhetoric and Oratory.
CHARLES W. ROLFE. M. S., Geology.
NATHANIAL BUTLER, JR., M. A., English Language and Literature.
CURTIS B. HOPPIN, LT. U. S. A., Military Science.
S. ROBERTSON WINCHELL, M. A., Latin.
ARTHUR W. PALMER, Sc. D., Chemistry.
FANNY M. RYAN, Modern Languages.

ADMISSION.

Candidates for the School of English and Modern Languages will be examined in algebra, geometry, natural philosophy, physiology and botany, and Latin but not Greek.

Candidates for the School of Ancient Languages will be examined in Greek, but not in Botany, Physiology or Natural Philosophy.

Students desiring to enter the College of Literature and Science must pass the examinations in preparatory Latin before they can be matriculated.

OBJECT OF THE SCHOOLS.

The object of the schools in this college is to furnish a sound and liberal education to fit students for the general duties of life, and especially to prepare them for those business pursuits which require a large measure of literary and scientific knowl-

edge and training. They meet the wants of those who wish to prepare themselves for the labors of the press as editors and publishers, for teachers in the higher institutions, or for the transaction of public business.

INSTRUCTION.

The plan of instruction embraces, besides the ordinary text-book study, lectures and practical exercises in all the departments, including original research, essays, criticism, and other work intended to illustrate the studies pursued, and to exercise the student's own powers.

A prominent aim will be to teach the right use of books, and thus to prepare the students for self-directed investigation and study, which will extend beyond the curriculum of his school and the period of his graduation. With this view, constant use of the already ample and continually enlarging stores of the library will be required and encouraged.

Of special value as an incentive to, and the means of practice in, English composition, should be mentioned THE ILLINI, a semi-monthly paper edited and published by the students of the several colleges, each of which is appropriately represented in its columns. A printing office has been provided in the mechanical building, and a press with a requisite supply of type.

The Library is well supplied with works illustrating the several periods of English, American, French, and German literature, as also those of ancient literature. It contains at present over nineteen thousand well selected volumes, and is constantly growing by purchase at home and abroad. Valuable American and foreign periodicals are received regularly in the reading room.

The following subjects are common to the schools of this college, and may be appropriately described in this place.

MATHEMATICS.

First Term.—Trigonometry, plane and spherical; fundamental relations between the trigonometrical functions of an angle or arc; relations between the functions of different angles or arcs; construction and use of tables: solution of triangles; angles as functions of sides, and sides as functions of angles; applications.

Second Term.—Conic sections, geometrical method. Definitions and general properties of the ellipse, hyperbola, and parabola; curvature of the conic sections; elements of analytical geometry. Properties and relations of the point and right line in a plane; of the conic sections.

Third Term.—Differential calculus; the differentiation of functions of a single variable; development of functions. Infinitesimals; order of an infinitesimal: the substitution of one infinitesimal for another; the limit of the ratio of two infinitesimals; the limit of the sum of infinitesimals. Integral calculus; formulas for direct integration and by substitution; integration by parts; simplification by transformation; area of a segment of a circle, of an ellipse, of an hyperbola; length of an arc of a circle, of a parabola, etc.

PHYSICS AND ASTRONOMY.

See College of Engineering, pp. 196 and 203.

NATURAL SCIENCE.

See College of Natural Science, page 218.

HISTORY AND SOCIAL SCIENCE.

The historical studies are designed to afford a general view of the history, social organization, and progress of the race. They embrace also the history of the arts and sciences, and of civilization, the principles of civil polity and law, the philosophy of history, and the principles of political economy and constitutional law.

The course occupies six terms in the junior and senior years of the University course.

JUNIOR YEAR.

History of Greece and Rome, and of other ancient nations; Ancient Geography; Mediæval History; Modern History; European Geography.

SENIOR YEAR.

Constitutional History of England and the United States; History of Civilization; Political Economy.

PHILOSOPHY AND LOGIC.

The studies of this department require much maturity of powers and are therefore confined to the senior year.

Mental philosophy. Analysis and classification of mental phenomena; theories of perception, consciousness, imagination, memory, judgment, reason. Mental physiology, or connection of body and mind, healthful condition of thought, growth and decay of mental and moral powers. Philosophy of education, theory of conscience; nature of moral obligation; moral feeling. The right. The good. Practical ethics; duties. Formation of character. Ancient schools of philosophy; modern schools of philosophy. Influence of philosophy on the progress of civilization, and on modern sciences and arts.

Principles of logic; conditions of valid thinking; forms of arguments; fallacies and their classification. Inductive and deductive reasoning; principles and methods of investigation. Practical applications of logic in the construction of arguments, in he detection and answer of fallacies, and the formation of the habits of thinking and common judgment of life.

School of English and Modern Languages.

ENGLISH LANGUAGE AND LITERATURE.

Studies of the School.—In the arrangement of the studies the endeavor is to present a thorough and extended drill in grammatical and philological study, and in the authors and history of the English language, affording a training equivalent to the ordinary studies of the classical language. This drill extends through three years of the course.

The first two terms of the first year are given to a general survey of the whole field of British and American literature from the middle of the sixteenth century to the present time. All the representative writers come into notice, and representative specimens from the writings of each are carefully read in class. Moreover, each student is required each term to read an entire work of some classic author, making choice from a prescribed list. Frequent exercises in writing abstracts, or original compositions on themes assigned, are also required. The study of rhetoric occupies the third term.

During the second year a few of the great masters are studied, their work analyzed, and the shaping forces of their times, with their influences upon succeeding times, are investigated. Lectures are given from time to time on topics relating to the class work. Writing and reading required as in first year.

In the senior year the first term is devoted to Anglo-Saxon (A. D. 500–1200), for which the way has been prepared by the study of both English and German. In the second term the study of middle English (A. D. 1200–1500) is taken up, and during the third term philology is studied. Essays, forensics, and orations are required.

French and German.—The course in modern languages in this school embraces two years of French and two years of German. The chief aim is mastery in translation and composition, constant attention being also given to the etymologies common to these languages and the English; the study is thus made to contribute to the student's knowledge of his own tongue, and to the power of expression in the same.

In the first year the student completes the study of a grammar and reader, acquiring a knowledge of the technicalities of the idiom, with a vocabulary sufficient for the use of books of reference in his course. The second year is devoted to a course of select reading and composition, involving a critical study of the languages and their literature.

French and German are used in the class room as a means of conversation, as far as practicable, but this is made subordinate to the main purpose, which is to enable the student to read the languages with ease, rather than to speak them indifferently.

COURSE IN SCHOOL OF ENGLISH AND MODERN LANGUAGES.

Required for Degree of B. L.

FIRST YEAR.

1. American Authors, or Cicero de Amicitia; French; Trigonometry.
2. British Authors, or Livy; French; Conic Sections.
3. Rhetoric, or Horace; French; Calculus, or Free-hand Drawing.

SECOND YEAR.

1. English Classics; German; Physiology, or Botany.
2. English Classics; German; Zoölogy, or Botany.
3. English Classics; German; Astronomy.

THIRD YEAR.

1. German; Chemistry; Ancient History.
2. German; Physics; Mediæval History.
3. German; Physics, or Chemistry; Modern History.

FOURTH YEAR.

1. Anglo-Saxon; Mental Science; History of Civilization; French (optional).
2. Early English; Logic; Constitutional History; French (optional).
3. Philology; Political Economy; Geology; French (optional).

School of Ancient Languages and Literature.

Instruction in the School of Ancient Languages and Literature, while aiming to impart a sufficiently full and critical knowledge of the Latin and Greek languages and writings, makes the study of these tongues subservient, in a more than usual degree, to a critical and correct use of the English. With this view, written translations, carefully prepared, with due attention to differences, equivalences, and substitutions of idioms, and the comparison and discrimination of synonyms, form a part of the entire course.

The study of Latin and Greek composition is continued through the first year, and, to some extent, through the course. Essays, historical and critical, are required from time to time, in connection with the works read, and a free use of the library is urged. It is intended that each student who completes the course in ancient languages shall have a clear knowledge of the history of Greek and Latin literature, and of the principal authors in both languages. As an aid to the appreciation of the literature of the two peoples, Greek and Roman history form an important part of the course, and are taken up in the beginning, illustrating the works read. In the first term of the third year ancient history is taken up as a separate study, and especial attention is then given to the history of Greece and Rome, and the nations with whom they came in contact. Classes will be formed for students who wish to carry their classical study further than the prescribed course, and every assistance will be given them.

COURSE IN SCHOOL OF ANCIENT LANGUAGES.

REQUIRED FOR DEGREE OF B. A.

FIRST YEAR.

1. Cicero de Amicitia; Iliad; Trigonometry.
2. Livy; Odyssey; Conic Sections.
3. Odes of Horace; Memorabilia; Calculus.

SECOND YEAR.

1. Satires of Horace; Thucydides, or German; Physiology.
2. Tusculan Disputations, or Terence; Sophocles, or German; Zoölogy.
3. Tacitus; Demosthenes, or German; Astronomy.

THIRD YEAR.

1. Juvenal, or French; Chemistry; Ancient History.
2. Quintilian, or French; Physics; Mediæval History.
3. De Officiis, or French; Physics; Modern History.

FOURTH YEAR.

1. Mental Science; History of Civilization; Physiography.
2. Logic; Constitutional History; Early English.
3. Political Economy; Philology; Geology.

Department of Rhetoric and Oratory.

All students are required to participate in the exercises of this department. Such a course of instruction in composition and oratory is provided as makes it probable that all who complete it faithfully will be able to express their thoughts, both with voice and pen, in a clear, intelligent manner, and without affectation or embarrassment.

With the exception of one term of the freshman year, which is devoted to the text book of rhetoric, the required theme work extends over the first two years of the course, the remaining two being given to the art of oratory, including the principles of delivery.

The number of themes from freshmen is eight, and from sophomores twelve, and each paper, after correction, is returned to the student to be re-written. For composition the classes are divided into sections of about twenty, which meet weekly. At these meetings, questions of students are answered, the faults and merits of the essays of the preceding week are pointed out, and subjects assigned for the next week. One lecture each term is given by the professor to the whole class, on the kind of writing involved in the next twelve weeks; as narration, description, argument, etc.

In oratory, the classes are also divided into sections. A critical analysis is made of some of the master-pieces of the great orators of England and America. The life and character of the orator, the circumstances that called forth the oration, his object in pronouncing it, are considered, and a study is made of his diction, sentences, paragraphs, figures of speech, etc. In addition, selections from the oration are assigned to the members of the class, which, after being well committed to memory, are carefully prepared, under the supervision of the instructor, for delivery in the presence of the whole class. Each member of the junior class is required to write an oration and hand it to the committee of the Faculty having supervision of the annual junior exhibition. From the whole number the committee selects ten, upon the basis of merit, to be presented at the exhibition.

Each member of the senior class is required to prepare a suitable oration or essay and to deliver it before the Faculty and students in the chapel.

ADDITIONAL SCHOOLS.

Not Included in the Four Colleges.

SCHOOL OF MILITARY SCIENCE.

Professor Curtis B. Hoppin, 1st Lieutenant 2nd Cavalry, U. S. A.

By the law of congress, and of the state, the University is required to teach military tactics to its students. All able-bodied male students of the preparatory year and of college classes of the first, second and third years are enrolled in the companies of the University battalion, and receive instruction in the following military exercises:

School of the Soldier; Manual of Arms.
School of the Company; Movements by Platoons, Firings, etc.
School of the Battalion; Ployment and Deployment of close Columns.
Battalion and Company Skirmish Drill; Bugle Calls.
Bayonet Fencing; Target Practice.
Guard and Picket Duties of Sentinels.

CLASS IN MILITARY SCIENCE.

Classes are taught in military science and tactics, as far as is requisite for officers of the line. At the end of the junior year each member of the class is required to present an essay upon some military subject. This is retained in the library of the department. From these classes are selected the officers of the several companies, for which they act as instructors. The military instruction is under the charge of Lieut. Curtis B. Hoppin, a graduate of the U. S. Military Academy, and an officer of the regular army of the United States. A full supply of arms and ammunition is furnished by the war department, including 300 cadet rifles and accoutrements, and two pieces of field artillery. Ammunition is furnished for practice and target firing, and for artillery use.

No student is eligible to the military class until he has reached the third term of the freshman year, nor unless he is in good standing in all his studies. The course of instruction is confined strictly to two years. No student will be permitted to retain a command who does not maintain a good standing in conduct and scholarship.

The instruction and class exercises occupy about three hours each week, arranged, as far as possible, so as not to interfere with any other course of study. Students must be careful, however, to ascertain, before entering the military class, that the proper studies and exercises of their chosen course will not be interfered with.

Commissions.—The Governor of the state is accustomed to commission as captains, by brevet, in the state militia, such graduates of the University as have completed th studies of the military classes and have obtained the requisite experience in command in the University battalion. In order to obtain the commission the student must be approved by the Faculty and pass, satisfactorily, an examination in military science and tactics before a committee appointed by the Faculty of the University. It is expected that in order to get the required experience in command, the members of the military class of the third or junior year will serve as commissioned officers of the several companies of the battalion.

The standings obtained in military science are not counted in the number required for graduation or class standing; the commissions above named being deemed sufficient reward for proficiency in this department.

University Uniform —Under the authority of the acts of incorporation, the Trustees have prescribed that all male students, after the first term of their attendance, shall wear the University uniform. The University cap is to be worn from the first. The uniform consists of a suit and a cap of cadet gray cloth. Students can procure them ready made on their arrival here. The University cap is ornamented in front with the initials, U. of I., surrounded by a wreath. Students will always wear their uniforms on parade, but in their rooms and at recitation may wear other clothing.

The University library contains many books on military science, military history and engineering.

Gymnasium.—The drill hall is furnished with a full set of gymnastic apparatus, and classes in gymnastic exercises are organized in the fall and winter terms, under careful leaders. Fee, 50 cents.

The University Cornet Band is composed of students who, while members of the band, are excused from drill. Instruments and music are furnished by the University, and the band plays at drill and other college exercises.

Course in School of Military Science.

FIRST YEAR.

1. School of the Soldier and Company; Bayonet Fencing.

SECOND YEAR.

1. School of Battalion; Skirmish Drill.
2. Ceremonies and Reviews; Military Signaling. Sword Fencing.
3. Guard, Outpost, and Picket Duty; Military Signaling; Sword Fencing.

THIRD YEAR.

1. Military Administration; Reports and Returns; Theory of Fire Arms; Target Practice; Artillery Drill.
2. Organization of Armies; Art of War: Field Fortifications: Artillery Drill.

School of Art and Design.

PROFESSOR PETER ROOS.

This school is to subserve a two-fold purpose. 1. It affords to the students of the several colleges the opportunity to acquire such a knowledge of free-hand drawing as their chosen courses may acquire. 2. It offers to such as have a talent or taste for art the best facilities for pursuing studies in industrial designing or other branches of fine art. Schools of design, in Europe and in this country, have been found important aids to the higher manufactures, adding to the beauty of fabrics, and to the skill and taste of workmen.

The increased interest in the decorative arts, and in the manufactures which they require, has added new importance to the study of drawing and designing. It is the purpose to keep this school of design abreast with the best movements in this direction.

As a preparation for entering the course in art and design, the study of plane geometry and projection drawing is recommended.

Topics for reading upon art subjects are given weekly.

Detailed studies and sketches, such as are necessary to the successful rendering of things, will be required outside of the regular exercises.

For admission to the advanced classes the student must show proficiency in preliminary work.

The authorities of the University have provided that persons not connected with the institution may join the drawing and painting classes on very moderate terms.

Music.

CLARA MAUD KIMBALL.

Music constitutes no part of any University course of studies, and is therefore not provided by the Trustees. But, as many students desire instruction in music, competent teachers are selected by the Trustees, and rooms are set apart for instruction.

TUITION.

Instruction, term of ten weeks—2 lessons a week	$10.00
For term of ten weeks—one lesson a week	6.00
Practice on piano, one hour daily, per term	2.00

The teacher of Vocal Music and Voice Culture, follows the Italian method, giving individual instruction.

TERMS.

Ten weeks—two lessons a week	$12.00
Ten weeks—one lesson a week	7.00

No deduction on account of absence in either course, except in case of protracted illness.

Special students in music will also be charged the regular term fee charged other students of the University.

Preparatory Classes.

To meet an urgent demand, the Trustees have temporarily provided for teaching the preparatory studies lying between the work of many of the common schools and the University. Candidates for these classes must not be less than fifteen years old. They must pass satisfactory examinations in arithmetic, geography, English grammar, and history of the United States.

Students in the preparatory studies are not matriculated as members of the University. They pay no entrance fee, but are charged a tuition fee of five dollars a term, and the incidental fee of seven and a half dollars a term. They have all the privileges of the library, and of the public lectures, and are required to drill.

The studies taught in the preliminary year are as follows:

FOR COLLEGES OF AGRICULTURE, ENGINEERING, AND NATURAL SCIENCE.

First Term.—Algebra.—(Wells's). Fundamental rules; factoring; common divisors and multiples; powers and roots; calculus of radicals; simple equations; proportion and progression. *Physiology.*—(Cutter's.) *Natural Philosophy.*—(Norton's.)

Second Term.—Algebra.—Quadratic equations, etc. *Geometry.*—(Wells's) Plane geometry, lines, circumferences, angles, polygons, as far as equality. *English.*—Elements of composition. (Clark's.) Orthoepy and word analysis. (Introduction of Webster's Academic Dictionary).

Third Term.—Geometry completed, including solid geometry and the sphere. *English*, as in the second term, with addition of Goldsmith's Traveler and Deserted Village, read for analysis. *Botany.*—Gray's Lessons and Manual.

FOR SCHOOL OF ENGLISH AND MODERN LANGUAGES.

First Term.—Algebra, as above. *Physiology. Natural Philosophy. Latin.*—Cicero's Orations. Prose Composition.

Second Term.—Algebra and Geometry, as above. *Latin.*—Æneid. Prose Composition.

Third Term.—Geometry, as above. *Botany. Latin.*—Æneid. Prose Compo sition.

FOR SCHOOL OF ANCIENT LANGUAGES.

First Term.—Algebra, as above. *Latin.*—Cicero's Orations. Prose Composition. *Greek.*—Grammar and Reader.

Second Term.—Algebra and Geometry, as above given. *Latin.*—Æneid. Prose Composition. *Greek.*—Anabasis. Prose Composition.

Third Term.—Geometry completed. *Latin.*—Æneid. Prose Composition. *Greek.*—Anabasis. Prose Composition.

SOCIETIES.

The literary societies have from the opening of the University enjoyed its fostering care.

The ADELPHIC and PHILOMATHEAN societies for men, and the ALETHENAI for women, occupy spacious halls, which the members have furnished and decorated with taste and elegance. Meetings are held Friday evenings throughout term time, are well attended, and are maintained with unflagging interest. They furnish excellent drill in writing, speaking, and parliamentary methods.

The YOUNG MEN'S and YOUNG WOMEN'S CHRISTIAN ASSOCIATIONS are active and useful.

Special organizations unite the students of NATIONAL HISTORY, of CIVIL ENGINEERING, of MECHANICAL ENGINEERING, of ARCHITECTURE, of AGRICULTURE, and of CHEMISTRY.

REGULATIONS AND ADMINISTRATION.

ADMISSION.

Examinations of candidates for admission to the University, or to any of its departments, are held at the University itself, on the two days previous to the opening of each term.

Applicants must be at least fifteen years of age, must pass the required examinations, and must pay the prescribed fees. No distinction is made in regard to sex, nativity, color, or place of residence. Entrance may be made at any time, provided the candidate is competent to take up the work of the classes then in progress; but it is very much better to begin upon the first collegiate day in September, when a large number of the classes are organized, several of them to continue during the year. Entrance, however, may usually be made satisfactorily at the beginning of the winter and spring terms.

Entrance Examinations.—The subjects upon which examinations for admission are held are as enumerated below:

For the Colleges of Agriculture, Engineering and Natural Science.

Arithmetic; English Grammar; Geography; History of the United States; Algebra, including equations of the second degree and the calculus of radical quantities; Geometry, plane and solid; Physiolgy; Botany; Natural Philosophy; Rhetoric and Composition.

The text books mentioned in course of study for the preparatory classes page 233, may be taken as an indication of the requirements in these studies. Any real equivalents for the books named are accepted.

For the School of English and Modern Languages, the same as the above, except the Rhetoric and Composition and with the addition of the following Latin:

Four books of Cæsar's Commentaries, six orations of Cicero, six books of Vergil's Æneid, with scansion of hexameter verse and the translation of English sentences into Latin prose, based on the portions of Cæsar and Cicero named above. This will necessitate a thorough knowledge of the etymology and syntax of Latin grammar.

Harkness's or Allen and Greenough's grammar and Winchell's (Bingham's) Latin Prose Composition are recommended.

Real equivalents for any of the above mentioned works will be accepted.

The Roman method of pronunciation is recommended.

For the School of Ancient Languages the same as the first list, except the ommission of Rhetoric and Composition, Physiology, Botany, and Natural Philosophy, and with the addition of the Latin described and Greek as follows:

Greek Grammar (Goodwin's or Hadley's), Greek Prose Composition (Jones's), and four books of Xenophon's Anabasis. Writing Greek with the accents will be required.

The so-called Continental sounds of the vowels and diphthongs and pronunciation according to accent are recommended.

County Superintendents' Certificates.—To prevent loss to those who are not prepared to enter the University, but might come, hoping to pass the examinations for admission, the following arrangement has been made:

County superintendents of schools will be furnished with questions and instructions for the examination of candidates in the four common branches, Arithmetic, Geography, English Grammar, and History of the United States; applicants who pass creditably will, when they present the superintendent's certificate to that effect, be admitted to the classes of the preliminary year.

Persons who hold teacher's certificates from the county superintendents will be admitted to the preliminary class without further examination.

Honorary Scholarships.—Provision has been made for one honorary scholarship for each county in the state. The holder of the scholarship may attend the University for four years, under proper regulations, free of charge for tuition or incidental expenses. The total value of this scholarship is $90.

Several of these scholarships are already occupied. The vacancies in other counties will be filled as follows:

Examinations are to be held in the several counties, under the supervision of the county superintendents thereof, on the first Friday and Saturday of June, at such places as the superintendents may select. Candidates for the examination must be approved by the superintendents in the common English branches. Questions will be furnished from the University, and the answers, in writing, will be sent to the University for judg-

ment. The scholarship will be awarded to the candidate who passes the best examination, provided he has a standing in each subject not less than 75, and an average standing on all the subjects not less than 80 per cent.

Each pupil who enters the examination may choose whether he will be examined to enter upon a technical course in Colleges of Agriculture, Engineering, or Natural Science, or a literary course in the College of Literature and Science.

In the first case the subjects of his examination will be Algebra, Geometry, Physiology, Botany, Natural Philosophy, and English Rhetoric.

In the second case the subjects will be Algebra, Geometry, Botany or Natural Philosophy, four books of Cæsar, six orations of Cicero, and six books of the Æneid.

The two classes of examinations are intended to be as nearly equivalent as possible, and to conform to the requirements already stated under the head, Examinations for Admission. It is essential that the examinations in the counties be held at the time named above, publicly, and with reasonable notice; requests for special or private examinations can not be considered.

The following persons have received honorary scholarships for the counties named:

CLASS OF 1892.

NAME.	COUNTY.
*Armstrong, James L.	Douglas.
Bevis, Albon.	Cass.
Forbes, Robert H.	Bureau.
Hart, Ralph W.	Cook.
Snodgrass, William.	Champaign.

CLASS OF 1893.

Bartlett, H. Emmett.	Brown.
Bennett, Sarah.	Coles.
Braucher Herbert H.	Logan.
Brown, Frank.	Piatt.
Carrick, William.	Jasper.
Dickinson, Richard J.	Woodford.
Earl, Mark A.	Clinton.
*Gaston, Hattie J.	McLean.
*Herrick, George I.	DuPage.
Johnson, Harriette A.	Rock Island.
*Strout, Frank A.	LaSalle.
Woodruff, Thomas T.	Adams.
Yeomans, Frances A.	Vermilion.

*Withdrawn—Scholarship now vacant.

Accredited High Schools.—The Faculty, after personal examination, appoints accredited high schools, whose graduates may be admitted to the University without further examination within one year after date of their graduation. These must be schools of first rate character, whose courses of instruction include all the studies required for admission to some one of the

colleges of the University. On application, a member of the Faculty is sent to examine the school making application, as to its facilities for teaching, its course and methods of instruction, and the general proficiency shown. If the report is favorable, the name of the school is entered in the published list of high schools accredited by the University. The graduates of these schools are admitted to such of the colleges as their studies may have prepared them to enter. The appointment continues as long as the work of the school is found satisfactory. Annual reports are asked from these schools.

The accredited schools whose graduates are admitted to any of the colleges of the University are the public high schools in

Aurora, East	Dixon	Moline
Aurora, West	Evanston	Oak Park
Belvidere, North	Freeport	Ottawa
Bloomington	Galena	Paris
Cairo	Hyde Park	Peoria
Champaign	Jacksonville	Princeton
Charleston	Jerseyville	Rockford
Chicago, North	Kewanee	Rock Island
Chicago, South	Lake View	Springfield
Chicago, West	Lincoln	Streator
Danville	Mattoon	Tuscola
Decatur	Mendota	Urbana

Also the high school of the Normal University, at Normal.

The accredited schools whose graduates are admitted to the college of engineering, of agriculture, or of natural history are the public high schools in

Camp Point	Pekin	Sheldon
Farmer City	Peru	Sterling
Gibson City	Pittsfield	Sycamore
Kankakee	Polo	Warren
LaSalle	Robinson	Washington
Marengo	Rochelle	Watseka
Monticello	Rossville	Waverly

Also the Chicago Manual Training School.

CHOICE OF STUDIES.

From the outset the University has permitted great freedom in the selection of studies. It is, however, necessarily required: That the student shall be thoroughly prepared to enter and to keep pace with the classes in the chosen studies, and that he shall take these studies in the terms in which they are taught. *Candidates for a degree must take the course of study prescribed for that degree.* But in the Colleges of Agriculture, Natural Science, and Literature and Science other University drawing will be accepted for an equivalent amount of free-hand drawing.

Each student is expected to have three distinct studies, affording three class exercises each day. On special request, the Faculty may allow less or more.

No change in studies may be made after the beginning of a term without permission of the Faculty.

Due care will be taken to prevent, as far as possible, all abuse of the liberty of choice. Students failing to pass satisfactory examinations in their chosen studies will not be permitted to remain and take other studies without a vote of the Faculty.

REQUIRED STUDIES.

To secure the diffusion of the sciences relating to the great industries, the state legislature, in 1873, prescribed that each student should be taught some of those sciences.

The Trustees accordingly require that each student shall take, each term, one study at least from the following list:

Agricultural Chemistry.
Agricultural Engineering and Architecture.
Analytical Mechanics.
Anatomy and Physiology.
Animal Husbandry.
Architectural Drawing and Designing.
Astronomy.
Botany.
Bridges.
Chemistry.
Dynamics.
Electric Machinery.
Elements of Agriculture.
Elements of Horticulture.
Entomology.
Esthetics of Architecture.
Estimates.
Free-hand Drawing.
Geodesy.
Geology.
Graphical Statics.
Heat Engines.
History of Agriculture.
History of Architecture.
Hydraulic Engines and Wind Wheels.
Hydraulics.
Landscape Gardening.
Logic.
Machine Drawing.
Masonry Construction.
Mathematics.
Mechanism.
Mental Science.
Metallurgy.
Military Science.
Mill Work.
Mine Administration.
Mine Attack.
Mineralogy.
Mining Engineering.
Physics.
Physiography.
Political Economy.
Railroad Engineering.
Resistance of Materials.
Rural Economy.
Sanitary Construction.
Stone, Brick, and Metal Construction.
Surveying.
Vegetable Physiology.
Veterinary Science.
Wood Construction.
Zoölogy.

TERM EXAMINATIONS.

Written examinations are held at the close of each term or oftener, and whenever any study has been finally completed. Any student failing to answer correctly 75 per cent. of the questions proposed, loses all credit for that study, and is precluded from proceeding with any other studies without special permission.

A record is kept of each student's term work and standing, and from this his final certificate of graduation is made up.

A statement of the scholarship and conduct of each student will be sent to his parent or guardian as soon as may be after the end of each term.

DEGREES AND CERTIFICATES.

The law provides, that, "on recommendation of the Faculty, the Trustees may authorize the Regent, as president of the University, to issue diplomas to such persons as shall have com-

pleted satisfactorily the required studies, and sustained the examination therein, conferring such literary and scientific degrees as are usually conferred by universities for similar or equivalent courses of studies, or such as the Trustees may deem appropriate." *Approved May 11, 1877.*

In accordance with the law, the following system of degrees has been adopted by the University.

1. All studies will remain, as heretofore, free. Each student may choose and pursue such studies as he may desire, subject only to such conditions as to preparation, times of study and number of studies, as may be necessary to secure efficiency in classes and economy in teaching.

2. But students who wish to be candidates for any degree must complete fully the course of studies prescribed for such degree, and must present an accepted thesis.

3. Students not candidates for any degree will be enrolled as special students, and will receive at the close of their attendance, if not less than a year, the certificates provided by law, with statements of work done and credits attained. Credits from other institutions may not be entered upon such certificates. The form of graduation with a "full certificate" will be discontinued after the commencement of 1891.

4. It is designed that the requirements for all the bachelor's degrees shall be, as nearly as possible, equal in amount and value.

5. The Degree of Bachelor of Science, B. S., will be given to those who complete either of the courses of studies in the College of Engineering, Agriculture, or Natural Science. The name of the School will be inserted after the degree.

6. The Degree of Bachelor of Letters, B. L., will be given to those who complete the course of the School of English and Modern Languages.

7. The Degree of Bachelor of Arts, B. A., will be given to those who complete the course in the School of Ancient Languages.

8. The Master's Degrees, M. S., M. L., and M. A., and the equivalent degrees of C. E., M. E., etc., will be given to those only who have pursued a year of prescribed post-graduate studies, and passed examinations thereon, or after a term of three years' successful practice. In either case an accepted thesis will be required.

GENERAL DIRECTIONS TO STUDENTS.

Young men or women desiring a liberal education, and living at a distance from a college or university, are often puzzled to understand precisely what they will be required to know and to do in order to gain admission. To such, these words are addressed:

1. Notice that a college or university (which is properly a collection of colleges) is designed for the higher education only, and not for the study of common branches. None of the common branches, such as arithmetic, geography, English Grammar, reading and spelling, are taught in this University. These all must be finished before you come.

2. In order to pursue profitably the true college studies, and to keep pace with the classes, you must be ready to pass a strict examination in the common branches just mentioned, and in certain other preparatory studies, differing from the different colleges of the University. (See pages 234 and 235.)

3. If well prepared only in the common branches above named, you may be admitted, not to the College, but to the preparatory classes, in which you will study the other preparatory studies for admission to college. (See pp 233–4.) All preparatory studies must be completed before you can be admitted, as a matriculated student, to any college class.

4. All college studies are arranged in regular courses, in which each term's work is designed to prepare for the next. You should enter at the beginning of the college year, in September. If unable to enter at that time, you may enter at any later time by making up the studies already passed over by the class.

5. Enter college with the purpose of going through, and make your course *regular as far as you go.* If obliged to leave before you have finished the course you will have done the best thing for yourself in the meantime: while if you remain, the regular course is in nine cases out of ten the most useful and effective.

Students desiring only a winter's schooling should go to some high school.

LABOR.

Labor is furnished as far as possible to all who desire. It is classified into educational and remunerative labor.

Educational labor is designed as practical instruction, and constitutes a part of the course in several schools. Students are credited with their proficiency in it as in other studies. Nothing is paid for it.

Remunerative labor is prosecuted for its products, and students are paid what their work is worth. The usual rate paid for ordinary farm, garden, and shop labor is *ten cents* per hour. Students of sufficient experience may be allowed to work by the piece or job, and thus by diligence or skill secure more pay.

Some students who have the requisite *skill, industry, and economy*, pay their entire expenses by their labor; but, in general, young men can not count upon doing this at first, without a capital to begin with, either of skill or of money, to serve them till a degree of skill is acquired. As the number of students increases, it is found more and more difficult to furnish the labor needed, and students can not count certainly upon finding employment.

BOARD.

The University does not furnish board. There is no general provision for boarding, but there is an abundance of suitable private places in Urbana and Champaign within a reasonable distance of the University where students can obtain either table board, or board and rooms with the advantages of the family circle. Boarding clubs are formed at which the cost of meals is about two and a half dollars per week. Some students prepare their own meals, thus considerably reducing expenses.

The Business Agent and the Young Men's and Young Women's Christian Associations of the University will aid new students in procuring rooms and boarding places.

EXPENSES.

THE TUITION IS FREE in all the University classes.

THE MATRICULATION FEE entitles the student to membership in the University until he completes his studies, and must be paid before he enters.
Amount.....$10.00

THE TERM FEE for incidental expenses is for each student..... $7.50

Each student working in laboratories, or in the draughting or engineering classes, is required to make a deposit varying from 50 cents to $12, to pay for chemicals and apparatus used, and for any breakages or damages.

A fee of $2.50 is charged students working in the mechanical and architectural shops.

ALL BILLS due the University *must be paid before the student can enter classes.*

The following are estimated maximum and minimum annual expenses, exclusive of books and clothing, of a residence of thirty-six weeks at the University.

	MIN.	MAX.
Term fees	$ 22.50	$ 22.50
Room rent for each student	18.00	48.00
Table board in boarding houses and clubs	90.00	126.00
Fuel and light	10.00	15.00
Washing at 60 cents per dozen	9.00	18.00
Total amount	$149.50	$229.50
Board and room in private houses, per week	4.00	6.00

FEES IN THE PRELIMINARY YEAR, OR IN THE BUILDERS' OR FARMERS' SHORT COURSES.

Tuition, per term.....$5.00
Incidental fee, per term..... 7.50

SPECIAL FEES.

For instrumental music, for 20 lessons.....$10.00
For painting or drawing, to special students 10.00
Matriculation fee..... 10.00
Graduation fee..... 5.00

CAUTION TO PARENTS—STUDENTS' FUNDS.

The Business Agent will receive on deposit any funds parents may intrust to him to meet the expenses of their sons. *No greater error can be committed than to send boys from home with large amounts of spending money*, without the authoritative care of some prudent friend. Half the dissipation in colleges springs from excessive allowances of money. Students have little real need for money, beyond that required for fees, board bills, and books. The attention of parents and guardians is earnestly requested to this matter, and especially in the case of those students who are under twenty years of age.

STATE LABORATORY OF NATURAL HISTORY.

STEPHEN A. FORBES, PH. D., DIRECTOR.

Dr. S. H. Peabody, Regent.

SIR:—In accordance with the spirit (although, I must confess, not strictly with the letter) of a resolution adopted by the Trustees of the University July 1, 1885, to the effect that the Director of the State Laboratory of Natural History should make to the Trustees, through the Regent, quarterly reports of the affairs and operations of the Laboratory, I beg to offer this report of our affairs during the last two years.

The organization of this establishment and its operations during this time have differed but little in scope and general character from those reported to the Trustees in 1888.*

The staff of the Laboratory during the last two years has consisted of a botanist, Prof. Burrill,—engaged for only a small part of his time; a botanical assistant, alternately Mr. Moses Craig and Mr. G. P. Clinton; an office entomologist, Mr. C. A. Hart; a field entomologist, Mr. John Marten; a zoölogical assistant, Mr. H. S. Brode (giving the Laboratory such part of his services as were not appropriated by the University); an amanuensis, Miss M. J. Snyder; and an artist, Mr. A. M. Westergren, employed in drawing (chiefly entomological) for only seven months. The salaries of those whose time is divided between the Laboratory and the University are derived in part from each source, in amounts proportioned as nearly as may be to their services for each. The botanist has received from the Laboratory $200 a year, the botanical assistants full pay for time actually spent on Laboratory work, and the zoölogical assistant $100 for the present year only. The salaries of the office entomologist, field entomologist, and amanuensis (who acts also as librarian) have been, respectively, $600, $900, and $600.

Owing to changes of assistants, indirectly due to the organization of a large number of new state agricultural experiment stations, the general zoölogical work of the State Natural History Survey has materially fallen off, but relatively greater attention has been given to economic investigation. The zoölogical work has been limited to considerable additions to the ornithological collections, made for a further study of the food of birds; and desultory studies on the lower aquatic animals of the state, especially insect larvæ, Vermes, and Protozoa. The progress of our knowledge of the aquatic zoölogy of Illinois has been indirectly advanced, by vacation work done outside our state limits,—during the summer of 1889 in northern Michigan and Lake Superior, and during that of 1890 in the lakes and streams of the northern Rocky Mountains. Reports on these collections have been prepared, or are in course of preparation, for publication by the U. S. Fish Commissioner, and as this material is studied, our similar and parallel collections from this state are studied with it, to the great advantage of the local work.

Our entomological investigations have been, as heretofore, almost wholly economic in their motive; nevertheless no opportunity has been lost to

*See Fourteenth Report of the Board of Trustees of the University of Illinois, p. 185.

improve our acquaintance with the insects of Illinois, whether economically interesting or not. The building of an insectary and separate office (the former devoted to experimental work upon the life histories of insects, their injuries to vegetation, and methods of practically controlling them,) has given us an opportun ty not before enjoyed for continuous observation and accurate experiment on some of the most difficult species. The principal subjects which we have studied are the life histories of cutworms, the contagious diseases of the chinch bug, the life history of the corn root louse and of the species of ant uniformly associated with it, the feeding habits of the plum and peach curculio with insecticide experiments for its destruction on the peach, the stages and life history of a new plum borer, the injuries to fruits by the common Thrips or strawberry "midget," the injuries and life history of a little-known corn root worm, the spring and summer history of the Hessian fly, and the life histories of the common white grubs and wireworms. Other subjects of interest studied are injuries to fruit trees by the European bark beetle, the damage to wheat, oats, and other grains by the grain Aphis, the life history of the swamp bill bug, the species and life histories of a considerable number of gall gnats, and the breeding, identification, and description of common aquatic larvæ from temporary pools in spring. Especially important progress has been made in our knowledge of the history and habits of some of the commonest and most destructive insects of the farm, including the white grubs, the Hessian fly, and the corn root louse.

The entomological collection has been greatly enlarged, especially in Diptera, and a large number of determinations in all orders have been made. The named collection is now contained in 160 double boxes, and numbers about 5,000 species, each being represented, as a rule, by four selected specimens. The pinned and determined duplicate insects on hand —largely in process of distribution to public schools—amount to 42,600 specimens. The alcoholic insects, including large numbers of larvæ, are contained in about 10,200 bottles and vials.

Seven hundred and forty-four copies of the zoölogical volume—the first on the ornithology of the state—have been issued up to the present time (Dec. 31, 1890), 732 of them gratuitously, 656 in Illinois and 76 outside the state, and 12 have been sold at cost ($3.50 a volume). There remain of the edition printed 256 copies, 200 of which we have reserved for future use.

There have been printed since my last statement two of my reports as State Entomologist, that for the years 1885 and 1886—long delayed in the hands of the printer—having finally been issued in 1889, and the report for 1887 and 1888, in 1890. Each of these reports contains seven articles: the first 103 pages, and the second 226 pages.

In the Bulletin of the Laboratory six articles have been issued in the last two years, one on the animals of the Mississippi bottoms, by Prof. H. Garman: two by myself, describing new species of Vermes; two by Mr. Weed, on the "harvestmen" of Illinois: and one by Prof. Garman, on Illinois reptiles and amphibians—110 pages in all.

Other articles prepared at the Laboratory during the period covered by this report, but published elsewhere, are as follows: "Note on Chinch-Bug Diseases," "Early Occurrence of the Chinch Bug in the Mississippi Valley," "Arsenical Poisons for the Plum and Peach Curculio," "Office and Laboratory Organization," "History a id Status of Public School Science Work in Illinois," "New and Old Insects," and a "Synopsis of Recent Work with Arsenical Insecticides," by myself, and a description of a new gall-fly by Mr. John Marten.

Other articles prepared by us and now in press, are as follows: "On Some Lake Superior Entomostraca," "Preliminary Report upon the Invertebrate Animals Inhabiting Lakes Geneva and Mendota, Wisconsin;" "A Summary History of the Corn-Root Aphis," "On the Life History of the White Grubs," and "Report of Progress in Economic Entomology," by myself; "Life History and Immature Stages of Wireworms," by Mr. C. A. Hart; and "New Notes on the Life History of the Hessian Fly," by Mr. Marten.

I have addressed, during the two years, fourteen farmers' institutes in various parts of the state and three horticultural societies, and have also lectured before the Chicago Institute and the Cincinnati Natural History Society.

The accumulation of duplicate insects has reached a point where it is again possible to distribute them to advantage to such public schools as teach regularly the subjects they illustrate. I consequently sent, in 1889, a circular of inquiry to a number of these schools, from the replies to which a list of schools was made to which sets of insects will be sent during the winter. The specimens available for this distribution (22,000 in number) will be made up into forty sets and sent out as fast as ready, with lists of names, both technical and common, and a pamphlet of economic notes respecting the species related in any important way to agriculture or horticulture. The amount of work involved in this distribution may be judged in part by the fact that the mere numbering and arrangement of this material in boxes, ready for shipment, after the labor of collection, preservation, determination, and systematic classification is all done, will take all the time of one assistant for about a month.

Our work of the past two years has been greatly hampered by the insufficiency of our library fund, and by loss of valuable assistants with years of experience on our subjects and training in our methods, and more useful here than any one else could be for a long time to come. This loss was due simply to inadequate provision for their salaries. If this work is to continue on its present basis, it is indispensable that our library appropriation be put back to what it was two years ago, and that sufficient allowance be made for salaries to enable me to hold good assistants, in competition with experiment stations and other institutions offering employment to able and well-trained young men.

[Financial statements may be found on pp. 92 and 177.]

AGRICULTURAL EXPERIMENT STATION.

SELIM H. PEABODY, PH. D., LL. D., PRESIDENT OF BOARD OF DIRECTION.

To the Regent of the University:

The work of the Station has been carried on during the two years for the most part along the lines laid down in the beginning. The chief expenditures, as a glance at the financial exhibits (pp. 92 and 177) will show, have been for publication of bulletins and reports, for labor, and for salaries. Upon the laboratories and the library only so much was spent as was essential to their highest usefulness.

BUILDINGS.

No new buildings have been erected. One of the barns on the University farm was burned September, 1889, and at the same time the silo which the Station had built was destroyed. Replacing this has been deferred until such time as the University shall have funds with which to build a new barn.

LIBRARY.

A considerable number of new books has been bought for the library and the subscription list of journals and periodicals has been increased. Valuable agricultural and horticultural reports, etc., have been donated to the Station. Four hundred and twenty-seven volumes have been bound during the two years. The subscription list has thirty-eight titles, and the exchanges number one hundred.

The whole number of bound volumes and pamphlets, including bulletins, is 3,034.

PUBLICATIONS.

Nine bulletins, Nos. 3-11, inclusive, and the two annual reports have been published and distributed. The bulletins contained in all 328 pages, and 10,000 or 11,000 copies of each were printed. The reports were pamphlets of sixteen and eighteen pages with cover. 2,000 copies were printed of the first and 1,000 of the second.

The bulletins contain articles as follows:

Bulletin No. 3, November, 1888, 12 pp. Field Experiments with Oats, 1888.

Bulletin No. 4, February, 1889, 104 pp. Field Experiments with Corn, 1888. Garden Experiments with Sweet Corn, 1888.

Bulletin No. 5, May, 1889, 24 pp. Grasses and Clovers. Effect of Ripeness upon Yield and Composition.

Bulletin No. 6, August, 1889, 12 pp. A Bacterial Disease of Corn.

Bulletin No. 7, November, 1889, 37 pp. The Biology of Ensilage. Field Experiments with Oats, 1889.

Bulletin No. 8, February, 1890, 75 pp. Field Experiments with Corn. 1889. Summary of the Results of Field Experiments with Corn. Garden Experiments with Sweet Corn, 1889.

Bulletin No. 9, May, 1890, 40 pp. Milk and Butter Tests. Comparative Value of Corn-fodder and Ensilage in Feeding Yearling Heifers.

Bulletin No. 10, August, 1890, 8 pp. Investigations of Milk Tests.

Bulletin No. 11, August, 1890, 16 pp. Experiments with Wheat.

NEW WORK.

Upon recommendation of the Board of Direction of the Station, new work has been authorized as follows:

September 11, 1888.

1. Investigation of the biology of ensilage.

2. An experiment in relation to the preservation of apples and other fruits.

3. An experiment with wheat sown on a thin soil, at some points in southern Illinois, and treated in the fall with fertilizers of different kinds, with the two-fold purpose to see whether the plant can be so strengthened as to withstand the attacks of the chinch bugs and to determine the effect of the fertilizers upon the yield.

December 11, 1888.

Stock-feeding Experiments:

Pigs, age of, as affecting cost of meat production.
Pigs, effect of weather and shelter upon their growth and condition.
Pigs, value of wheat as a food for.
Pigs, value for, of the undigested food they get from cattle when following them.
Ensilage, value of, for horses, steers, and young cattle.

Dairying Experiments:

Ensilage, its value for milch cows in comparison with dry foods.
Ensilage, its effect upon the quality of milk and butter.
Milk, tests to ascertain its butter value.
Milch cows, effects of warming water for.

Tree-culture Experiments:

Trees, testing time and methods of transplanting.
Orchard fruits, production of new varieties.
Orchard fruits, testing the effects of stock on cion and of cion on stock.
Native fruits, testing and improving.
Fruits, testing methods of preservation.

Greenhouse Experiments:

Coleuses, testing and identifying varieties.
Geraniums, testing and identifying varieties

March 12, 1889.

1. Oats, testing varieties.

2. Oats and wheat, a trial of the plan of growing them together.

3. Sugar beets and mangel-wurzels, cost of raising them and value of the crop.

4. Corn, the effect of fertilizers upon. The purpose is to conduct this experiment upon a light soil, at some convenient point in southern Illinois.

5. Grasslands (meadow and pasture), tests of the use of fertilizers upon.

6. Pigs, cost of production, and rate of growth from birth.

7. Cross fertilization of plants, testing the effects of.

8. Fruits, production of new varieties from seeds.

June 11, 1889.

1. An experiment to test the vitality of blue grass, red top, and timothy seeds.

2. An experiment to test the value of "second cropping," by planting the experimental wheat plats, after the wheat has been harvested, part with corn and part with millet.

3. An experiment to determine the effect upon the corn of sowing rye in it at the last ordinary plowing, and at a later special seeding.

4. An experiment to determine the best method of eradicating the Canada thistle, the experiment to be tried at Mattoon.

5. An investigation of the "slobbers" in horses.

6. A limited series of digestion experiments with poultry.

September 10, 1889.

1. To test effect of fertilizers upon wheat. Experiment to be tried at several places in Southern Illinois.

2. An experiment to test the vitality of seeds.

3. An experiment to test the durability of woods.

4. An experiment to test the deterioration of varieties of fruits and vegetables.

December 10, 1889.

1. To investigate a disease of cattle now prevalent in this vicinity and elsewhere in the state among cattle which have been turned into the cornfields.

2. To take up some experimental work with cucurbitaceous plants except melons.

March 11, 1890.

1. Cost of production of pumpkins. These will be raised with a view to using them for feeding purposes.

2. The protection of trees from borers, mice, rabbits, and other animals.

3. The protection of trees from climatic injuries.

June 10, 1890.

1. To determine the feeding value of broom-corn seed.

2. To determine the feeding value of apple pomace.

EXPERIMENTS CONTINUED AND UNDERTAKEN.

The following table gives the number and title of each experiment that has been in hand during the two years; and in the first column to the right of each title is given the year when the experiment was begun; in the second those which have been completed within the year are marked with a cross (x); in the third, the experiments in progress are marked the same way; and in the last column is stated in which bulletin, or bulletins, a report upon the experiment may be found, if any has been published.

TABLE SHOWING EXPERIMENTS IN HAND DURING TWO YEARS.

No. Experiment.	Class and Title of Experiment.	When begun.....	Completed.....	In progress.....	Reported in bulletins Nos.....
	Field Experiments.				
1	Corn, testing varieties	1887-8	....	x	4 and 8
2	Corn, testing varieties for ensilage	"	x	....	4
3	Corn, time of planting	"	....	x	4 and 8
4	Corn, depth of planting	"	....	x	"
5	Corn, thickness of planting	"	....	x	
6	Corn, planting in hills or drills	"	x	....	4
8	Corn, frequency of cultivation	"	....	x	4 and 8
9	Corn, depth of cultivation	"	....	x	"
10	Corn, effect of root-pruning	"	....	x	"
11	Corn, effect of fertilizers	"	....	x	"
12	Oats, quantity of seed per acre	"	....	x	3 and 7
13	Oats, compact or loose seed-bed	"	....	x	"
14	Oats, time of sowing	"	....	x	"
15	Oats, depth of sowing	"	....	x	"
16	Grasses, comparison of varieties	"	....	x	.....
17	Clovers, comparison of varieties	"	....	x	.....
18	Grasses and clovers, sown with or without grain	"	....	x	.....
19	Grasses, field tests of varieties	"	....	x	.....
20	Clovers, field tests of varieties	"	....	x	.....
21	Grasses and clovers, field tests of mixtures	"	....	x	.....
22	Weeds, number and kinds on given areas	"	....	x	.....
23	Rotation, University experiments continued	"	....	x	.....
24	Fertilizers, comparison of, on corn—small plats	"	....	x	4 and 8
50	Grasses and clovers, effect of ripeness on yield and chemical qualities	"	....	x	.....
53	Wheat, effect of time and manner of harvesting	"	....	x	.....
54	Corn, root grown	"	....	x	4 and 8
61	Wheat, effect of fertilizers on, (wheat sown in 1887)	"	x	....	.....
62	Wheat effect of fertilizers	1888-9	....	x	.....
63	Wheat, methods of soil preparation	"	....	x	.....
64	Wheat, large or small seed	"	....	x	.....
65	Wheat, quantity of seed per acre	"	....	x	.....
66	Wheat, time of sowing	"	....	x	.....
67	Wheat, depth of sowing	"	....	x	.....
68	Wheat, its relation to chess	"	....	x	.....
69	Wheat, effect of fertilizers upon. (Experiments this year at Flora, Odin, and Farina.)	"	....	x	.....
70	Corn fodder, translocation after cutting	"	x	....	.....
71	Corn fodder, effect of ripeness	"	x	....	.....
84	Oats, testing varieties	"	....	x	7
85	Oats, effect of sowing spring wheat with	"	....	x	.....
86	Fertilizers, effect on grass lands	"	x	....	.....
88	Beets, testing varieties	"	....	x	.....
89	Corn, cross fertilization of	"	....	x	.....
90	Corn, rate of growth	"	....	x	.....
95	Corn, effect of sowing rye in it at last plowing and later	1889-90	x	....	.....
103	Comparative yield of corn planted with and without pumpkins, and of pumpkins planted with and without corn	"	....	x	.....
	Feeding Experiments.				
26	Feeding cattle of different breeds	1887-8	x	....	.....
27	Cost of production of young steers	"	x	....	9
28	Cost of production of young colts	"	....	x	.....
29	Cost of production of young calves	"	x	....	.....
30	Effect of ash constituents upon pigs	"	x	....	.....
58	Record of milk product (milk measured in experiment No. 29)	"	x	....	.....
59	Cost of production of young heifers	"	x	....	.....
60	Pigs, comparison between corn, grass, and corn and grass in feeding	1888-9	....	x	.....
72	Comparative value of new and old corn in feeding steers	"	x	....	.....
74	Comparative value of corn and pumpkins, of corn, and of corn and apples in feeding pigs	"	x	....	.....
81	Value of offal fed to pigs	"	x	....	.....
82	Feeding ensilage to colts	"	x	....	.....
83	Comparison of corn meal, and of corn meal and wheat meal fed to pigs	"	x	....	.....
87	Pigs, comparative value of soaked and dry corn in feeding	"	x	....	.....
	Dairying Experiment.				
106	Milk tests, investigation of	"	....	x	9
	Tree Culture.				
31	Orchard, soil cultivation and management	1887-8	....	x	.....
32	Orchard, soil fertilization	"	....	x	.....

TABLE SHOWING EXPERIMENTS—*Continued.*

No. Experiment.	Class and Title of Experiment.	When begun.....	Completed.....	In progress.....	Reported in bulletins Nos.....
33	Apples, testing new varieties	"	....	x	.....
34	Apples, testing new varieties by top-grafting	"	....	x	.....
35	Apples, testing hardiness of root-grafted and double-worked trees	"	....	x	.....
36	Pears, testing new varieties	"	....	x	.....
37	Plums, testing new varieties	"	....	x	.....
38	Cherries, testing new varieties	"	....	x	.....
39	Forest trees, growing of	"	....	x	.....
78	Testing time and methods of transplanting trees	1888–9	....	x	.....
79	Testing and improving native fruits	"	....	x	.....
80	Testing the effects of stock and scion upon each other	"	....	x	.....
91	Peach trees, winter protection of	"	....	x	.....
101	Trees, protection of trunks	1889–90	....	x	.....
102	Trees, protection from mice, rabbits and insects	"	....	x	.....
	Vine Culture.				
40	Grapes, testing new varieties	1887–8	....	x	.....
41	Grapes, methods of training	"	....	x	.....
42	Grapes, soil treatment	"	....	x	.....
	Small Fruit Culture.				
43	Blackberries, testing varieties	"	....	x	.....
44	Raspberries, testing varieties	"	....	x	.....
45	Strawberries, testing varieties	"	....	x	.....
46	Strawberries, method of management	"	....	x	.....
51	Strawberries, raising seedlings	"	x	....	.....
52	Raspberries, soil management	"	....	x	.....
	Gardening.				
48	Beans, testing varieties	"	....	x	.....
49	Sweet corn, testing varieties	"	....	x	4 and 8
56	Potatoes, investigation of scab	"	....	x	.....
104	Cucurbitaceous plants, except melons, tests of	1889–90	....	x	.....
	Tree and Vine Culture.				
55	Fungicides, use of	1887–8	....	x	.....
57	Insecticides, use of	"	....	x	.....
	Miscellaneous.				
73	Record of soil temperatures	1888–9	....	x	.....
75	Soil moisture, evaporation of water from the surface of water, of uncultivated soil, of cultivated soil, of a corn plant, and of grass	"	x	....	.....
76	Meteorological record from August 17, 1888	"	....	x	.....
77	Biology of ensilage	"	....	x	7
92	Canada thistles, extermination of. (At Mattoon)	"	....	x	.....
93	Fruits, production of new varieties from seeds	"	....	x	.....
94	Vitality of timothy, blue grass and red top seeds tested	1889–90	....	x	.....
97	Vitality of seeds tested	"	....	x	.....
105	Investigation of a bacterial disease of corn	"	....	x	6
107	Woods, testing durability of	"	....	x	.....
108	Potatoes, investigation of rot in	"	....	x	.....
109	Tomatoes, investigation of rot in	"	....	x	.....
110	Cabbages, investigation of rot in	"	....	x	.....
111	Beans, investigation of diseases in	"	....	x	.....

BULLETINS.

A brief summary of the articles contained in the bulletins published during the two years is here given:

Bulletin No. 3, pp. 25-36. FIELD EXPERIMENTS WITH OATS, 1888. The same experiments reported upon in this article were continued through the season of 1889, and the results for both years are given below in the summary of the article upon experiments with oats in *bulletin No. 7.*

Bulletin No. 4, pp. 37-140. FIELD EXPERIMENTS WITH CORN, 1888. See below summary of first article in *bulletin No. 8.*

GARDEN EXPERIMENTS WITH SWEET CORN. See below summary of second article in *bulletin No. 8.*

Bulletin No. 5, pp. 141-164. GRASSES AND CLOVERS: EFFECT OF RIPENESS UPON YIELD AND COMPOSITION.

The investigations reported in this bulletin were undertaken to ascertain the effect of cutting certain grasses and clovers at different periods of growth upon the yield of hay and its composition. The results obtained by several others who have made investigations on the same lines are also given, and the whole is believed to be a fairly comprehensive summary of the data so far accumulated upon this subject in this country.

Four grasses, timothy, Kentucky blue grass, orchard grass, and meadow fescue, and two clovers, medium red and mammoth red, were used in the investigation. Incidently there was some comparison of the varieties.

Tracts were selected which promised an even and a full yield. They were divided into plats each one rod square.

Two or more plats of each species were cut at each time of cutting, so that accidental variations might be in a measure overcome.

The grass, or clover, was shaken out after cutting, and turned once or twice. If left out over night, it was shocked. The weather was usually favorable, and the hay was mostly of good quality. When dry enough for storage the hay was weighed, chopped in a feed cutter, carefully mixed, and samples were analyzed by the Station chemists.

The yield per acre of green substance varied in the grasses from three and one-half to four and three-quarters tons, and in the clovers from four and two-fifths to seven and three-fourths tons. The grasses lost while curing, from one and three-fourths to two and three-fifths tons.

An analysis of the results embodied in the tables given shows that while there are marked exceptions, there is, in general, a decrease in the per cent. of water, crude ash, crude fat, and crude protien, and an increase in the per cent. of crude fibre, and nitrogen free extract as the plant matures during that period within which it is at all practicable to harvest the crop for hay. The increase of the non-nitrogenous over the nitrogenous portions has such few exceptions that they may be attributed to accidental variations of sampling. The decrease in the per cent. of fat is quite general, but there are marked exceptions.

The increase of yield of the grasses from the period of full bloom until seeds are formed is appreciable. There is an increase of all the food nutrients, but the increase is most marked in the crude fibre and nitrogen-free extract. With timothy, orchard grass, and meadow fescue, there was an increase of six hundred pounds of water-free substance, or an average increase of one-fourth their weight from the full bloom until seeds were formed. With the clovers there was a decrease of yield after the period of full bloom (when about one-half of the heads are in full bloom). There was a decrease in all the nutrients, with the exception of crude fibre, in which there is sometimes an appreciable increase.

Whether the decrease in the digestibility of the grasses after full bloom will offset the increase of yield has not yet been determined. Presumably, the decrease in digestibility is not so rapid with the grasses as with the clovers.

With an ordinary yield the loss of water while curing in the field may be from two to five tons per acre; the loss is larger in the clovers than in the grasses. The loss in weight by drying after storing may be from two to four hundred pounds per ton.

In comparing the composition of the different forage plants cut for hay in this experiment, the most noticeable difference is to be seen in the percentage of crude protein in the clovers as compared to the grasses. Medium red clover contained over twice as large a per cent. of this substance as did timothy. Mammoth red clover contained about three per cent. less than did medium red clover. Timothy is distinguished by containing the least percentage of crude ash, crude fat, and crude protein, the largest percentage of nitrogen-free extract, and with one exception, meadow fescue,

the largest percentage of crude fibre of any of the species analyzed. Of the grasses, orchard grass contained the largest percentage of ash and crude protein, and Kentucky blue grass the largest percentage of fat.

In yield, both of field-cured hay and water-free substance, timothy leads the list, followed by mammoth red clover, orchard grass, Kentucky blue grass, medium red clover, and meadow fescue.

While the yield of orchard grass was less than of timothy, the digestible organic substance being about three-fourths that of timothy, its composition and digestibility indicate a better quality of hay for milch cows and growing stock. Orchard grass does not seem difficult to grow successfully in this state. It ripens with medium red clover, which makes it desirable for mixing with that plant. Nevertheless, its cultivation is adopted slowly. It has generally been held to be less readily eaten by stock than timothy, and the cost of the seed probably retards its adoption and general culture for meadows. As a pasture grass it is conceded to be inferior to Kentucky blue grass for this state.

Bulletin No. 6, pp. 165-175. A BACTERIAL DISEASE OF CORN. A disease of common Indian corn, not previously described, is reported in this bulletin. The malady is very wide-spread throughout the United States and sometimes causes very great destruction, though it more often exists without serious results. The effects are, to casual observation, very similar to those of certain insects, especially to such as injure the roots in the early part of the season. The affected stalks cease growing properly, they become abnormally slender, the color becomes yellowish, showing first in the lowest leaves, and the plants are at length very easily pulled from the ground on account of the death and decay of many of the roots. When the latter are carefully examined it is found that the oldest and lowest are dead and the bottom portion of the stalk, from which these lowest roots issue, is also discolored and dead or dying. When the corn escapes until after midsummer and then becomes affected with this disease the most prominently apparent marks are in the leaf-sheaths—the portion closely enwrapping the stem. Dark spots or patches show through and may thus be seen from the outer side; but if the sheaths are stripped off the corroded areas will be found much more plainly shown on the inner side. Sometimes the ears and especially the husks are similarly affected. Subsequently these diseased ears often become white with mould.

The most injury is done when the roots are affected. Sometimes certain patches of the field, more often low ground, fail entirely, while other parts of same field are little or not at all injured. In some instances, however, the stalks whose lower roots have been thus killed ultimately recover, form new roots, and perhaps make a fair yield. This doubtless depends upon the weather and other external conditions.

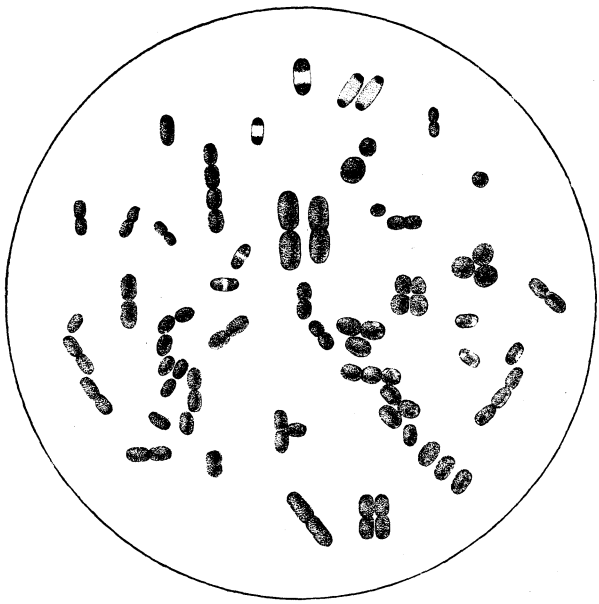
The organisms which cause the disease are bacteria, and may be found in great numbers in the affected parts. They are exceedingly minute, and of course can be seen with the high powers of the compound microscope only. The subjoined engraving represents them magnified over 3,000 times across.

The corroded spots follow within a few days as a result of artificially applying a pure culture of the bacteria, without of necessity previously puncturing the tissues.

No remedial measures have been found.

It is believed the same organisms sometimes cause the death of cattle which feed upon the affected stalks after the corn is gathered.

FIGURES SHOWING FORMS OF THE BACTERIA, MULTIPLIED 3,333 TIMES ACROSS.



In making the drawing there were used three slides from cultures each of which was known to be pure, and one slide made directly from the gelatinous substance on a leaf-sheath. The endeavor was made to select from these four slides all forms and sizes of the organisms which they contained, and thus to show, as nearly as possible, all the variations of the species. Every individual figured was drawn as accurately as possible from the actual object.

The typical form is represented by those of medium size having an oval shape, most numerously shown. The largest ones are indicated by the two near the center of the figure, and the peculiar appearance of those not becoming uniformly stained is shown near the top. The two, near together, with dark color near the ends only and a much paler but somewhat colored central area, are types of those obtained from mounts made directly from the diseased plants.

Bulletin No. 7, pp. 178-194. BIOLOGY OF ENSILAGE. This bulletin gives the results of microscopical and other researches upon the fermentative changes occurring in ensilage in ordinary silos, and also in laboratory imitations upon a small scale of such silos. The various living organisms found at different stages of the fermentation were carefully studied and, as far as possible, the special action of each kind was determined. A very large number of artificial cultures of these organisms—mostly bacteria—were made and numerous experiments were tried in the endeavor to find out just what ordinarily takes place in silos and under what conditions favorable and unfavorable changes occur.

The following is a summary of results obtained:

Ensilage is a very variable product. The variations are due to so many factors—including differences in the original material, in the states and

conditions of the weather, and in the construction of the storage bins—that great care and much knowledge must be required to secure reasonably uniform results.

Ensilage is never truly preserved fodder, but is more nearly such when the mass has been very hot for a time and then has the air most thoroughly excluded by the proper construction of the silo and the densest attainable condition of the material. The initial high temperature is probably most serviceable by causing this closer packing of the mass rather than by killing the germs of other ferments.

No appreciable alcoholic fermentation occurs. The very high temperature often attained is due to two or more species of rod-like bacilli which appear to cause butyric fermentation and its allies.

Lactic fermentation is most abundant in the earlier transformations of ensilage not originally rising to a high temperature.

Acetic fermentation occurs only when the temperature sinks below 35° C. (95° F.) A large proportion of water is favorable to this change, and the sharply acid material is much less likely to be attacked by decomposing agents (other bacteria and mould fungi). Except for the difference in density of the material, that originally hot subsequently sours nearly as rapidly as that less heated at first.

The bests results are obtained by the most nearly perfect exclusion of air. For this purpose, uniform distribution upon filling the silo is of more importance than persistent tramping, because the pressure of the mass must be mostly relied upon.

FIELD EXPERIMENTS WITH OATS, 1889. The four experiments with oats tried in 1888 and reported on in bulletin No. 3, were repeated as follows:

Experiment No. 12. Oats, Quantity of Seed per Acre. In 1888, the largest yield was produced when two and one-half bushels per acre were sown; in 1889, when three and one-half bushels were sown. Both years considered, the yield was related to the quantity of seed sown from most to least as follows: Three and one-half, four, three, two and one-half, two, one and one-half, and one.

Experiment No. 13. Oats, Compact or Loose Seed-bed. A medium loose seed-bed gave a larger yield in both seasons than a compact or a very loose seed-bed.

Experiment No. 14. Oats, Time of Sowing. Almost without exception, the earlier the seeding the larger the yield and the greater the weight per bushel. Oats sown March 14, 1889, yielded one-half more than those sown April 4th, and nearly twice as much as those sown April 18th.

Experiment No. 15. Oats, Depth of Sowing. Between one and four inches in depth, the differences in yield do not indicate with certainty that the depth of sowing affected the results.

Experiment No. 84, Oats, Tests of Varieties, was first tried in the season of 1889. Thirty named varieties were sown, which were classified as very early, ripe July 15th; early, ripe July 17th and 18th; medium, ripe July 20th; late, ripe July 24th; very late, ripe July 27th.

A test of the vitality of the seed showed that an average of 93 per cent. of the berries sprouted. In fifteen varieties 95 per cent. or more sprouted; in three less than 80 per cent. sprouted.

The seed obtained from seedsmen was found practically free from foreign seeds and other impurities.

The conclusions drawn from the experiment are given below. It must be remembered that they rest upon one year's trial; subsequent trials may materially modify them.

1. In many cases varieties of oats under distinct names resemble each other so closely as to be practically identical.

2. Thirty-three plats, including varieties under 30 names, gave the rather low average of 41 bushels per acre. The largest yield was 54 and the least 30 bushels per acre.

3. There was an average of somewhat less than two pounds (1.84 lb.) of straw for each pound of grain. The variation in the yield of straw was a little less than the yield of grain.

4. The following varieties gave the largest yields, in the order named: Giant yellow French, early Dakota white, improved American, Japan, white bonanza, and American banner; while Canadian black, Virginia winter, white Belgian, black Tartarian, and Texas rust proof gave the poorest yields.

5. All things considered, it may probably be fairly concluded that the earlier ripening varieties were the more desirable.

6. Neither the length, plumpness, nor weight of berry, nor the weight per bushel appreciably influenced the yield.

7. The white varieties were considerably superior in yield and weight per bushel to the black and dun-colored varieties.

8. The varieties with closed panicles yielded somewhat better than those with open panicles.

9. The average per cent. of kernel in the berries, as shown, was 69.6 per cent. and 65.1 per cent. in the crop. The largest individual difference between two varieties, was 19.3 per cent. in the seed and 12.7 in the crop. This extreme difference between two varieties would make a difference of $39,000,000 if applied to the annual crop of the United States. Differences, apparently not beyond the control of the farmer, would make a difference of eight to nine millions in the annual value of the crop.

10. Those varieties which contained the higher per cent. of kernel in the berry of the seed sown, contained, on an average, the higher per cent. in the crop and gave the larger yield.

11. On the whole, it is doubtful whether there was any relation between the per cent. of kernel in the berry and the weight per bushel, the color, weight, or plumpness of the berry. If any such relation existed those varieties with long, slender berries, with lighter berries, and with the less weight per bushel yielded the highest per cent. of kernel.

12. While it appears from the data obtained that it is especially desirable to sow varieties of oats whose berries contain a larger per cent. of kernel, this quality, with our present knowledge, can be known only by direct determination.

Bulletin No. 8, pp. 194-288. FIELD EXPERIMENTS WITH CORN. Under this title report was made upon ten experiments with common dent corn which had been tried in 1888 and were repeated with some variations in 1889.

Experiment No. 1. Corn, Test of Varieties. Many varieties planted in 1888 which gave no promise of merit were not planted in 1889.

In 1888, the varieties were classified as early maturing, ripe in 125 days or less from date of planting; medium maturing, ripe in from 125 to 135 days; late maturing, ripe in from 135 to 145 days; and non-maturing. The time of ripening in 1889 was ten days longer for each class. Carefully revised descriptions of varieties are given and full details of results.

Taking into the account the experiments of 1888 and 1889 made by the Station, and a test of varieties made on the University farm in 1887, varieties were thus recommended:

While no one of the varieties tested stands far above the average of the better varieties of its class, doubtless a large number of the varieties are better than the average raised by the farmers of the state, and might be introduced on their farms with profit. Not to exclude other meritorious varieties, the following medium maturing dent varieties may be safely recommended for general culture in central Illinois: Yellow—Leaming, Clark's Iroquois, legal tender, Riley's favorite, Fisk. White—Champion white pearl or Burr's white, gourd-seed, Clark's premium 110-day. The following, which are desirable early maturing varieties in this latitude, may be recommended for general culture in northern Illinois: Yellow—Murdock, Edmunds or Kane county pride, grange favorite, king of the earliest (for very early). White—Wisconsin white dent, champion of the north.

The following, which are almost too late for this latitude, would probably be desirable farther south: Yellow—Improved orange pride, Steward's improved yellow, Swengel. White—Helms improved, Parish.

Experiment No. 3. Corn, Time of Planting. Eight weekly plantings were made beginning April 22d.

The results of two seasons' experiments indicate that the yield of corn is not appreciably affected by a variation of five weeks, prior to June 1st, in the time of planting. Some differences occur which seem to be due to certain variable conditions of weather rather than to the time of planting. Sometimes the later plantings may be properly cultivated with less labor than the early plantings.

Experiment No. 4. Corn, Depth of Planting. Corn was planted May 6th, at from one to six inches deep. The deeper plantings came up sooner and yielded better. The best yield was from the seed planted six inches deep. In 1888, the largest yield was from seed planted one inch deep. The difference was due to the fact that in 1889 the ground was very dry until May 21st.

Experiment No. 5. Corn, Thickness of Planting. The object of the experiment was to determine both the best amount of seed for a given area and the best manner of distributing that seed. The results obtained in 1888 were in the main confirmed by the trial of 1889.

Neither for fodder purposes nor for the production of corn merely do these experiments show any material advantage in planting in drills over planting in hills, and this where the cultivation was such as to keep the land equally free of weeds, whatever the method of planting. The quantity of seed planted controlled the yield, rather than planting one or four kernels in a place. For corn alone, planting at the rate of one kernel every nine or twelve inches, gave better results than thicker or thinner planting. For fodder, planting at the rate of one kernel every six inches gave better results than planting twice as many kernels.

Experiments Nos. 8, 9 and 10. Corn, Frequency of Cultivation; Depth of Cultivation; Effect of Root-pruning. As in 1888, there seemed to be no gain from cultivation more frequent than that of ordinary practice. So also the very plain conclusion to be drawn this year from experiments 9 and 10 is the same as that of last year: That the shallow cultivation is better than the deep; and the reason for this seems to be that the deep cultivation disturbs and cuts the roots. The shallow cultivation does not destroy the weeds quite so effectually as the deep, and demands more skill on the part of the workman. The average yield on shallow cultivated plats was nine bushels per acre, or twelve per cent. more than on deep cultivated plats.

Experiment No. 54. Corn, Root Growth. The purpose of this experiment was to ascertain the number of the roots of corn and their depth at the points where they are likely to be disturbed by deep cultivation. The summaries of the results for both 1888 and 1889 are here given:

1888. Nine plants which averaged 12 in. high to tip of highest leaf had altogether 94 roots, or an average of over 10 apiece. The longest root traced was 35 in.. the plant being 22 in. high. A plant 4½ in. high had a root 13 in. long. Twenty-four roots were examined at 6 in. from their base.

One was 4½ in. deep; five, 4 in.; twelve, 3½ in.; one, 2½ in.; four, 2 in.; and one, ¾ in., at this distance from the base of the root. Three-fourths of the roots, therefore, would not have been broken by root-pruning or cultivating 3 in. deep; but all except one would have been at 4 in.

1889. Of the seven corn plants planted April 29th, 4 averaging from 5 to 6 in. high were examined May 21st and 22d, and 3 averaging 15 in. high were examined June 15th. These 7 plants had 97 roots of which 78 were traced, with a few exceptions, throughout their entire length. Forty-eight roots were examined at 6 in. from their base. At this point the depths were three, 2 in. deep; one, 2½ in.; seven, 3 in.; three, 3½ in.; seventeen, 4 in.; two, 4½ in.; five, 5 in.; two 5½ in.; five 6 in.; three went straight down.

Rather more than three fourths of the roots would not have been broken by root-pruning or cultivating 3 in. deep; nearly two-thirds would have been broken at 4 in. deep. Over one-third were 4 in. deep at 6 in. from their base.

Another point brought out by these examinations was that the roots (except the seminal ones, those at the seed, which afterwards die) start usually at from 1 to 2 in. from the surface without reference to the depth at which the seed had been planted. In case the seed is planted deeper than this, the stem is simply elongated between the first or seminal whorl and the second, or first nodal whorl. The stem between these points is usually about 1-16 in. in diameter, while above the second whorl the stem is oval, and in plants 15 in. high is about ½ in. in diameter. It would seem from this that, unless necessitated by dryness, nothing would be gained by planting over, say 3 in. deep. Deeper planting would merely require of the plant extra force and time to reach a position, where the roots which eventually nourish the plants will grow.

Experiments Nos. 11 and 24. Corn, Effect of Fertilizers. The experiment with a rotation of crops was also briefly reported upon to show the effect of fertilizers upon corn. One tract of land included in experiment No. 11 was in Flora, Ill. The fertilizers used were stable manure, hog tankage, muriate of potash, dissolved bone-black, sulphate of ammonia, superphosphate, and guano. The results were thus stated:

Nothing can be more conclusive than that in the nine trials made during the past two seasons, no practical benefit was obtained from the use of commercial fertilizers when applied to corn; and, moreover, but very little effect of any kind. The conditions of soil, climate, and culture under which these trials were made, it may be said, were not very different from those under which the bulk of this great crop was raised.

The increased yields from the use of stable manure, taken as a whole, probably repaid the cost of application and left some profit. Clearly the value of stable manure was not equal to the estimates often made, based upon the cost of commercial fertilizers. It should be recognized that the overwhelming testimony derived from experiments so far conducted is that for those states which raise one-half or more of the corn of the United States the application of commercial fertilizers for the production of corn is not generally profitable at the present time; and that to base the value of stable manure for those states on the price of the constituents of commercial fertilizers is misleading. Every corn raiser in those states knows that it takes 15 to 25 tons of stable manure per acre to produce a material increase in the yield of corn; and he knows that experiments which make the value of stable manure several dollars per ton can have no application in regard to his land.

GARDEN EXPERIMENTS WITH SWEET CORN. *Experiment No. 49. Sweet Corn, Testing Varieties.* Some varieties were described which were not included in the descriptions of 1888, and the results of tests of the vitality of seed both in the greenhouse and the field were reported. The average shown in greenhouse tests was about 80 per cent.; in field tests, about 65 per cent.

Conclusions were stated as follows:

Sweet corn for seed should be gathered before there has been any extremely cold weather. As soon as gathered, it should be thoroughly dried, and kept dry until planted the following season.

Among so many varieties it would be presumptuous to name any one as the best. But for general planting any of the following varieties mentioned in the order of earliness may be recommended: Early—Cory, Narragansett, Ford's early, Minnesota, Leet's early. Medium—Crosby, Concord, Stabler's early, Landreth sugar, Black Mexican. Late—Amber cream, ruby, Stowell's evergreen, eight-rowed, triumph, Egyptian, late mammoth, The early, small growing varieties do best planted, if in hills, 1½ to 2 ft. apart; the medium 2½ ft. apart; and the large, late varieties, 3 to 3½ ft. apart.

It will not do to depend implicitly on catalogue statements in regard to new varieties. Two illustrations will suffice. No. 48 (No. 4 of table p. 283) was sent out as 10 to 14 days earlier than any other known variety. As grown here the past season it was no earlier than two other varieties; and within a week from the time when it was fit for use, sixteen other varieties had come into season. Gold coin was said to be 6 to 10 days earlier than Stowell's evergreen. It proved the present season to be 6 to 16 days later, there being 10 days difference between the earliest and latest plats of the latter. With the exception of gold coin, the greatest difference in time between the earliest and latest plats the past season was 23 days; including gold coin the difference is 28 days. In the tests for 1888, the greatest difference found was 25 days. The earlier varieties, as a rule, not only produce fewer ears in proportion to the number of stalks, but they also produce fewer good ears in proportion to the number of nubbins.

Bulletin No. 9, pp. 291-328. MILK AND BUTTER TESTS. *Experiment No. 106.* At the creameries of DeKalb, Malta, and Shabbona, owned by Gurler Bros. tests were made to compare the gravemetric method and the methods with Short's test and the lactoscope of determining the amount of butter fat in milk. The actual yield of the churn was also compared with the results indicated by the method with Short's test.

In connection with this investigation a long series of experiments were conducted at the creameries and the Station laboratory to determine at what degree of acidity cream would yield the most butter, the cream standing at 58° F. when churning began.

A report is also given of some trials in making butter of sweet cream.

At the American Fat Stock and Dairy Show, held at Chicago, in November, 1889, eight cows competed for prizes to be awarded those giving the greatest quantity of butter fat in milk given in one day. Two Ayrshires, three Holsteins, and three Jerseys competed. The milk was analyzed for butter fat and total solids by the Station chemist and a report of the analyses is given in the bulletin. A report is also given upon the composition of samples of butter which had taken first prizes at the same show. The samples were taken by a committee appointed by the Association of American Agricultural Colleges and Experiment Stations, and a set of them sent to the Station laboratory for analysis.

THE COMPARATIVE VALUE OF CORN-FODDER AND ENSILAGE IN FEEDING YEARLING HEIFERS. *Experiment No. 99.* This experiment was conducted with a view of determining, so far as one experiment may, the comparative value of corn (stalk and ear), when field-cured for corn-fodder or when made into ensilage, in the production of live increase in cattle. Seven of the heifers were thoroughbred Shorthorns, the eighth was a high grade Shorthorn.

During two weeks, December 23, 1889, to January 6, 1890, while the heifers were getting accustomed to their quarters, they were each fed daily six pounds of middlings and one feed of both corn-fodder and ensilage.

The time covered by the feeding test was 84 days, January 6 to March 31, 1890, and may be divided into three periods, as follows:

Periods.	Days.
Period 1, January 6th to January 30th	24
Period 2, January 30th to March 10th	39
Period 3, March 10th to March 31st	21

The duration of the first two periods was controlled by the supply of ensilage.

During the three periods each heifer had six pounds of crushed oats daily, and each pair (heifers 1 and 2, 3 and 4, etc.), had four pounds of clover hay daily. Except the first day or two, all given of both oats and hay was eaten.

During period 1, heifers 1 to 4, were fed corn-fodder from Burrell and Whitman ensilage corn, and heifers 5 to 8 were fed ensilage from the same. During period 2, heifers 1 to 4 were fed corn-fodder from Burr's white corn, and heifers 5 to 8 were fed ensilage from the same; and during period 3, all were fed corn-fodder from Burr's white corn.

The daily routine was about as follows:

6:30 a. m., removed and weighed corn-fodder and ensilage left uneaten from previous evening feed.
7 a. m., fed crushed oats.
7:30 to 8 a. m., fed corn-fodder and ensilage.
9 to 10 a. m., weighed animals, removed and weighed corn-fodder and ensilage not eaten, and watered in stall.
10 a. m. to 3:30 p. m., heifers ran in a small lot, during which time clover hay was placed in mangers.
3:30 to 4 p. m., stabled and watered.
4 to 4:30 p. m., fed crushed oats.
5 to 6 p. m., fed corn-fodder and ensilage.

Period 1. During period 1, January 6–30, 1890, heifers 1 to 4 were each given 12 pounds daily (5 lb. in the morning and 7 lb. in the evening) of Burrell and Whitman corn-fodder, and heifers 5 to 8 were each given from January 6th to January 15th, 25 pounds (10 in the morning and 15 in the evening), of Burrell and Whitman corn ensilage; from January 15th to 27th, 28 pounds (12 in the morning and 16 in the evening); and from January 27th to 30th, 30 pounds (13 in the morning and 17 in the evening).

The constant aim was to give each animal the same quantity of crushed oats, and each pair the same quantity of clover hay, and to allow each animal all the corn-fodder or ensilage it would eat, though recognizing that with full feeding some of the coarser parts of each would not be eaten.

The total pounds of food eaten per day per animal, during the 12 weeks, January 6th to March 31st, was:

	Heifers fed Corn-fodder.		Heifers fed Ensilage. (During periods 1 and 2).	
	Fresh.	Water-free.	Fresh.	Water-free.
Corn-fodder or ensilage	8.3	5.92	20.17	6.57
Crushed oats	6.	5.19	6.	5.19
Clover hay	2.	1.64	2.	1.64
Total per animal	16.3	12.75	28.17	13.40
Total per 1,000 lb. live wt		16.87		17.55

The following table gives the gain, in pounds, per lot for each period and the total gain for the three periods:

Period.	Heifers fed corn-fodder.	Heifers fed ensilage, (during periods 1 and 2).
Period 1	186.2	259.5
Period 2	285.6	251.
Period 3	93.2	39.8
Periods 1, 2 and 3	565.	550.3
Grain per day per animal	1.68	1.64

The report also contains tables of daily weights of animals and of food eaten and water drunk, as well as discussions of methods and results.

Each week during the progress of the experiment duplicate samples of the food offered and that rejected were taken and analyzed. The tables below give the results of these analyses. In making the second table the digestive coefficients for corn-fodder and corn ensilage were those given by Dr. Armsby in *Bulletin No. 9, Penn. Experiment Station.* For clover hay and oats the coefficients are taken from *Wolff's Futterungslehre.* They are

	Protein.	Fiber.	Nitrogen-free extract.	Fat.
Corn-fodder	44	71	68	79
Corn ensilage	41	60	66	86
Clover hay	63	..	62	60
Crushed oats	72	..	67	80

TABLE SHOWING COMPOSITION OF THE FEEDING STUFFS, PER CENTS.

	Water	Ash.	Protein*	Fiber.	Nitrogen-free extract.	Crude fat.
Corn fodder as fed—						
Fresh	32.19	3.49	5.76	13.56	42.91	2.09
Water free		5.15	8.50	20.00	63.28	3.07
Corn Ensilage as fed—						
Fresh	72.30	1.54	2.30	6.02	16.88	0.96
Water-free		5.58	8.31	21.70	60.93	3.48
Fodder refused—						
Fresh	51.65	3.96	2.95	17.28	23.07	1.09
Water-free		8.20	6.19	35.73	47.62	2.26
Ensilage refused—						
Fresh	78.32	1.95	1.80	7.56	10.04	0.33
Water-free		9.03	8.37	34.86	46.21	1.53
Clover hay—						
Fresh	18.23	6.34	12.93	25.10	34.68	2.72
Water-free		7.76	15.81	30.70	42.41	3.32
Crushed oats—						
Fresh	13.32	3.32	11.48	9.73	57.22	4.93
Water-free		3.84	13.24	11.23	66.01	5.68

*Nitrogen + 6.25.

TABLE SHOWING DIGESTIBLE NUTRIENTS AND POTENTIAL ENERGY IN 100 POUNDS OF FEEDING STUFFS NAMED.

	Corn-fodder.	Corn ensilage.	Corn-fodder refus'd	Corn ensilage r'fus'd	Clover hay.	Crushed Oats.
Digestible protein, lb....	2.53	0.94	1.29	0.73	8.14	8.26
Digestible crude fiber, lb	9.62	3.61	12.27	4.53	.....	.....
Digestible nitrogen-free extract, lb.....	29.18	10.68	15.69	16.61	37.07	44.85
Digestible fat (ether extract), lb	1.65	0.82	0.86	0.28	1.63	3.94
Total digestible organic matter.....	42.98	16.05	30.11	12.15	49.84	57.05
Potential energy (calories).....	83,841	31,779	58,039	23,261	91,018	115,420
Nutritive ratio.....	1:16	1:17	1:23	1:16	1:5	1:6.5

VALUE OF PASTURE, AND OF GRAIN RATION WITH PASTURE, FOR YOUNG CATTLE. *Experiment No. 27.* The purpose of the experiment was to ascertain—

1. The feeding value, for young cattle, of pasture.
2. The value of a grain ration for young cattle on pasture.

Report is made upon the feeding of two lots of steers—one from April 18, 1888, to November 25, 1889, and the other from May 20 to November 25, 1889. During the pasture season of 1888 a part of the first lot was fed grain in addition to the pasturage. During the season of 1889 the whole of the first lot was fed no grain; but of the second lot part was fed grain and part not. Two pigs were put in with the steers of the last lot which were fed grain. Tables are given showing the weights of the animals, taken each two weeks.

The conclusions suggested—with, however, the caution that so complicated problems cannot be solved by trials running through two years—are:

The results from two years' trials indicate that a grain ration to young steers on good pasture is not usually profitable. The value of the increase in weight by the grain-fed steers over that by those having grass only, will rarely repay the cost of food and labor. The increased value of the animals from earlier maturity and better quality may make the grain feeding profitable.

Especially if the grain given be unground, is it essential to have pigs follow the cattle, if a profit is to be had.

To secure the greatest gains per animal the pastures must not be fully stocked. To secure the largest gain per acre they should be fully stocked.

An acre of good grass may be expected to support a steer weighing from 800 to 1,000 lb., and enable it to make a moderate gain during the summer.

The rate of growth of cattle, either on grass alone or with an added grain ration, is very irregular, being especially checked by either drouth or excessive rains, extreme heat or cold storms.

The addition of grain or other food to the pasturage before the grass fails in the autumn is clearly advisable.

The acreage of pasturage may probably be safely decreased one-third, if the steers be given a full grain ration.

It is doubtful if, at present, in most parts of Illinois, cattle can be maintained or an increase of weight be secured at so low a cost in any other way as by allowing them to get all their food during the best of the grazing season from good pastures, fully but not over stocked.

Bulletin No. 10, pp. 329-336. INVESTIGATIONS OF "MILK TESTS." *Experiment No. 106.* The object of the investigation was

First, To show that dairy cows vary in value to their owners. Some are tke weeds in a corn field, and are kept at an actual loss; while others pay for liheir keeping and a profit besides.

Second, To show that the *pounds* of *milk* brought to a creamery by its patrons is not the most accurate basis upon which to pay for the milk, since the butter fat, which alone is of value to the creamery, is not always proportionate to the quantity of milk.

Third, A trial of some of the methods proposed for analysing or testing milk, that can be easily and quickly mastered by those who wish to use them; and observations on the accuracy of results obtained by these methods.

In the first division of this investigation the per cent. of fat was determined in the milk of each cow, 38 in all, on three different farms, where, at that season, the cows had pasture feed only. The percentages of butter fat varied from 2.3 to 5, and the amounts varied still more widely.

In the second division of the investigation the milk brought during one day by each patron to two creameries was analyzed, 113 tests being made. The record shows that at creamery A the milk brought by one-fifth of the patrons contained 3.6 per cent, fat, or 27.7 lb. milk to 1 lb. of butter fat. The amount they brought was nearly one-seventh (14.7 per cent.) of the total receipts of milk, and the butter fat it contained was about one-seventh (14.4 per cent.) the total amount received. In this case, then, it did not make much difference with one-fifth of the patrons whether they were paid per hundred lb. of milk or per lb. of butter fat delivered, as each is nearly the same proportion of the total quantity for the day. With the other four-fifths of the patrons, however, the proportion is quite irregular. The milk brought by 24 patrons, or nearly one-half of all, was 49.7 per cent. of the total quantity, but it contained from 3.7 to 4.0 per cent. of fat and supplied 51.9 per cent. of the total butter fat. One-fourth of the patrons delivered 26.5 per cent. of the total milk brought; but it contained from 3.2 to 3.5 per cent of fat and supplied only 24.3 per cent. of the total butter fat that day.

Besides these already mentioned are a few extremes. The milk supplied by two patrons contained 3.0 and 3.1 per cent. fat, and that supplied by four patrons, from 4.1 to 4.4 per cent. fat, making a difference of 1.4 per cent. between extremes; or the richest milk was 47 per cent. richer than the poorest.

Equally striking illustrations could be drawn from the record of creamery B. Eighty per cent. of the patrons supplied milk ranging from 3.2 to 3.8 per cent. of fat, but the milk brought by one patron ran as low as 2.3 per cent. and that brought by another as high as 4.6 per cent. of fat; that is, one contained just twice as much butter fat in 100 lb. of milk. If the richer milk is received at $1 per 100 lb., for the poorer but 50 cts. per 100 lb. should be paid.

In the third division of this investigation an examination was made of five methods or systems, proposed during the last two years to be used for analyzing or testing milk by persons not chemists.

1. "A new method for determining fat in milk," by F. G. Short. (*Bulletin No. 16, July, 1888, A. E. S., Univ. of Wis.*)

2. "A new volumetric method for the estimation of fat in milk, skimmed milk, buttermilk, and cream," by C. L. Parsons. (*Ann. Rep't, N. H. A. E. S., 1888, p. 69.*)

3. "A new method of milk analysis for the use of dairymen," by G. H. Failyer and J. T. Willard. (*Ann. Re'pt Kas. A. E. S., 1888, p. 149.*)

4. "A new process for determining the per cent. of fat in milk, cream, or skim milk," by C. B. Cochran. Patented. (*Jour. Analytical Chemistry, Vol. III., p. 381.*)

5. "The Iowa Station milk test," by G. E. Patrick. (*Bull. 8, Ia. A E. S.*)

Further investigations of this kind will be made and more extended reports made later.

Bulletin No. 11, pp. 337-352. EXPERIMENTS WITH WHEAT. The report includes the two seasons' tests, with regard to the preparation of the seedbed, the quantity of the seed sown, the time of sowing, and the effect of the time and manner of harvesting on the yield of wheat.

The experiments indicate that sowing wheat in October is not a safe practice in this latitude.

It would seem that, between one and two bushels per acre, the rate of seeding affects the yield much less than other items in wheat culture.

Drilling wheat in plowed ground has given better yields than drilling in corn stalks or drilling in open ground prepared with a disk harrow. Rolling the ground after drilling did not injure the wheat this season, which was a severe one.

In the one trial made during a season favorable to wheat, no benefit was obtained from mulching wheat with straw, at the rate of one and a quarter tons per acre.

In general, the riper the wheat the larger has been the yield from a given number of heads, and the larger the kernels. The experiments indicate that if the wheat were rather green, shocking and capping would result in a larger yield than harvesting without binding.

Experiments were also carried on for the two years to determine the effect of fertilizers upon wheat. These were conducted in part at the Station and in part upon the light-colored soil of southern Illinois, which last were undertaken at the suggestion primarily of Professor S. A. Forbes, State Entomologist, with the view of determining the effect of certain fertilizers in tiding a crop of wheat over an attack of chinch bugs. But, the chinch bugs having disappeared, the experiment has been carried forward to ascertain the direct effect of the fertilizers in the production of wheat. Four trials have been made—one in 1888-9 and three in 1889-90.

The trials with commercial fertilizers in the production of wheat do not indicate that their application will be found generally profitable in central Illinois. In an experiment made in 1888-9 on the light-colored clay soil of southern Illinois, the apparent increase from the use both of stable manure and commercial fertilizers was very marked and abundantly profitable. Three trials were made in three separate localities this season, and up to the time of the severe weather in March, the field notes indicated an appreciable effect from the use of stable manure and commercial fertilizers. How much this severe weather affected the results, the fertilized plats being the ranker and possibly proportionately more severely injured, can not be told. Although the per cent. of increase from the use of stable manure, cattle tankage, and superphosphate was often considerable, being as high as 92 per cent. in one case and in many cases 25 per cent. or more, still the total increase in yield was not sufficient to pay for the cost of the fertilizers used. Whether or not during a series of years the application of commercial fertilizers to the light colored clay soil of southern Illinois can be made profitable in the production of wheat can be determined only by a series of carefully conducted experiments; but with the information so far obtained, it is believed that the prospects are sufficiently good to make it desirable that as many farmers as may be in a position to do so should give the subject careful tests on a small scale. No farmer should use commercial fertilizers on a large scale unless he has more information than is given by these trials.

Fertilizers containing phosphoric acid generally produce the most effect, those containing potash the least. Good stable manure was generally equal to any other fertilizer.

The table and diagram combined, on the following page, give a summary of most of the experiments with fertilizers upon wheat.

DIAGRAM SHOWING EFFCT OF FERTILIZERS UPON YIELD OF WHEAT.

Fertilizer per acre.		Yield of wheat per acre.	
Name.	Qu'ntity	Bu.	One bushel to one-tenth inch.
Station grounds 1889-90.			
Stable manure..	20 loads	15.1	
*None.....	.....	23	
Cattle tankage..	400 lb.	23.8	
Superphosphate	40[illegible] lb.	22.5	
Superphosphate.	400 lb.	23.7	
Nitrate of soda..	100 lb.		
Superphosphate	400 lb.	19.8	
Muriate of p'tash	100 lb.		
None.....	.....	15.8	
Nitrate of soda ..	100 lb.	17.3	
Muriate of p'tash	100 lb.	14.3	
Nitrate of soda..	100 lb.	21.8	
Muriate of p'tash	100 lb.		
Flora, Clay Co. 1888-89.			
†.....	.....	27.2	
‡None.....	.....	8.75	
Flora, Clay Co., 1889-90.			
Stable manure..	20 loads	15.7	
Cattle tankage..	400 lb.	13.4	
None.....	.....	13.7	
Superphosphate.	400 lb.	12.6	
Superphosphate.	400 lb.	15.3	
Sulphate of p't'sh	200 lb.		
None.....	.....	10.9	
Superphosphate.	400 lb.	17.1	
Superphosphate.	400 lb.	21.3	
Sulphate of p't'sh	200 lb.		
Nitrate of soda..	100 lb.		
None.....	.....	13.2	
Nitrate of soda..	100 lb.	10.7	
Sulphate of p't'sh	200 lb.	10.9	
None.....	.....	11.7	
Nitrate of soda..	100 lb.	15.5	
Sulphate of p't'sh	200 lb.		
Nitrate of soda..	100 lb.	15	
Sulphate of p't'sh	200 lb.		
None.....	.....	14.6	
Nitrate of soda..	100 lb.	15	
Sulphate of p't'sh	200 lb.	12	
Marion Co., near Farina, 1889-90.			
Cattle tankage..	400 lb.	7.1	
Stable manure..	20 loads	7	
None.....	.....	3.8	
Superphosphate.	400 lb.	6.6	
None.....	.....	3.6	
Superphosphate.	400 lb.	5.7	

DIAGRAM SHOWING EEFECT OF FERTILIZERS UPON YIELD OF WHEAT.

Fertilizer per acre.		Yield of wheat per acre.	
Name.	Qu'ntity	Bu.	One bu. to one-tenth inch.
Odin, Marion Co., 1889-90.			
Stable manure..	20 oads	10.5	
None.....	.....	9.1	
Cattle tankage..	400 lb.	10.1	
None.....	.....	8.1	
Superphosphate	400 lb.	11.1	
None.....	.....	9	
Superphosphate	400 lb.	12.9	
None.....	.....	11.5	

*Mulch of oat straw, 2,500 lb., 1888-89.

†There were 4 plats which were fertilized in the same way as were the 1st, 2d, 4th, and 5th at this place the next year.

‡Some fertilizers were put on part of this acre in the spring, but the wheat had been so far injured by the winter that the whole is counted as unfertilized.

[Financial statements may be found on p. 92 and p. 177.]

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