MAINE STATE LEGISLATURE

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PUBLIC DOCUMENTS OF MAINE

1909

BEING THE

ANNUAL REPORTS

OF THE VARIOUS

DEPARTMENTS AND INSTITUTIONS

For the Year 1908.

VOLUME IV.

AUGUSTA
KENNEBEC JOURNAL PRINT
1909

ANNUAL REPORT

OF THE

UNIVERSITY OF MAINE

FOR THE YEAR ENDING JULY 1, 1908

REPORTS OF THE TRUSTEES, PRESIDENT, TREASURER AND FACULTY

WATERVILLE
SENTINEL PUBLISHING COMPANY
1909

REPORT OF THE BOARD OF TRUSTEES

To the Honorable Governor and Executive Council of Maine:

The trustees of the University of Maine submit their fortieth annual report, with report of the president and treasurer. Full information regarding the general and financial affairs of the University will be found in the annual reports of President Fellows and Treasurer Stetson.

There has been during the period covered by this report but one change in the board of trustees, Honorable Henry Lord of Bangor retiring at the expiration of his term, having served for seventeen years as a member of the board, being for sixteen years its president. His retirement was greatly regretted not only by the president and faculty but also by the student body and friends of the institution. A man of untiring energy and keen foresight living, as he did, in the city of Bangor, he was called upon repeatedly to attend to the numerous immediate wants of the institution in addition to his duties as president of its board of trustees. The University, in due consideration of the work which he performed in helping to make the University what it is today, named the new mechanical and electrical building in his honor. With the passing of Mr. Lord from the active affairs of the institution, the University looses one of its most faithful trustees, but it will always retain the many proofs of his efficient service. Mr. Lord was succeeded by the Honorable John Marshall Oak of Bangor, who was one of the early graduates of the University. Mr. Oak has aided the University greatly in the past, and it is sure to be strengthened in the future by his services.

The past year has been one of deep interest to the University, being the fortieth year of its establishment. There was a large attendance at the commencement exercises in celebration of this fortieth anniversary, many of the alumni and former professors of the University being present. The announcement was made of the retirement of Prof. M. C. Fernald, who has been connected with the institution since its inception, having filled the position of president and for the past few years as a professor. Dr. Fernald has always been very popular with the faculty and students of the University, and will always have a deep interest in its future success.

There have been some changes in the faculty, which are referred to more fully in the report of President Fellows.

The University met with a great loss in the sudden death of Prof. H. M. Estabrooke, who met with an accident resulting in his death. Prof. Gilbert M. Gowell, who had been connected with the University Experiment Station for many years, was well known to the great farming interests of Maine, and while not actively engaged in work at the University at the time, his death is one that will long be felt by the institution.

In 1907 the legislature made appropriations for a heating plant and agricultural building. The heating plant has been installed, a central station having been built with underground service to the principal buildings on the campus, result of which has been very satisfactory, reducing the cost and heating the buildings with more uniformity in a much more satisfactory manner, to say nothing of lessening the hazardous fire risk by having so many independent heating plants. The new agricultural building is now completed, having been built within the appropriation made by the legislature. It is a beautiful building, commanding one of the most sightly locations on the campus, and is sure to be greatly to the advantage of the department of agriculture. Its construction is such that all parts of the building are perfectly lighted. This building will add as much strength to the institution as any erected in the past.

One of the most pressing needs of the University is a new dormitory for men. The rapid increase in the number of students has caused a great anxiety on the part of the president and faculty to furnish accommodations for students. We strongly recommend the erection of a new dormitory to accommodate not less than 150 men, and this building should be one of most modern construction, considering the important question of caring for so many students in one building; and it is urgently hoped that suitable appropriation will be made for other buildings the coming year, which are very much needed and fully explained in President Fellows' report to the board of trustees.

During the past year the campus has presented unusual beauty in the growth of shrubbery, and the care of the grounds. Many new walks have been added and much improvement made. The grounds have been greatly admired by the many visitors to the University.

The college of law has had a most successful year, and by its work has added great strength to the University. The number of students has rapidly increased until there are now 113 in attendance.

At the present time the University has the largest number of students in its history, having 880 scholars. Excellent health has prevailed among the faculty and students during the past year.

The board of trustees in reviewing the wonderful growth of the University, cannot urge too strongly the importance of providing for its future growth, and are unanimously in favor of a fractional mill tax, so that the institution may take rank, as it has, among the strongest of the land grant colleges in the country.

EDWARD B. WINSLOW,
President, Board of Trustees.

REPORT OF THE TREASURER

To the Trustees of the University of Maine:

The treasurer has the honor to submit the following report concerning the financial condition of the University, July 1, 1908.

INCOME OF THE UNIVERSITY OF MAINE FROM JULY 1, 1907, TO JULY 1, 1908

Cash balance, July 1, 1907		$12 94
Coburn Fund	$4,000 00	
Land Grant Fund	5,915 00	
Morrill Fund	30,000 00	
State	73,500 00	
Student Receipts	35,738 36	
		$149,153 36

RECEIPTS OF THE UNIVERSITY OF MAINE FROM JULY 1, 1907, TO JULY 1, 1908

Agricultural Building	$20,000 00	
Bills payable	27,000 00	
Bills receivable	424 88	
Diplomas	225 71	
Heating plant	40,000 00	
Interest and discount	634 34	
Insurance	608 40	
Rents	1,469 38	
Sales, farm produce, etc	10,012 15	
Sundry receipts	517 59	
		$100,892 45
Total receipts		$250,058 75

EXPENSES OF THE UNIVERSITY OF MAINE FROM JULY 1, 1907, TO JULY 1, 1908

Current Expenses:

Salaries		$84,311 75
Bacteriology and Veterinary Science	$21 68	
Biology	558 81	

Current Expenses:		
Biological Chemistry	269 88	
Chemistry	2,381 17	
Civil Engineering	2,421 31	
College of Agriculture	8,336 51	
Electrical Engineering	1,067 55	
Latin	3 92	
Mathematics and Astronomy	50 00	
Mechanical Engineering	1,436 84	
Pharmacy	10 80	
Physics	354 70	
Physical Education	52 05	
		$16,965 22
General Expenses:		
Advertising	$411 15	
Bills Payable	27,500 00	
Care of Buildings	3,267 85	
Commencement	489 94	
Commons	1,052 14	
Freight and Express	491 05	
Furniture and Fixtures	703 69	
Grounds	2,602 89	
Heating Buildings	6,408 91	
Incidentals	150 13	
Lectures	433 35	
Library	5,105 98	
Law Library	832 07	
Lighting Buildings and Grounds	1,474 34	
Miscellaneous	1,614 23	
Mt. Vernon House	680 99	
Museum	702 98	
Office	275 96	
Oak Hall	331 94	
Postage and Stationery	1,247 29	
Prizes	90 00	
Repairs	13,977 57	
Shop	755 98	
School Inspection	46 75	
Track	3 45	
Treasury	310 05	
Trustees' Expenses	50 00	
Water Supply	3,730 37	
Charges, Farm Produce, etc	15,807 15	
		$90,548 20

Sundry Expenses:		
Carnegie Library	$691 56	
Heating Plant	49,322 42	
Agricultural Building	6,650 78	
		$56,664 76
Cash Balance		1,568 82
		$250,058 75

Respectfully submitted,

ISAIAH K. STETSON, *Treasurer.*

I hereby certify that I have examined the accounts of the treasurer and find them correctly kept and properly vouched.

S. W. GOULD, *Auditor.*

REPORT OF THE PRESIDENT

To the Board of Trustees of the University of Maine:

The President of the University has the honor to present his seventh annual report, covering the years 1907-1908.

CHANGES IN THE FACULTY

The Commencement exercises in June, 1908, were given an especial interest and character by the celebration of the fortieth anniversary of the active work of the institution. This was an occasion of much importance.

More important than the fact of forty years life of the University, was the public announcement of the retirement of Professor M. C. Fernald from active duty in the institution. During the whole period of the life of the Maine State College and the University of Maine Professor Fernald had been an important factor; first as Acting President and Professor, later as President from 1879 to 1893, and after this until June, 1908, Professor of Philosophy. At Commencement Dinner the warmest appreciations of Professor Fernald's services were pronounced by alumni, faculty, and students. A formal expression of appreciation was passed by the Board of Trustees and forwarded to Doctor Fernald. Although he has discontinued active service, the friends of the institution are certain of his continued interest in its prosperity.

Professor Gowell: The death of Professor Gilbert M. Gowell removed from the State one of the most able, cultured, and enthusiastic workers in the field of experiment and investigation. The University and the whole State of Maine have had the advantage of Professor Gowell's work and advice for more than twenty years, and for many years to come his influence will not cease to be felt for good in the lines of dairying and poultry culture. He had carried on successful experiments with poultry for many years. Although Professor Gowell had voluntarily withdrawn from his active connection with the University as teacher and experimenter, all his friends had looked forward to many years of active work for him and to benefits through his advice in his public addresses. He was an unusually successful and pleasing public speaker on the topics in which he was interested. He was perhaps more widely known throughout the United States and abroad than any other experi-

menter with poultry, and the fame of the poultry work at the Maine Experiment Station has been inseparably connected with the name of Professor Gowell.

His funeral was held in the chapel. The entire military body served as an escort from the house to the chapel, and on the return.

Professor Estabrooke: During the last week of October Professor H. M. Estabrooke, head of the Department of English, met with a serious accident which resulted two days later in his death. Professor Estabrooke had given his entire services for seventeen years to the University of Maine. During the time of his connection with the institution the work in the Department of English had increased so greatly that besides his own services there were required the services of five others. Professor Estabrooke began his work when not even the whole time of one teacher was given to the English Department. He had therefore grown with the institution, and had come to be regarded as a most important member in the faculty. The suddenness of his death came as a severe blow to his associates in the University and his friends in the village. It is the intention of the faculty to hold appropriate memorial services at an early date.

Wallace Craig, Ph. D., has been appointed Professor of Philosophy. He is a graduate of the University of Illinois in the class of 1898, and received the degree of M. S. in 1901. He was a graduate student at the University of Chicago from 1901 to 1904, and in 1907-1908, and received the degree of Ph. D. in the summer of 1908. For two years he was Assistant in Zoology in the University of Chicago; two summers he has spent in study at the Marine Biological Laboratory at Woods Hole; and for two years was Professor of Psychology and Biology in the North Dakota State Normal School.

Leon E. Woodman, M. A., has been appointed Assistant Professor in Physics. Mr. Woodman is a graduate of Dartmouth College in the class of 1899. He received the degree of M. A. from Dartmouth in 1902. In 1904 Mr. Woodman came to the University of Maine as Instructor in Physics. He remained here one year, and then went to Columbia University for further graduate work. For the two years that he has been at Columbia University he has been acting as Assistant in Physics.

Victor R. Gardner, M. S., has been appointed Assistant Professor in Horticulture. Mr. Gardner is a graduate of the Michigan Agricultural College in the class of 1905. For two years after his graduation he was Instructor in Horticulture at the Iowa State College, and received the degree of M. S. A. from that institution in 1907. During the year 1907-1908 he was Instructor in Horticulture in MacDonald College, St. Anne de Bellevue, Quebec.

William A. Brown, M. S. A., a graduate of the Ontario Agricultural College at Guelph, has been made Assistant Professor in Animal Industry, and is to have direct charge of the work in poultry husbandry.

Harry N. Conser, M. S., M. A., has been made Instructor in Botany. He is a graduate of Union Seminary, Pa., where he received the degree

of B. S. in 1883 and the degree of M. S. in 1886. He has been engaged in secondary school work. He spent the year of 1888-1889 in graduate work at the Universities of Leipsic and Bonn. In 1908 he received the degree of M. A. from the Harvard Graduate School.

Edith M. Wallace, a graduate of Mt. Holyoke College, in the class of 1903, has been made Instructor in Biology. Miss Wallace was for two years head of the Department of Biology at the Western College for Women. She received the degree of M. A. from Clark University in 1908.

Charles E. Lewis, Ph. D., has been appointed Assistant Vegetable Pathologist in the Experiment Station. Doctor Lewis is a graduate of the University of Indiana. He received the degree of Ph. D. at Cornell in 1905. During the summer of 1905 he was Instructor in Botany at the Indiana University Summer School, and the following year was acting head of the Department of Biology at the University of Idaho. During 1906-1907 he was Honorary Fellow at Cornell, and for the last year has been Instructor in Botany at the University of Wisconsin.

Maynie R. Curtis, M. A., a graduate of the University of Michigan, in the class of 1905, has been made Assistant in Biology in the Experiment Station. In 1907 Miss Curtis was private assistant to the head of the Department of Zoology in the University of Michigan, and for the past year has been graduate assistant in Zoology in that institution, receiving the degree of M. A. in 1908.

Joseph L. Coon, B. A., a graduate of Bucknell University in the class of 1908, has been made Tutor in Physics.

Edward A. Garlock, B. S., a graduate of Purdue University in the class of 1908, has been made Tutor in Physics.

James P. Farnsworth, B. S., a graduate of the University of Maine in the class of 1908, has been appointed Tutor in Drawing.

Robert K. Steward, B. S., a graduate of the University of Maine in the class of 1908, has been made Tutor in Civil Engineering.

Anne Margaret Merrill, B. A., a graduate of the University of Maine in the class of 1908, has been made Assistant in German.

Assistant Professor Beckenstrater, of the Department of Horticulture, resigned at the close of the college year.

Percy L. Reynolds, M. D., Physical Director and University Physician, resigned at the close of the college year to accept a position at Massachusetts Agricultural College.

Henry W. Bearce, B. S., Instructor in Physics, resigned to enter government work.

Dayton J. Edwards, B. S., Instructor in Biology, resigned to accept a fellowship in Zoology at Columbia University.

Charles L. Ridgway, B. S., Instructor in Botany, resigned in order to take up graduate work.

Arthur R. Lord, B. S., Tutor in Civil Engineering, resigned, and has accepted a position in the University of Illinois.

Carleton C. Murdock, B. A., Tutor in Physics, resigned in order to continue graduate work.

Charles H. Sampson, B. S., Tutor in Drawing, resigned, and has accepted a position in Bangor High School.

Arthur C. Whittier, B. S., Assistant Chemist in the Experiment Station, has resigned to accept a position in the Ohio Experiment Station.

A Guy Durgin, B. S., a graduate of the Unversity of Maine in the class of 1908, has been made Assistant in Chemistry.

John F. Mahan has been appointed Physical Director. Mr. Mahan has been Physical Director at the Massachusetts Institute of Technology for six years.

STUDENTS

The number of students for the year ending June, 1908, was 776. The number listed in the catalog which is now in press, for the year 1908-1909, is 880, subdivided as follows: Seniors, 103; Juniors, 120; Sophomores, 164; Freshmen, 161; Short Pharmacy, 19; Specials, 50; Summer Term, 99; College of Law, 114; School Course in Agriculture, 21; Winter Courses in Agriculture, 49; Graduate students, 16.

Every county in the State is represented in the student body. The largest number of students from any one county is from Penobscot county, the number being 219. The second largest number is from Cumberland county, the number being 86. Every county in the State is represented in the freshman class. The number of women students is 43.

Of the whole student body 689 are from Maine; 127 from Massachusetts; 20 from New Hampshire; 1 from Vermont; 2 from Rhode Island; 1 from New Jersey; 15 from New York; 10 from Connecticut; 1 from Pennsylvania; 1 from Colorado; 2 from Maryland; 1 from Ohio; 1 from South Carolina; 1 from Tennessee; 1 from Texas; 1 from District of Columbia; 1 from Armenia; 2 from China; 1 from New Brunswick; 1 from Porto Rico; 1 from South America.

Of the new students Maine furnishes 153; Massachusetts 35; New Hampshire 5; New York 4; Connecticut 3; Maryland 2; Rhode Island 1; Pennsylvania 1; China 1.

The average age of the freshman class is twenty years and six months.

In the class entering in September, 1908, the religious membership is as follows:

Baptist, 20; Congregational, 67; Catholic, 14; Christian Science, 2; Advent Christian, 1; Episcopal, 15; Free Will Baptist, 5; Friends, 1; Lutheran, 2; Methodist, 29; Presbyterian, 1; Protestant, 1; Unitarian, 8; Universalist, 16.

THE COLLEGES

During the past two years the work of the Dean of the University has been systematized, and has accordingly become more useful. I would recommend a careful perusal of the Dean's report, which follows immediately after the President's report. See page

College of Law. The wisdom of establishing the College of Law as a department of the University, becomes more evident as the years go by. The work of that College is efficient, and the success of the gradu-

ates is ample evidence of this efficiency. The total number of students enrolled for the present year is 113. Fuller details are furnished by the report of the Dean.

College of Agriculture. Last year the Dean of the College of Agriculture reported 288 persons as receiving instruction for a longer or shorter period in this College. This year his report shows that 657 different persons received instruction at the University in the various classes and lectures offered in the College of Agriculture. This is in addition to 14,392 persons who attended the lectures and demonstrations given by the Extension Department of the College of Agriculture. These figures are not only evidence of the widespread usefulness of the work in agriculture, but are a reminder that while we are trying to do our duty to those engaged in this field of work, we should do the same kind of work for citizens of the State of Maine who are engaged in other occupations. This subject will be treated more fully at a later time. A very full report of the Dean of the College of Agriculture will be found, followed by the reports of the various departments of that College.

A word should be added here concerning the Poultry Department.

Although the experiments at the Maine Agricultural Experiment Station have made the poultry work of that Station famous throughout the world, yet we have never had regularly organized instruction on the subject of poultry until the present year. Through the action of the board of trustees, taken last year, there has been organized, to begin in September of the present year, a full course in poultry keeping and management, and the necessary buildings have been constructed. I respectfully refer you, for full details, to the report included under the head of the College of Agriculture.

College of Arts and Sciences. However rapidly the other colleges of the University may grow, and however much in demand they may be, it must always remain true that the work in arts and sciences must be the backbone of University education. No clearer evidence of this can be found than that there is a constant tendency in institutions which are established especially for technical and scientific training, to add work in languages and literature to their curriculum. At a recent meeting of the National Association of State Universities the problem of states where two institutions have been established, one a State University and one an agricultural and mechanical college, was fully discussed. The consensus of opinion seemed to be that the result in those states would be that they will ultimately have two State Universities, the cause being that the agricultural and mechanical college will have and must have work in the liberal arts. Instead of the tendency being to do away with liberal studies in existing institutions, there is a tendency to add them where they do not now exist. Reference is here made to the report of the Dean of the College of Arts and Sciences, where will be found not only the report of the Dean, but thereafter will be found the reports of the various departments in this College.

College of Pharmacy. The Professor of Pharmacy makes a concise statement of the value and needs of this kind of work.

College of Technology. The College of Technology, while it has a solid and substantial organization, has not as yet had a dean appointed whose chief work is the administration of this College. For two or three years there has been an executive committee of the engineering faculties, which has done good work in co-ordinating the work of the different engineering departments. During the past year Professor Hart, the Dean of the University, has been also Acting Dean of the College of Technology. His report in this capacity will be found in this volume, followed by the reports of the heads of the various departments in this College.

ALUMNI ADVISORY COUNCIL

At the meeting of the General Alumni Association, in June, 1908, there was chosen by that Association a body called the Alumni Advisory Council. The purpose of this Council, as stated by the Secretary of the Alumni Association, is "to promote the interests of the University of Maine by assisting the President and Trustees of the University, and in such other ways as may be possible."

The Council is composed of fifteen members, ten elected by mail vote of all the alumni, and one representative of each College of the University elected by the alumni of that College.

The terms of those chosen at the first election were determined by lot, varying from one year to five, the full term being five years.

The first regular meeting of the Council was held June 7, 1908, following which a conference was held between members of the Council and members of the Trustees.

The officers of the Council are, ex-officio, the officers of the General Alumni Association, the President for 1908-1909 being John M. Oak, 1873, Bangor.

The full list of the Council is as follows:

EX-OFFICIO

President, John M. Oak, Bangor, Maine.
Recording Secretary, F. L. Russell, Orono.
Corresponding Secretary, Ralph K. Jones, Orono.
Treasurer, A. H. Brown, Old Town.

MEMBERS AT LARGE

John M. Oak, 1873, Bangor, Maine	1913
Louis C. Southard, 1875, Boston, Mass	1913
Albert H. Brown, 1880, Old Town, Maine	1912
George H. Hamlin, 1873, Orono, Maine	1912
Edward H. Kelley, 1890, Brewer, Maine	1911
Paul D. Sargent, 1896, Augusta, Maine	1911
Charles S. Bickford, 1882, Belfast, Maine	1910
George E. Thompson, 1891, Orono, Maine	1910
Walter Flint, 1882, Port Deposit, Md	1909
——— ———	1909

REPRESENTING THE COLLEGE OF AGRICULTURE

W. H. Jordan, 1875, Geneva, N. Y., 1910.

REPRESENTING THE COLLEGE OF ARTS AND SCIENCES

W. R. Howard, 1882, Farmington, N. H., 1912.

REPRESENTING THE COLLEGE OF LAW

Freeland Jones, 1900, Bangor, 1911.

REPRESENTING THE COLLEGE OF PHARMACY

———— ————, 1909.

REPRESENTING THE COLLEGE OF TECHNOLOGY

N. C. Grover, 1890, New York City, N. Y., 1913.

It is my opinion that this chosen body of alumni may make itself of very great assistance to the Board of Trustees in many ways, and I suggest that the trustees have it in mind to call upon the Alumni Council for service of all kinds when it may seem to be needed. No institution can be run successfully without the hearty sympathy and cooperation of those who have been graduated from it, and while it is not always wise to have the whole Board of Trustees composed of alumni, yet the very fact that most boards of trustees have representatives of the alumni within their body, demonstrates clearly that the business interests of the institution need the advice and experience of those who have been in close touch with the institution as students. I think a step forward has been taken by the alumni in thus offering their services to the trustees.

VESPER SERVICES

Late in the winter of 1908 a proposition was made by one of the religious denominations in the State to furnish free services of religious nature for a given number of times during the year, for the benefit of the faculty and students. The President thanked the persons making this offier, but replied that no services of this kind could be accepted in a state institution unless an equal opportunity were given to all religious denominations within the State. Leading representatives of the various religious denominations in the State were accordingly notified that such a request had been made, and that no request of the kind could be granted without the consent or participation of the other religious bodies. The result was that nearly all of the organized religious societies in the State tendered their services for one or more Sundays during the year. Seven Sunday afternoons during the remainder of the college year were given to a service of about an hour in length, conducted each time by a representative of a different religious denomination. The result seemed to be satisfactory and beneficial.

A series of vesper services, held each Sunday afternoon at three o'clock, has been arranged on the same plan for the coming winter.

Inasmuch as no one denomination has any more interest than another in these services, and inasmuch as all have an opportunity to participate in them, it would seem that no objection could be raised by anyone, and that all will be greatly benefited thereby.

THE CARNEGIE FOUNDATION

In my annual report for 1907 I gave an outline of the plan of the Carnegie Foundation for the Advancement of Teaching. One of the purposes of this Foundation was to establish retiring allowances for professors in colleges, universities and technical institutions. The state universities had not been included in Mr. Carnegie's deed of gift to the Foundation.

The committee appointed by the National Association of State Universities consisted of the President of the University of Wisconsin, and the President of the University of Maine. They presented before the trustees of the Foundation for two successive years the claims of the state universities to participate in the benefits of the Foundation. In March, 1908, Mr. Carnegie gave an additional five million to the foundation in order that the state universities might be included. The University of Maine is eligible under this deed of gift to the full benefits of the Foundation, the only condition being the formal acceptance of the gift by the legislature and governor of the State.

I therefore recommend that the board appoint some member to draft a bill or resolve to be presented to the legislature immediately upon its assembling in January, in order that the gift of Mr. Carnegie may be formally accepted, and that members of the faculty of the University may thereby at once receive the retiring allowances provided. Three persons are now eligible.

DEPARTMENT OF EDUCATION

The Department of Education, which was established two years ago, has been successful. The effort at the beginning, however, has been only to prepare those who are intending to teach in the schools of the State, and those who were preparing to hold administrative positions in the schools. No definite work has been done toward the training of teachers in other than the commonly accepted grammar and high school courses.

The State law requires agriculture to be taught in the public schools. There are so few persons prepared to teach agriculture that the law cannot be fully operative until a large number of persons have had special training not only in agriculture, but in the teaching of the subject. It is planned, therefore, that through co-operation with our College of Agriculture, the Department of Education will arrange work so that those who desire to teach agriculture may have special pedagogical training in that direction. This, however, is but an infinitesimal part of the work that might be done through the Department of Education for the benefit and upbuilding of all the schools in the State. The time is

rapidly approaching when industrial work will be put into all of the public schools. It must come very soon, and when the demand comes there will be no supply of teachers.

I recommend most strongly that a very early arrangement be made whereby our Department of Education shall be so enlarged that we may prepare teachers for manual training, domestic science and household economy, and other industrial work. At the present time there are so few people prepared to teach these subjects that it is difficult for colleges to get the teachers needed, and to supply the demand which will immediately come from the high schools and the other public schools of the various states there must be a provision made. I sincerely hope that sufficient appropriation may be made by the legislature not only to provide for additional teaching in the Department of Education, but to build and fully equip the necessary buildings for the practical instruction in all the subjects above mentioned. We could use our present wood and iron shops for the instruction in manual training and several of the industries, but we need a fully equipped department of household economy and domestic science. A full statement was made on this latter topic in the report of last year.

BUILDINGS

The appropriations made by the legislature of 1907 for a heating plant and agricultural building have been satisfactorily expended. The heating plant has been in working order for a year, and the buildings are more satisfactorily heated than they were previously. The actual expense of heating the buildings will probably be reduced, but it is too early to get exact figures on this point. Certainly there are many gains. Where five or six different boilers needed the attention of as many janitors, now of course the time of these janitors can be more fully devoted to the proper care of the buildings, which of necessity had previously been much neglected. The heating system is that of the R. D. Kimball Company, 6 Beacon Street, Boston, Mass., and is the same that has been used in Dartmouth College, Wellesley College, and other important institutions of New England. The R. D. Kimball Company were the supervising engineers, and all contractors worked under their general supervision.

The Hall of Agriculture is so nearly completed that we may have the use of it within a month. It seems in every way to be a satisfactory building. The plans were made by William Hart Taylor of Boston, and the contract was awarded to, and has been executed by, Messrs. George H. Wilbur & Son of Old Town. The contractors deserve the warmest commendation for their careful and painstaking work. The best of material has been used in the building, and the personal attention of the contractors every moment during the construction of the building has insured the most rigid following of all the specification.

There is danger in repeating the needs of buildings from year to year that the very repetition will become monotonous and therefore fail to call attention to the urgency of the needs themselves.

There is the strongest and most immediate need of buildings for the departments of Physics and Chemistry, and a dormitory for men. These are all necessary for the present number of students in attendance, and without anticipation of an increase either in courses, students, or professors. There are several educational needs which would demand the erection of other buildings, but it would seem that good judgment would compel us to refrain from making these demands until the necessities of the present moment are fully satisfied. It will probably seem like presumption to those who are not familiar with the management of a large educational institution to demand three or four buildings all at once. But I have no fear that any one who would thoroughly inform himself on all sides of the question would doubt that there is immediate necessity for the three buildings mentioned. The two buildings for instruction are essential for adequate attention to be given to the subjects they represent, as well as to make way for demands of other departments in the space now occupied by Physics and Chemistry. On the other hand, the students that are now here are not adequately housed, and those that are likely to attend in the immediate future cannot be received unless there be a men's dormitory. It seems impossible to decide between the two apparently imperative needs, and indeed I do not wish to be responsible for the decision, provided both needs cannot be supplied. Yet to those less familiar with the educational work of the University there seems the more obvious need of a dormitory, and if there is any doubt about the appropriation for all the needed buildings, I suppose on this ground the dormitory should be the first provided. It should be a modern building in every respect, and provide not only rooms for students, but an adequate commissary department for at least one hundred and fifty men.

Fractional Mill Tax. It will be noticed by a careful perusal of the reports from the various departments that there are many requests for additional instructors for next year. It may seem that some of these requests are unreasonable, unless you carefully look over the statistics reported by the Dean as to the number of students in the various departments. There is, of course, a constant demand for new buildings as a consequence of the increase in the number of students and for the purpose of giving better instruction for those who are here. But there is another demand equally pressing, and that is for not only more instructors, but more competent instructors. Both of these imply more money.

Cornell University is one of the strongest of the land grant colleges, founded at the same time and on the same basis as the University of Maine. The next to the last report of the president of Cornell University (President Schurman), contains the following sentences: "Cornell needs millions for men." "It is the faculty which makes a University." In his request for "millions for men" he means that millions should be added to the endowment in order that the income may provide additional teachers and increased salaries. Money may be provided either as

income from endowment, or as a direct appropriation by the State legislature. The latter is the method used in most states, either by means of the fractional mill tax or biennial appropriations. Whatever the method for raising money, the truth of President Schurman's statement must be appreciated by all candid thinkers. The necessity for having a consistent policy in the management of any large enterprise becomes more evident day by day.

It is unnecessary to go into the arguments again concerning the mill tax principle. These have been advanced from time to time. They are well known to those who wish to know them.

The present standing of the University of Maine in the State and elsewhere, would seem to warrant the continued demand upon the legislature for a provision which can be counted upon for some years, at least, in advance. Every year new states join the ranks of those who use the mill tax method to provide for the state educational institutions. Is it not time that the trustees of the University of Maine decide fully upon the wisdom of this policy, and determine upon an effort for its adoption which shall be unceasing until success is achieved?

RELATION OF THE UNIVERSITY TO THE EDUCATIONAL SYSTEM OF THE STATE.

The trustees of this institution are all business men of wide experience, and I feel sure that all would agree that the success of any large enterprise depends upon thoroughness of organization and close attention to all details. I therefore address myself to you in the matter of education in the State of Maine. I apply to you in a larger sense than merely as trustees of one institution. In your position as official guides of the one institution which is the capstone of the educational system you can, and I believe ought to, look into the relations of the University to all other schools of all grades which are in any sense public institutions.

The high schools and academies of the State should not exist entirely as isolated units, detached in interests and harmony from the schools below and above them in grade. The whole public educational system of the State should be so organized that each school fits as closely into its place with all others as the individual part fits into an effective piece of mechanism. The transition should be easy and natural from the primary to the grammar school, from the grammar school to the high school, and from the high school to the University. It is a recognized feature of American life that the public must educate the people. However many institutions have been or shall be established through private benevolence and patriotism, there will always be a vast majority of the people left over for the public to care for. Many states of the Union have already recognized the necessity for a systematization of all public educational efforts, and several more are at the present time devoting the closest attention to this topic. For instance, Virginia and Arkansas at the present moment are officially studying the most approved educational organizations to be found in any states in the Union, with a view

to immediately co-ordinating their various institutions and systems into a more effective whole. It is time that the true statesmen of Maine should look upon this subject with the closest attention. The pupils are fewer in the grammar schools than in the primary schools; they are vastly more numerous in the grammar schools than in the high schools; and it is unnecessary to say that those who seek education beyond the high school grade are in a startling minority.

The reasons for this condition are many. But one of the clearest is that the pupils and their parents do not find in the schools all that they desire and need for the practical work which is to occupy them through the most of their lives. The whole development of the land grant colleges in the past forty years has demonstrated that the people want industrial education in connection with culture. Therefore the institutions which have offered scientific and industrial education in connection with the always recognized subjects for culture, have prospered beyond all anticipation. Certain individual states which have provided the same opportunities in their secondary schools have discovered that the interest in secondary education has been immensely quickened, and the manual arts high schools, the commercial high schools, the technical high schools, as they are variously named, have outstripped all others in supplying the demand which the people make for education of that grade. These schools are not purely industrial, but give the industrial with the intellectual work. The same demand exists to supply the needs of the people whose children are in attendance at the schools of lower grade than the high schools. This is not a subject which can be ignored much longer. Those who ignore it will be left behind in the race. The states which ignore it will not be abreast of their sisters in the Union.

I therefore apply to you, genelemen, to take some time, in addition to that which you are now giving to the affairs of the State University, to investigate the whole subject of industrial and practical education in connection with the public school system, and if need be take the initiative in calling for a commission to be appointed by the governor to study and report upon the educational needs of the State of Maine as a whole. No more suitable source for such valuable service could be found than the Board of Trustees of the State University. If you do not take the initiative, someone else will, and here is where it ought to begin.

The normal schools are in many senses the most important of the educational tools of the public. They are now doing a valuable and effective work, but they are supplying a very small proportion of the trained teachers which our State needs. They can best work out their proper destiny if they could have closer and more intimate relations with the other public agencies.

I do not speak of this subject in any sense to criticise any existing efforts, but purely in order to make a possible helpful suggestion for the general educational welfare of the State. The State Superintendent is now doing, and has done in the past, his utmost toward proper organization. But in my opinion there must be a close study made, as already suggested, of the whole matter including the needs of the people, the

demands they now make and will make in the future, upon the schools and academies, normal schools and University.

RHODES SCHOLAR

It is proper that I should call the attention of the trustees to the fact that the University of Maine is now represented at Oxford by a Rhodes Scholar, Ballard Freeze Keith. Mr. Keith took the qualifying examinations a year ago last winter while he was a member of the sopohomore class. Two members of the University at that time passed the qualifying examination, but as the requirements of the Rhodes trustees included athletic ability and interest quite as much as scholarship, the decision seemed necessarily made in favor of Mr. Keith rather than of Mr. Harold M. Ellis. Mr. Ellis has been appointed to a fellowship at Harvard University.

Either of these gentlemen would have represented the University with distinction at Oxford. The fellowship at Harvard is a definite recognition of the ability of Mr. Ellis. The University has a right to feel proud of the success of both of these young men.

DRAMATIC CLUB

For the past two years public exhibitions by the Dramatic Club have been given. This organization is a new one in the University. In the spring of 1907 the play, Shakespeare's "As you like it," was given; and in 1908, "When We were Twenty-One."

This Dramatic Club is an outgrowth of the Department of Public Speaking. It is a credit to the department and to the University.

GIFTS

Since the last annual report the University has received the following gifts:

College of Agriculture

Two gasoline engines, from the Moline Pump Company, Moline, Illinois.

One Miami gasoline engine, from Brackett, Shaw & Lunt, Somersworth, N. H.

Six samples of wire fence, from American Steel & Wire Company.

One set barn door hangers, one set hay fork hangers, from Stowell Manufacturing Company, Milwaukee, Wis.

One sulky plow, one landside plow, one swivel plow, from Oliver Chilled Plow Company.

Registered twin Guernsey calves, by Mr. Lyman Blair, Greenville.

No. 8 shears for sheep shearing machine, by the Chicago Flexible Shaft Company, Chicago.

One quart Kemp's Sheep Branding Liquid, by William Cooper & Nephews, Chicago.

Set of wool samples, by Benedict & Livingston, Boston.

One Wigwam Brooder, by E. F. Hodgdon, Dover, Mass.

One 220-egg Reliable Incubator, by Reliable Incubator & Brooder Company, Quincy, Illinois.

One 8-bottle Babcock Argos milk tester.

One small set balances for weighing samples of cream, from Vermont Farm Machine Company, Bellows Falls, Vt.

Civil Engineering

One Hundred Dollars from the Alpha Portland Cement Company, and a considerable quantity of their cement for testing purposes.

A considerable amount of steel for testing purposes, from the Turner Construction Company, New York.

A large number of photographs and drawings from different water wheel manufacturers, which will be of especial value in making lantern slides.

Electrical Engineering

Wireless Telegraphy apparatus, presented by Joseph Jacobs, of the class of 1908.

LECTURES

Following is a list of the lecturers who have appeared before the students in the College of Technology:

Mr. E. Palmer, of the General Electric Company, Boston. Subject: Industrial Application of Electric Motors.

Mr. E. W. Bolton, of the Penobscot Machinery Company, Bangor. Subject: The Installation of Pumps.

Mr. C. W. Jones, of the Holophane Company, New York. Subject: Modern Lighting (illustrated).

Mr. H. K. Barrows, District Engineer of the United States Geological Survey.

Mr. B. W. Guppy, Bridge Engineer, Maine Central Railroad.

Mr. J. A. Holmes, Division Engineer of the Charles River Basin Commission.

Professors Swain, Allen, Porter, and Breed, of the Massachusetts Institute of Technology.

The following is a list of the degrees conferred at the last Commencement:

COLLEGE OF AGRICULTURE

Joshua Swett Irish, B. S. in Agriculture.....Gorham
Samuel Barry Locke, B. S. in Forestry.....West Paris
Perley Fiske Skofield, B. S. in Agriculture.....Houlton
Raymond Judson Smith, B. S. in Forestry.....Skowhegan

COLLEGE OF ARTS AND SCIENCES

Anna Coffin Bean, B. S. (Chemistry).....Waltham, Mass.
Claude Boyle, B. S. (Chemistry).....Dover
Sarah Ellen Brown, B. A. (Greek).....Old Town
Daniel Chase, B. A. (Mathematics).....Baring

Owen Oscar Dow, B. S. (Economics).....Hiram
Elizabeth Read Estabrooke, B. A. (English).....Orono
Alice Belle Farnsworth, B. A. (Germanic Languages).....West Sullivan
Raymond Fellows, B. A. (Economics).....Bucksport
Thomas Whitmore Fessenden, B. A. (Philosophy) [Ph. B., Taylor University, 1902].....Bangor
Bell Curry Harris, B. A. (Germanic Languages).....Sherman Mills
Ballard Freeze Keith, B. A. (Latin).....Old Town
Stacy Clifford Lanpher, B. A. (Germanic Languages).....Sebec
William Stephen McNamara, B. S. (Romance Languages) Millville, Mass.
Anne Margaret Merrill, B. A. (Romance Languages).....Auburn
William Francis Scammon, B. A. (English).....Berlin Mills, N. H.
Merle Alton Sturtevant, B. S. (Physics).....Hebron
Walter Linwood Sturtevant, B. S. (Chemistry).....Bangor

COLLEGE OF PHARMACY

Fred Ellward Bartlett, Ph. C.....Westbrook
Howard Gilson Bradish, Ph. C.....Calais
William Herbert Ormsby, Ph. C.....South Portland
Myron Herbert Ridlon, Ph. C.....Kezar Falls

COLLEGE OF TECHNOLOGY

Chester Howe Bean, B. S. in Civil Engineering.....Bethel
Arthur Lawrence Beedle, B. S. in Electrical Engineering.South Gardiner
Chester Howe Brownell, B. S. in Civil Engineering.....Newport, R. I.
William Alfred Cobb, B. S. in Civil Engineering.....Auburn
Bernard Ira Collins, B. S. in Civil Engineering.....Haverhill, Mass.
Robert Lincoln Cummings, B. S. in Electrical Engineering.....Gorham
Leon Snell Dixon, B. S. in Mechanical Engineering.....Orono
Clifford Lester Draper, B. S. in Electrical Engineering..Stoneham, Mass.
Albert Guy Durgin, B. S. in Chemistry.....Orono
Francis Philip Emery, B. S. in Mechanical Engineering.....Eastport
Harry Pope Eveleth, B. S. in Electrical Engineering.....Greenville
James Pitt Farnsworth, B. S. in Electrical Engineering.....Milbridge
Roy Haynes Fisher, B. S. in Civil Engineering.....Pepperell, Mass.
Ben Baker Fogler, B. S. in Mechanical Engineering.....Skowhegan
Robert Mower Foster, B. S. in Electrical Engineering.....Lisbon
Cecil Sumner French, B. S. in Electrical Engineering.....Kingfield
James Adrian Gannett, B. S. in Electrical Engineering.....Yarmouth
Arthur Snow Hanscom, B. S. in Civil Engineering.....Leeds Junction
Grover Merrill Hardison, B. S. in Civil Engineering.....Caribou
William Andrew Hill, B. S. in Civil Engineering.....Winterport
Stanley Tyng Hilliard, B. S. in Mechanical Engineering.....Old Town
George Jesse Hopkins, B. S. in Mechanical Engineering.....Bath
Joseph Jacobs, B. S. in Electrical Engineering.....West Boylston, Mass.
Charles Arthur Johnson, B. S. in Civil Engineering...Berlin Mills, N. H.
John Thompson Kendrigan, B. S. in Civil Engineering..Rockland, Mass.

George Raymond Knight, B. S. in Electrical Engineering.No. Waterford
Paul Libby, B. S. in Civil Engineering.....Somersworth, N. H.
Leslie Roland Lord, B. S. in Electrical Engineering...Poquonock, Conn.
Carlton Hambly Macomber, B. S. in Mechanical Engineering
Portsmouth, R. I.
Frederico Walter Matheas, B. S. in Civil Engineering.....Bangor
Claude Pitman Meserve, B. S. in Mechanical Engineering.No. Bridgton
Earle Linwood Milliken, B. S. in Electrical Engineering.....Westbrook
Henry LeRoy Miner, B. S. in Chemistry.....Haverhill, Mass.
James Joseph Morrison, B. S. in Electrical Engineering.....Pembroke
Fred Constine Morton, B. S. in Electrical Engineering..South Windham
Howard Lewis Perkins, B. S. in Electrical Engineering.....Augusta
Robert Eaton Potter, B. S. in Civil Engineering.....Bath
Philip Increase Robinson, B. S. in Electrical Engineering.....Waterville
Robert Kent Steward, B. S. in Civil Engineering.....Skowhegan
Searle Fowler Thomas, B. S. in Electrical Engineering.....Lincoln
Warren Dudley Trask, B. S. in Civil Engineering.....Augusta
Earle Nelson Vickery, B. S. in Electrical Engineering.....Pittsfield
Clarence McLellan Weston, B. S. in Civil Engineering.....Madison
Walter Edmund Wilbur, B. S. in Electrical Engineering.....Pembroke
Louis Carl Wood, B. S. in Civil Engineering.....Berlin, N. H.

COLLEGE OF LAW

Charles Albert Gooding Blossom, LL. B.....New Bedford, Mass.
Frank Beaumont Burgess, LL. B.....Sangerville
Edward Burleigh Davidson, LL. B.....York Village
John Perley Dudley, LL. B.....Holden
Ralph Wentworth Goss, LL. B.....Berwick
Willard Packard Hamilton, LL. B. [B. A. Bates College, 1895]..Caribou
Charles Goodell Lewis, LL. B.....New Bedford, Mass.
James Davidson Maxwell, LL. B.....Bangor
Harry McDonald Nolan, LL.B.....Haverhill, Mass.
Frank Howard Purinton, LL. B. [B. A. Bates College, 1896]...Lewiston
Morton Howard Rideout, LL. B.....Bangor
Horace Denver Ridlon, LL. B.....Stetson
Ernest Linwood Seavey, LL. B.....Caribou
Carroll Brown Skillin, LL. B.....North Yarmouth
William Linscott Waldron, LL. B. [B. A. Colby, 1899; M. A. Maine, 1906] .....Waterville

ADVANCED DEGREES

MASTER OF ARTS

Harold Milton Ellis, B. A., 1907 (English).....Hingham, Mass.
Hugh Finlay Graham, B. A. [Bowdoin College, 1898] (Philosophy)
Patten
Ellen Marian Ropes, B. A. [Bryn Mawr College, 1902] (Germanic Languages) .....Bangor

MASTER OF SCIENCE

Elmer Earl Moots, B. C. E. [Highland Park, 1906] (Mathematics)
Des Moines, Iowa

MASTER OF LAWS

John Buckley, LL. B., 1907.....Stafford Springs, Conn.
Carlos Clayton Heard, B. A. [Yale University, 1896].....Biddeford
William Asbury Johnson, LL. B., 1905.....Milo

CIVIL ENGINEER

Rodney Clinton Davis, B. S. in Civil Engineering, 1903.....Chicago, Ill.
Guy Alfred Hersey, B. S. in Civil Engineering, 1900.....Bangor

ELECTRICAL ENGINEERING

William Edward Barrows, Jr., B. S. in Electrical Engineering, 1902
Chicago, Ill.
Ralph Henry Alton, B. S. in Electrical Engineering, 1905...Lynn, Mass.

DEGREES OUT OF COURSE

Francis Henry Bacon, B. S. of the Class of 1876.....Boston, Mass.
Edward Butler Pillsbury, B. S. of the Class of 1876.....Boston, Mass.
Abram Woodard Sargent, B. S. of the Class of 1888...New York, N. Y.

CERTIFICATES IN THE SCHOOL COURSE IN AGRICULTURE

Alfred Searles Cook.....Presque Isle
George Phillips Fogg.....Hull's Cove
Bernard Franklin Twitchell.....South Paris

The following honorary degrees were conferred:

Upon Louis Sebastian Walsh, Bishop of Portland, the degree of Doctor of Laws.

Upon Payson Smith, State Superintendent of Schools, the degree of Doctor of Laws.

Upon John King Lord, Acting President of Dartmouth College, the degree of Doctor of Laws.

Upon Amos Arthur Noyes, Acting President of Massachusetts Institute of Technology, the degree of Doctor of Laws.

Upon William D. Gibbs, President of New Hampshire State College, the degree of Doctor of Science.

Upon Merritt Caldwell Fernald, Professor of Philosophy, University of Maine, the degree of Doctor of Laws.

Upon James Norris Hart, Dean of the University of Maine, the degree of Doctor of Science.

Upon Lucius Herbert Merrill, Professor of Biological and Agricultural Chemistry, University of Maine, the degree of Doctor of Science.

REPORT OF THE DEAN

President G. E. Fellows:

SIR:—During the past two years the activity of the Dean of the University has been particularly in connection with the following matters: (1) consultation with students, especially first year students; (2) consideration of student requests for excuses; (3) admission of first year students to the University; (4) the work of the committee on rules. The Dean has kept office hours—two hours daily—for the convenience of students. During each semester he has held from one to three interviews at the direction of the Faculty or of the Committee on Delinquent Students with about one-third of the freshman class; and a much larger number of students have voluntarily called for advice or information. This work consumes a great deal of time but we hope that it is time profitably employed.

The regulations of the Faculty regarding examinations and excuses for absence were materially modified, the changes taking effect at the beginning of the college year 1907-8. It is believed that the new rules have had a healthy effect upon attendance and scholarship. Accurate records are kept in the secretary's office of the attendance of each individual student, but previous to last year no statistics have been compiled showing the average regularity (or irregularity) of class attendance. With an idea of being able to compare one year with another, the following figures have been made of class attendance during the year 1907-8.

PERCENTAGE OF TIMES PRESENT TO TIMES DUE

Average of all departments. Fall semester	94.86	Spring semester 93.02
Highest average in any department	98.4	94.9
Lowest average in any department	91.7	86.4

These percentages were made up from direct reports made by the instructors at the close of each semester, this method offering the advantage of distribution of labor. The falling off in regularity in attendance in the spring semester was in part due to an epidemic of mumps.

The question of the best method of controlling student attendance is not an easy one. Our method appears to be successful but involves a considerable expediture of time on the part of the Dean, the major instructors, and the office force. For possible future comparison and

improvement of methods a careful record of excuses granted with reasons therefor is being kept.

The following table showing the number of first year students admitted in 1904, 1906, and 1908 explains itself.

Sttudents admitted to college courses in	1904	1906	1908
Regular Freshmen	88	152	162
First year specials	27	17	21
Percentage of special students	23.5	10	13

These figures represent numbers actually in the classes and do not include those who were admitted but did not attend. This year we had an unusually large number of these, but the numbers are not given, as corresponding figures for previous years have not been preserved. In points offered for admission the gain above the requirement over two years ago is not as marked as that for the preceding two years. Average number of points offered by all candidates for four years' courses—1904, 23.8; 1906, 25.9; 1908, 28.26. In comparing these figures it must be remembered that the number of points required in 1904 and 1906 was twenty-six, in 1908 twenty-eight. Hence it is seen that all candidates this year averaged to offer a slight excess above the requirement.

	1904	1906	1908
Percentage admitted without conditions	47.6	62.5	62.1
Percentage admitted by examinations	42.8	13.2	28.8
Percentage admitted by certificate	57.2	86.8	71.2

Principals are more careful than formerly about granting certificates and the apparent contradiction between the average number of points offered and the percentage admitted without condition is due to the larger number admitted this year on probation; also, we believe, in part to the increased severity of our entrance examinations. It should be added that the percentage of students failing to gain admission by examination this year was unusually large.

Candidates have been admitted to the University in 1908 from the following schools in Maine:

Old Town 16; Bangor 11; Hebron, Norway, Orono, 4 each; Bar Harbor, Biddeford, Brewer, Calais, Charleston, Higgins Classical Institute, Deering, Farmington, Hampden, Jonesport, Portland, Saco (Thornton Academy), Skowhegan, South Berwick Academy, 3 each; Bath, Belfast, Bethel (Gould's Academy), Bridgton Academy, Bucksport (E. M. C. S.), Camden, Cherryfield, Fryeburg, Houlton, Lewiston, Presque Isle, Vanceboro, Yarmouth, 2 each; Auburn (Edward Little High School), Augusta, Caribou, Dexter, East Machias (Washington Academy), Ellsworth, Freedom Academy, Guilford, Houlton, (Ricker Classical Institute), Lewiston, Livermore Falls, Lubec, Madison, Mexico, North Yarmouth Academy, Rangeley, Richmond, Topsham, Vassalboro, Waterville, Westbrook, 1 each.

Schools outside of Maine:

Lynn, Mass. (English High School) 5, New Britain, Ct., Malden, Newton, Peabody, Springfield (Technical High School), Wakefield, Mass., Port

Deposit, Md. (Jacob Tome Institute), 2 each; Attleboro, Beverly, Boston English High, Dorchester, Georgetown, Hanson, Haverhill, Kingston, Needham, Orange, Reading, Rockland, Wareham, Wellesley, Worcester (South High School), Mass., Claremont, Gorham, Rochester, Wolfboro (Brewster Academy), N. H., Hartford, New Britain, Ct., Newport, R. I., St. Johnsbury, Vt., Brooklyn (Manual Training High School), New York City (Bryant High School), Little Falls, N. Y., Montclair, N. J., Junction City, Kansas, Washington, D. C., (Central High), Staunton, Va., (Military Academy), 1 each.

Early last year the juniors and seniors then in college were asked to present statistics regarding their expenses and earnings while in college. There is naturally a slight hesitation on the part of some young men to comply with such a request as this but the response from the students was very general. Many took a lively interest in the inquiry and volunteered valuable information in addition to that called for in the questions submitted. The statistics were summarized and published in a revision of our pamphlet on student earnings and expenses. Nearly all students reported some earnings. The average of earnings reported was $136 per year; that is, these students averaged earning during their college course over 40% of their college expenses. These figures are likely to be too small rather than too large as no doubt some students omitted to report a part of their earnings. The highest amount earned by any one student was $416 per year for the four years. Another student had earned more than his actual total expenses. Sixty per cent of those reporting had earned more or less along the lines of their prospective future employment.

From the figures submitted it appears that while the expenses in the University have increased somewhat in recent years, the increase is mainly in items of a personal nature which are under the student's own control. The results may be briefly stated as follows:

	Lowest	Average	Highest
College expenses for four years, per year..	$167	$307	$450
Total expenses during four years, per year	255	433	650

In comparison with other colleges of similar size and giving similar courses the expenses of our students are low, but undoubtedly many young men are deterred from taking some of our courses because they cannot see their way to meet the expenses. While it is perhaps hardly to be expected that the State will again make tuition free, it would seem very reasonable to expect that provision be made for the granting of free tuition to a percentage of needy and able students who are residents of Maine. It is believed that a considerable number of students have been discouraged from coming here in recent years because of the lack of dormitory accommodations available for freshmen. A new dormitory is very much needed.

Respectfully submitted,

JAMES N. HART,
Dean of the University.

REPORT OF THE LIBRARIAN

President G. E. Fellows:

SIR:—The event of greatest importance to the library during the biennial period of 1906-8 is the occupancy of the new building, for the erection and equipment of which Mr. Andrew Carnegie gave the University the sum of $55,000.

After a competition in which eleven architects took part, the plans submitted by Messrs. Brainerd and Leeds, of Boston, upon recommendation of the architectural expert employed by the board, were accepted by the building committee of the trustees, which included the President of the University. The plans chosen were those which were in all respects most satisfactory to the librarian.

The contract for the building was awarded to the Horace Purinton Company of Waterville. The foundation was built during the fall of 1905, and work upon the superstructure was begun early the following spring. The corner stone was laid, with appropriate exercises, on Tuesday of Commencement week, June 12. The principal speakers were Hon. Henry Lord, President of the Board of Trustees, Hon. W. W. Stetson, State Superintendent of Public Schools, and Hon. A. W. Gilman, State Commissioner of Agriculture. The building was dedicated November 2, 1906, when the speakers were President Henry Lord of the Board of Trustees, Hon. E. B. Winslow, chairman of the building committee, Governor William T. Cobb, President George Emory Fellows, Hon. Elmer E. Brown, United States Commissioner of Education, and the librarian.

The stacks were erected by Austin D. Houghton, class of 1887, and the furniture and other equipment were supplied by the Library Bureau. It is worthy of mention that no changes in the plans were necessary after work began, there was no bill for extras, and the entire cost to the University, outside of the cost of excavating and grading, was $36.00 more than the amount given by Mr. Carnegie.

The books were moved to the new building, from the old quarters in Coburn Hall, during the Thanksgiving recess of 1906, by a simple system of having the contents of a single shelf at a time placed in a tray made for the purpose, and keeping about 25 students at work for a couple of days carrying the trays. During the period of moving, no book was unavailable for more than a few minutes, and although a cer-

tain amount of readjustment was necessary, this was done later by the regular library staff, without interference with the ordinary routine.

The test of daily use for two years proves that the building is satisfactory in every respect. All of the rooms are used for the purpose for which they were planned, and there is no change of any importance that the library staff would have made if it could. There is ample provision for probable growth for some years to come.

The number of bound volumes in the library, June 30, 1908, was 36,361, an increase of 7,096 during the biennial period covered by this report. Of the increase, 1,088 volumes were added to the Experiment Station Library, and were paid for out of Experiment Station funds. The cost of these may be found by referring to the fiscal statements of the Station. The books for the Station are ordered by the director, and the bills do not pass through the hands of the librarian. The books are cataloged by the regular cataloger of the University Library, and in addition to the catalog at the Station duplicate cards are placed in the regular library catalog in order to make the Station books available to those who consult the library catalog.

Of the 6,008 volumes added to the library, exclusive of those for the Experiment Station, 3,765 were secured by purchase, 584 by binding, and 1,659 by gift. Among those from whom gifts were received should be mentioned the U. S. Superintendent of Documents, the various governmental departments, the state libraries of Maine, New York, Michigan, Idaho, Connecticut, Ohio, the Carnegie Institution, the Geological Survey of New Jersey, the Geological Survey of Canada, the Iowa State Horticultural Society, the Wisconsin State Historical Society, Hon. W. P. Frye, Hon. Eugene Hale, Hon. Llewellyn Powers, Miss Mary King Longfellow, Charles S. Fellows, Dr. E. E. Holt, Dr. G. R. Raymond, President Fellows, Director C. D. Woods, Professors Gowell, Aubert, and Carr, General Charles Hamlin, Hon. L. C. Southard, the University of Chicago Press, Allyn & Bacon, American Book Company, Ginn & Company, D. C. Heath & Company, Henry Holt & Company, W. R. Jenkins Company, Macmillan Company, Newson & Company, and Scott, Foresman & Company.

The gross expenditure by the University for the library for the years 1906-8 was $8,972.73, of which $1,345.23 was for the law library.

Among the most important additions may be mentioned the following: Stephen and Lee's Dictionary of National Biography, Warner's Library of the World's Best Literature, Reed's Modern Eloquence, Carman's World's Best Poetry, Rogers's History of Agriculture and Prices in England, Engler and Prantl's Natürlichen Pflanzenfamilien, Poole's Political History of England, 153 volumes of the Proceedings of the Institution of Civil Engineers, a complete set of Maine Acts and Resolves, a duplicate set of Maine Reports, required by increasing demand at the College of Law, and complete sets of the School Review, the Journal of Morphology, and Sammlung Chemischer und Chemisch-technischer Vorträge. A special fund secured by Professor J. W. Carr for the

Department of Germanic Languages made possible the acquisition of more than a thousand volumes. Partly by purchase, but largely by gift from the publishers, Professor Carr has gathered together what is undoubtedly one of the best collections of German text-books in any library. Among the most important of the additions that are included among the purchases for the German department, are Meyer's Grosses Konversations-lexikon and Grimm's Deutsches Wörterbuch. A very fair beginning of a Romance languages text-book collection has been secured through the efforts of Professor J. B. Segall.

Among the most important accessions to the Experiment Station Library are Hooker and Jackson's Index Kewensis, Buckton's Monograph of the British Aphides, Oppel's Lehrbuch der Vergleichenden Mikroskopischen Anatomie der Wirbeltiere, VI Congresso Internazionale di Chimica Applicata . . . Atti, American Journal of Physiology, Annales de la Science Agronomique, Annales Mycologici, Annals of Botany, L'Année Biologique, Biochemisches Centralblatt, Biologisches Centralblatt, Archiv für Entwickelungs-mechanik der Organismen, Centralblatt für Bakteriologie, Deutsche Botanische Gesellschaft Berichte, General Insectorum, Journal of Experimental Zoology, Journal of Mycology, Journal of the American Chemical Society, Journal of the N. Y. Entomological Society, Proceedings of the Washington Entomological Society, Oesterreichische Chemiker-zeitung, Transactions of the American Entomological Society, Zeitschrift für Hygiene und Infektionskrankheiten, Zeitschrift für Pflanzenkrankheiten, Zeitschrift für Physiologische Chemie, and Zeitschrift für Untersuchung der Nahrungsund Genusmittel.

Since the last report of the Library, it has begun to use the printed cards of the Library of Congress. These are bought whenever they can be obtained, and during the last year the entire series of cards for United States publications has been secured, thus making much more easily accessible than hitherto the great amount of valuable material in them.

With the prospect of opportunities for increased usefulness offered by the completion of the new library building, the employment of a trained cataloger was authorized for 1906-7, and Miss Elizabeth Dunmore, B. S., a graduate of Simmons College in the course in library economy, was appointed. It was a source of sincere regret that it was impossible to retain her services for more than a year. The vacancy was filled by the appointment of Miss Isabel Monro, B. S., also a Simmons graduate. Increased demands upon the Library required the appointment of another assistant for 1907-8, and the services of Miss Bertha C. Whittemore were secured. Miss Whittemore attended Colby for nearly three years, was in the Waterville Public Library for a year, and completed the work in library economy given at Simmons College in its one year course for college graduates. Both Miss Monro and Miss Whittemore has been reengaged for 1908-9. Miss Maude B. Colcord, who had been employed as assistant in the library since 1905-6,

resigned in April, 1908, to accept a more remunerative position elsewhere. The vacancy created by this resignation has not been filled, owing to the urgent necessity for strict economy. By the employment of student assistants, it will be possible to get through the coming year, but this is an unsatisfactory makeshift, and should not be continued longer than is absolutely necessary.

The hours during which the Library is open regularly during the college year, are from 8.00 A. M. to 12.00 M., and 1.30 to 5.30 and 7.00 to 9.30 P. M., Sundays and legal holidays excepted. Sunday afternoons the Library is open from 2.30 to 5.30, and holidays during the forenoon. During vacations the library hours are from 8.00 A. M. to 12.00 M., and from 1.30 to 5.30 P. M., except Saturday afternoons and Sundays. Arrangements should be made as soon as practicable to have the Library open continuously, on week days during term time, from 7.30 A. M. to 9.30 P. M. Regular assistants are required to work 44 hours a week, that is, eight hours a day for five days and four hours one day a week. During 1906-7 the evening and Sunday hours were divided between the regular assistants, but previous to that year the care of the Library during these hours was entrusted to student assistants, and it will be necessary to resume this during the coming year, owing to the reduction in the regular staff.

Our library staff is smaller than in almost any other library where the accessions and the use of the library equal our own. The only means by which it has been possible to keep the work up to the point reached is by the sacrifice of the vacation period to which the librarian is entitled. Although understood to have the same vacations, for rest or study, that are given heads of other departments, during only one of the last eleven years has the librarian been away from the Library for as much as three weeks in any one year.

During the last two years the librarian has attended one meeting of the American Library Association, three meetings of the College Librarians of New England, one meeting of the Massachusetts Library Club, two meetings of the Maine Library Association, and all of the meetings of the Eastern Maine Library Club except one at which it was impossible for him to be present. All of the assistants have attended various meetings of the two latter organizations.

The use of the Library by students increases with the growth of the student body and steadily increasing references to it by heads of departments. Required readings are an important feature of the work of many departments.

At the time the location for the new building was selected, fear was expressed in some quarters that it was a little one side of the center of the University buildings and that this would lessen its use by students. As a matter of fact, it is not more than three minutes walk from any other University building, and fears of decreasing use were not sustained, for there has been a steady increase in the use of the Library ever since the new building was occupied.

In the report of the librarian two years ago, the necessity for increased expenditures for the Library was pointed out and figures were presented which showed that our expenditures were materially less than those of any of the New England colleges by whose needs our own can fairly be measured. Although it has been possible to have a larger amount during the last two years than ever before, our expeditures are still considerably less than those of other New England institutions of equal rank, and than other State Universities with which our own should be compared. Unless the work of all our departments of instruction is to be handicapped by insufficient material for reference in the Library, provision needs to be made for the expediture of at least $7,000 a year for the next five years by the Library, for the purchase of current books and periodicals, the acquisition of standard publications previously published, and the rounding out of neglected portions.

I append a list of periodicals received regularly at the Library. Those to which an asterisk (*) is prefixed are gifts, in most cases from the publishers, although many are received in exchange for the publications of the Experiment Station.

Respectfully submitted,

RALPH K. JONES, *Librarian.*

PERIODICALS RECEIVED REGULARLY AT THE UNIVERSITY LIBRARY

A. L. A., Booklist
* Accident Bulletin
* Advocate of Peace
* Agricultural Student
American Antiquarian
American Chemical Journal
* American Cultivator
American Economic Association Quarterly
* American Economist
American Engineer
* American Grocer
American Gymnasia
* American Hay, Flour and Feed
American Historical Review
American Horse Breeder
* American Industries
American Journal of Archæology
American Journal of Mathematics
American Journal of Pharmacy
American Journal of Philology
American Journal of Psychology
American Journal of Science
American Journal of Sociology
* American Lumberman
American Machinist
American Magazine
American Mathematical Monthly
American Naturalist
American Physical Education Review
American Political Science Review
* American Sheep Breeder
* American Sugar Industry
* American Swineherd
Annals of the American Academy
Apothecary
* Appeal to Reason
Archivor Pedagogia y Ciencias Afines
Arena
* Aroostook Pioneer
* Aroostook Times
Art Journal
Astrophysical Journal
Athenæum

Atlantic Monthly
* Auburn Seminary Record
* Automobile
Bangor Daily Commercial
Bangor Daily News
* Bangor Semi-Weekly News
* Bangor Weekly Commercial
Bibliotheca Sacra
* Biddeford Record
Blackwood's Edinburgh Magazine
Blue Book
Book News Monthly
Book Review Digest
Bookman
Boston Daily Globe
Boston Evening Transcript
Boston Herald
Botanical Gazette
Breeders Gazette
Bulletin of Bibliography
Bulletin of Pharmacy
Bulletin of the American Library Association
* Bulletin of the Brooklyn Public Library
* Bulletin of the Bureau of Education
* Bulletin of the Bureau of Labor
* Bulletin of the Bureau of Standards
* Bulletin of the International Union of American Republics
* Bulletin of the Lloyd Library
* Bulletin of the Mount Weather Observatory
* Bulletin of the N. Y. Botanical Garden
* Bulletin of the N. Y. Public Library
Bulletin of the Torrey Botanical Club
* Canada Lumberman
Canadian Entomologist
* Canadian Forestry Journal
Canadian Horticulturist
* Canner
* Carleton's Sportsman's Journal
Cassier's Magazine
Cement Age
Century
Charities
Chautauquan
Chemical Engineer
Chemical News
* Civic League Record
* Clarkson Bulletin
Classical Journal
Classical Philology
Classical Quarterly
Classical Review
* Cold Storage and Ice Trade Journal
Collier's Weekly
* Colman's Rural World
Comptes Rendus
* Congressional Record
Contemporary Review
Cosmopolitan Magazine
* Country Gentleman
Country Life in America
* Courier Gazette
* Crop Reporter
Cumulative Book Index
Current Literature
* Daily Eastern Argus
Daily Kennebec Journal
Dial
Druggists Circular
* Eastport Sentinel
Economic Bulletin
Economic Geology
Edinburgh Review
Education
Educational Review
Electric Journal
Electric Railway Journal
Electrical Review
Electrical World
Electrician
Electrochemical Industry
* Elgin Dairy
* Ellsworth American
Engineer
* Engineering

Engineering and Mining Journal
Engineering Digest
Engineering Magazine
Engineering News
Engineering Record
English Historical Review
Entomological News
Everybody's Magazine
* Experiment Station Record
* Farm Implement News
* Farm Journal
* Farm Poultry Monthly
* Farm Progress
* Farm, Stock and Home
* Farmer's Advocate
* Farmer's Guide
* Farmer's Review
* Farmer's Tribune
* Farmer's Voice
* Farmer's Wife
* Field Museum Bulletins
Fliegende Blätter
* Florist's Exchange
* Florist's Review
* Flour and Feed
* Forestry and Irrigation
* Forestry Quarterly
Fortnightly Review
Forum
* Fruit Grower
Garden Magazine
Gardeners' Chronicle
Gardening
Gardening Illustrated
* Gas Engine
* General Electric Co. Bulletin
Geographical Journal
* Girls' Home
* Gleanings in Bee Culture
* Good Roads Magazine
* Graphite
* Guernsey Breeders Sale List
* Hardwood Record
Harper's Monthly
Harper's Weekly
* Hartford Seminary Record
* Hawaiian Forester and Agriculturist
* Herald of the Cross
* Herald of the Golden Age
* Holstein-Friesian Record
* Homestead
Illustrated London News
Independent
* Industrial Journal
International Journal of Ethics
International Marine Engineering
International Studio
* Jersey Bulletin
Journal of American History
Journal of Biological Chemistry
Journal of Education
Journal of Geology
Journal of Morphology
Journal of Philosophy
Journal of Physical Chemistry
Journal of Political Economy
Journal of the Association of Engineering Societies
Journal of the Chemical Society
Journal of the Elisha Mitchell Scientific Society
Journal of the Franklin Institute
Journal of the Military Service Institution
Journal of the New England Water Works Association
Journal of the Royal Microscopial Society
Journal of the Society of Chemical Industry
Journal of the U. S. Cavalry Association
Journal of the U. S. Infantry Association
* Journal of the Western Society of Engineers
* Journal of Zoöphily
Judge
* Kimball's Dairy Farmer
* Law Notes
Leslie's Weekly
Lewiston Evening Journal
* Lewiston Weekly Journal
Library Journal
Library Work

Library World
Life
Lippincott's Magazine
Literarische Echo
Literary Digest
Literaturblatt für Germanische und Romanische Philologie
* Locomotive
* Long Island Agronomist
* Louisiana Planter
McClure's Magazine
* Machias Union
Machinery [Engineering Edition]
* Maine Campus
* Maine Farmer
* Maine Law Review
* Maine Temperance Record
Manual Training Magazine
* Mark Lane Express
* Market Grower's Journal
* Massachusetts Labor Bulletin
* Mechanic Falls Ledger
* Memoirs of the Department of Agriculture in India
* Merck's Report
* Michigan Farmer
Mind
* Minnesota and Dakota Farmer
* Mirror and Farmer
Modern Language Notes
* Modern Miller
Modern Philology
Monist
* Monthly Bulletin of Books Added to the Boston Public Library
* Monthly Bulletin of the International Bureau of American Republics
* Monthly Bulletin of the Pratt Institute Free Library
* Monthly Catalogue U. S. Public Documents
* Monthly Consular and Trade Reports
* Monthly Record of Scientific Literature
* Monthly Summary of Commerce and Finance
* Monthly Weather Review
Municipal Engineering
Munsey's Magazine
Nation
* National Farmer
National Geographic Magazine
* National Grange
National Magazine
* National Stockman and Farmer
Nature
Neue Jahrbücher
New England Magazine
* New Hampshire Farmer
* N. Y. Farmer
N. Y. Herald
* N. Y. Labor Bulletin
* N. Y. Produce Review
N. Y. Times Saturday Review
* New Zealand Dairyman
Nineteenth Century and After
North American Review
* Nut Grower
Observatory
* Official Gazette of the U. S. Patent Office
* Oregon Agriculturist
* Our Dumb Animals
* Old Town Enterprise
Outing
Outlook
* Oxford Democrat
* Paper Mill
* Paper Trade Journal
* Park and Cemetery
Pedagogical Seminary
* People
* Pharmaceutical Era
Pharmaceutical Review
* Philippine Agricultural Review
Philosophical Magazine
Philosophical Review
Physical Review
* Piscataquis Observer
Poet Lore
Political Science Quarterly
Popular Astronomy
Popular Mechanics
Popular Science Monthly

Portland Daily Press
Portland Evening Express
* Portland Transcript
* Poultry Topics
Power
* Practical Dairyman
* Practical Druggist
* Practical Farmer
* Prairie Farmer
* Proceedings of the Academy of Science
Proceedings of the American Institute of Electrical Engineers
* Proceedings of the American Philosophical Society
Psyche
Publisher's Weekly
Putnam's Monthly
Quarterly Journal of Economics
* Quarterly Journal of Forestry
Quarterly Journal of Microscopical Science
Quarterly Review
Railway and Locomotive Engineering
Reader's Guide to Periodical Literature
* Reliable Poultry Journal
Religious Education
* Republic
* Republican Journal
Review of Reviews
* Revista de la Facultas de Letras y Ciencas
Revue Bleue
Revue Historique
Rhodora
* Rural Californian
* Rural Life
* Rural New Yorker
* St. Louis Lumberman
Sammlung Chemischer und Chemisch-technischer Vortraege
School Review
School Science and Mathematics
Science
Science Abstracts, Sections A and B
Scientific American
Scientific American Supplement
Scribner's Magazine
* Smithsonian Institution Miscellaneous Collections, Quarterly Issue
* Somerset Reporter
* Southern Lumberman
* Southern Planter
* Spatula
* Special Crops
* Springvale Advocate
Success Magazine
* Successful Farmer
* Successful Poultry Journal
Technical World
Technik und Wirtschaft
* Technology Review
Terrestrial Magnetism
* Theosophical Quarterly
* Transactions of the Commonwealth Club of California
* Turf, Farm and Home
* U. S. Catalogue of Copyright Entries
* U. S. Geological Survey Bulletins
* U. S. Geological Survey Water Supply and Irrigation Papers
* U. S. National Museum Bulletin
* U. S. Naval Medical Bulletin
* U. S. Public Health and Marine Hospital Service Bulletin
* U. S. Treasury Department, Hygienic Laboratory, Bulletin
* Up-to-date Farming
* Vanderbilt University Quarterly
Velhagen und Klasings Monatshefte
* Vick's Magazine
* Wallace's Farmer
* Waterville Morning Sentinel
* Weekly Eastern Argus
Western Druggist
* Western N. Y. Apple
Westminster Review
Where Is the Information?
* Wilson Bulletin

* Wisconsin Natural History Society Bulletin
Wochenschrift für Klassische Philologie
* Woman's Home Companion
* World
World To-day
World's Work
Yale Review
Zeitschrift des Vereines Deutscher Ingenieure
Zeitschrift für Angewandte Chemie
Zoologischer Anzeiger
Zoologisches Zentralblatt

AT THE COLLEGE OF LAW

Albany Law Journal
American Law Review
American Lawyer
American Legal News
Atlantic Reporter
Central Law Journal
Federal Reporter
Green Bag
Harvard Law Review
Illinois Law Review
Index to Legal Periodicals
Law Student's Helper
Northeastern Reporter
Northwestern Reporter
Pacific Reporter
Southeastern Reporter
Southern Reporter
Southwestern Reporter
* University of Pennsylvania Law Review
Yale Law Journal

AT THE AGRICULTURAL EXPERIMENT STATION

* Agricultural Gazette of New South Wales
American Fertilizer
American Journal of Physiology
* American Miller
Analyst
Anatomischer Anzeiger
Annales de l'Institut Pasteur
Annales Mycologici
Annals of Botany
Annals of the Entomological Society of America
Archiv für Entwircklungsmechanik der Organismen
Archiv für Rassen-und Gesellschafts-Biologic
Berichte Deutschen Botanischen Gesellschaft
Beihefte zum Botanischen Centralblatt
Beidermann's Zentralblatt für Agrikulturchemie
Biochemisches Centralblatt
Biological Bulletin
Biologisches Centralblatt
Biophysikalisches Centralblatt
Botanischer Centralblatt
British Food Journal
Centralblatt für Bakteriologie
Chemical Abstracts
Chemical Engineer
Dietetic and Hygienic Gazette
Entomologische Litteraturblätter
* Experiment Station Record
* Forestry and Irrigation
Hoppe-Seyler's Zeitschrift für Physiologische Chemie
Index Medicus
Journal für Landwirtschaft
Journal of Agricultural Science
Journal of Biological Chemistry
Journal of Economic Entomology
Journal of Mycology

Journal of the American Chemical Society
Journal of the American Medical Association
Journal of the N. Y. Entomological Society
* Journal of the Royal Horticultural Society
Landwirtschaftliche Jahrbucher
Landwirtschaftlichen Versuchs-Stationen
Mycological Bulletin
Naturæ Novitates
Oesterreichische Chemiker-Zeitung
* Philippine Agricultural Review
Proceedings of the Entomological Society of Washington
Revue Horticole
Revue Internationale des Falsifications
Transactions of the American Entomological Society
Veterinary Journal
* Weekly Northwestern Miller
Zeitschrift für Analytische Chemie
Zeitschrift für Biologie
Zeitschrift für Hygiene
Zeitschrift für Induktive Abstammungs-und Vererbungslchre für Untersuchung der Naturungs- und Genussmittel
Zeitschrift für Pflanzenkrankheiten
Zoologischer Anzeiger

* Received by gift or in exchange.

REPORT OF THE DEPARTMENT OF MILITARY SCIENCE AND TACTICS

President G. E. Fellows:

SIR:—Since the last report, the Cadet Battalion have used the new United States Army Rifle, Model 1898, have made a change from the blue to the service uniform, have adopted, for the cadet officers, sabers, in place of swords. The interest in this department has materially increased, likewise its efficiency.

The annual report for the War Department Inspector for the year 1907 showed a material improvement in the Battalion, over former years. The report for the year 1908 also gave a marked advance in the condition of 1907.

The work in this department, under the new rules for making up time work and the present orders from the War Department is giving good results. Therefore, it is recommended that they should not be materially altered.

The Adjutant General of this State has offered marksmanship medals to those students taking military instruction, who qualify in the prescribed target courses. It is therefore respectfully recommended that the range be improved, so that it can be used for target practice up to six hundred yards range. This would entail a minimum of expense, increase the efficiency of this department, and the usefulness of this course.

Respectfully submitted,

WALTER S. BROWN,

Captain 25th Infantry,

Professor of Military Science and Tactics.

REPORT OF THE COLLEGE OF LAW

President G. E. Fellows:

SIR:—I beg leave to submit the following report regarding the College of Law.

The total enrollment of the College of Law up to date is 113, as against 97 last year, and as against 90 at the date of my report two years ago (November 21, 1906). These men are classified as follows: Graduate Students, 37; Seniors, 23; Juniors, 15; First Year men, 26; Special Students, 12.

The number of new men, 40 in all up to date, represents the largest entering class in the history of the school. Previous to this the high water mark stood at 26 and 29, reached last year and the year before. Of the number of new men—exclusive of 3 graduate students, one of whom received honors at the Cornell University College of Law—2 have entered the Senior Class, one of them having a Yale degree and being a graduate of the Cumberland University Law School; 26 are First Year men, and 9 special students. Of these special students, four are such by choice, and not because they could not satisfy the entrance requirements of the regular course, while two of the four have enjoyed the advantages of a college education, at least in part.

Of the new men, 9 are college graduates and 4 are college men that had reached their Senior year, among them two Maine University Seniors that will graduate next June, 13 college men in all, or 32 per cent, constituting the largest percentage of college men in any entering class. These new men have raised the number of University of Maine men, including the two University Seniors, to 8; the number of Bowdoin men to 7; and that of Dartmouth men to 4.

As regards their homes, 21 of the new men have come from Maine, 15 from Massachusetts, and one each from New Hampshire, New York, Tennessee and Armenia.

As regards age, the average age of the entering class is twenty-five years and a half. Leaving special students out of account and comparing the age of the college men that have entered with that of the non-college men, we find that the college men have an average age of twenty-seven years and a fourth, and the non-college men one of only twenty-three and three-fourths, a difference of three years and a half; in other words, with a three years' law course college men will enter upon their professional life when past thirty years of age, or nearly

four years after the men that have not gone to college. There is no doubt that in the long run college men will and do overcome this handicap, but its existence shows the wisdom of permitting earnest and capable men to finish the college course in three years if they can, instead of holding all alike down to four years regardless of ability, character, and industry. This wiser and, we may add, humaner and juster policy has been adopted by the University of Maine and by other New England institutions, and two men registered as University of Maine Seniors have this year wisely taken advantage of an opportunity offered for the first time to the young men of the State within the State itself.

Turning now from the new men to the College of Law as a whole, we find that, including University and College seniors, there are 30 college men, as against 22 last year and as against 16 two years ago, or a percentage of 26.55, as against 22.68 and 17.78 in 1907 and 1906. There are also 7 men with a college education of one year or more but less than three years, and 5 men that have received part of their legal education elsewhere. This makes 42 men in all with an education in excess of the entrance requirement, the possession of a four years' high school training. Of the different colleges the University of Maine has 8 represenatives, Bowdoin 7, Colby 4, Dartmouth 4, Bates 3, and Yale, Brown, St. Mary's and the Euphrates College each one. Of the men with a partial college education, 4 are from Maine, and one each from Boston University, Brown, and St. Mary's. The law schools represented are the Albany Law School, the Boston University Law School, the Cornell University College of Law, the Cumberland University Law School, and the George Washington University Department of Law.

The different counties of Maine are represented in the school as follows: Androscoggin, 3; Aroostook, 6, an increase of 3; Cumberland, 12, an increase of 4; Franklin, 1; Hancock, 10, an increase of 4; Kennebec, 7, an increase of 4; Lincoln, 1; Penobscot, 16; Piscataquis, 3; Sagadahoc, 1; Somerset, 3; Waldo, 1; Washington, 2; and York, 6; or a total of 72 in all. It will be noticed how closely Cumberland county treads upon the heels of Penobscot, and what a relatively large representation the counties of Hancock, Kennebec, and Aroostook have secured for themselves in the Law School.

The other states of the Union are represented as follows: Massachusetts, 29, an increase of 6; New Hampshire, 5, an increase of 3; New York, 2; and Colorado, South Carolina, Tennessee, and Vermont 1 each. The continent of Asia has also a representative from Armenia. This makes a total of 41 men from outside the State.

At the Commencement in June the degree of Bachelor of Laws was conferred upon 15 members of the Senior Class, and that of Master of Laws upon 3 graduate students, members of the Maine and Connecticut State Bar. All of our graduates that took the bar examination in Maine and had been with us three years before their graduation, passed it with-

out a single exception; and in Massachusetts all but one. This one failure was in a way made more than good by the success, at the same examination, of three other men from the Law School, non-graduates, one of whom had attended considerably less than three years, another just two, and the third only two-thirds of a year. The remarkable success of these three men, members of the school, though not graduates, has done much to spread the name and fame of the school throughout the old Commonwealth of which our own State once formed part, and accounts, possibly more than anything else, for the large number of men from Massachusetts that have applied for admission to the school this year. The recent national election has witnessed the success of three of our men in Massachusetts and of one in Connecticut, all four having been elected members of the legislatures of their respective states. The success in professional life achieved by the great majority of graduates and former members of the school continues to be favorably commented upon by many prominent attorneys and judges.

From the facts given above may be gathered how the school stands in each part of the State and outside of it in the Union; how college men, in ever growing numbers, begin to cast in their lot with it; how its members gain entrance to the profession, and establish themselves in practice; and how a learned profession and, through it, the public begin to take note of the seed planted just ten years ago and now growing into a tree of vigor and strength. It must be the daily duty and it will be, beyond question, the constant effort of the school and the University, of its teachers and students, of its president and trustees, as well as of the State, its governor, its legislature, its supreme judicial court, to see to it that nothing will be allowed to impede or dwarf the natural growth of this institution planted on the banks of the Penobscot for the benefit of the State and the Nation, and more particularly for the benefit of those that come here to seek both knowledge and wisdom with a view to the administration of law and justice among the people.

Respectfully submitted,

W. E. WALZ,

Dean of the College of Law.

COLLEGE OF AGRICULTURE

REPORTS OF THE DEAN AND DEPARTMENTS

President G. E. Fellows:

SIR:—In accordance with your request I hereby submit my report as dean of the College of Agriculture.

The development and organization of the College of Agriculture has progressed along the lines outlined in the report published in November, 1906, and as presented to you from time to time since that date.

The attendance of students continues to increase. During the year 1907-1908 the enrollment in the College was as follows:

Four year agricultural course	29
Two year school course	19
Short winter course	8
Special poultry course	41
Forestry students	42
Students from other departments in the University electing agriculture or forestry	17
Correspondence course	130
Farmers' Week	371
Total	657

This is an increase of 369, a gain of 228%, over the attendance of the previous year. There are 34 new agricultural students this (fall, 1908) semester.

All of our recent graduates who desired positions have good ones and are filling them with credit to themselves and to the University. Calls for men trained in agriculture, especially for teachers of agriculture in secondary schools and for men to manage estates, continue to come in. So far we have not had sufficient numbers to meet the demand.

Since July, 1907, the following buildings have been finished or are nearing completion: The new Agricultural building and stock judging pavilion, farm house of ten rooms, a piggery 28 x 40 ft., a wagon shed 20 x 55 ft., an incubator cellar 25 x 40 ft., a brooder house 15 x 30 ft., a fattening and killing house 15 x 46 ft., and several poultry colony houses of various types.

At the June meeting (1908) of the trustees a parcel of land comprising about one hundred acres was purchased of Mrs. William Woodward of

Stillwater. While in a run down condition at present, the land is naturally good and can soon be brought back to a high state of fertility.

Since the date last mentioned the Extension Department, so urgently asked for in my last report, has been established and the work done over the State is best proof for its justification. As soon as possible a traveling instructor with horse and wagon properly equipped should be added to the force. I would also like to see the "Guelph" plan tried in Maine. Details of the work are given in the report of that department. The department of Veterinary Science and Bacteriology, established in September of the present year, gives courses much needed, and which no doubt will be much called for in the future. The department of Agricultural and Biological Chemistry is now offering courses which will directly aid agricultural students who desire to enter Experiment Station work.

The College of Agriculture up to the present year has not had a poultry department. A department of this work has now been organized, necessary buildings have been erected and as soon as some needed equipment is provided we shall have facilities for instruction surpassed by few institutions in this country.

The College of Agriculture continues its policy of attempting to reach out through its different departments and touch every branch of the agricultural industry in the State. It is identifying itself with the movement toward the introduction of elementary agriculture into the public schools by coöperating with the State superintendent of schools, school boards, and teachers, aiding them by lectures or advice whenever possible. Two of our professors gave instruction in this subject at four summer schools conducted by the State superintendent during the past summer.

The repeated requests in the past that the bulletins of the various stations and the United States Department of Agriculture in the University library be bound and made available for consultation by students has been granted and is at present being done. Nearly a complete set has been made possible by the generous gift of Dr. Charles D. Woods of his private collection. I know of nothing that will help and strengthen our class work more than to have access to these publications.

The school course in Agriculture is developing satisfactorily but an effort should be made soon to make this course into a typical high school course in Agriculture with more of the common branches and mechanics added. As soon as is possible a corp of instructors should be engaged especially for this course, relieving the present force from some of the work in order that they may devote more of their time to developing the college courses along more scientific lines.

For some years past the United States Department of Agriculture has been doing soil survey work and coöperative work with state institutions in New York, Pennsylvania, Illinois, Wisconsin, Iowa, and several other states. Last spring application was made of the Bureau of Soils for a soil survey in this State. The request was granted and about

600 square miles of soil in Aroostook county has been surveyed and mapped. A request was recently made that a man be assigned to Maine with headquarters at the University to advise farmers throughout the State as to the utilization of their land and to give information on the subject of farm management. This request has also been granted, arrangements have been made, and such a man will be stationed here in 1909 without cost to the University. The Bureau of Soils will also make a survey of some county in southern Maine in 1909.

Two sholarships to be known as the "Gilbert M. Gowell Scholarship" have been offered by a graduate in Agriculture in the class of 1908.

While the efficiency of courses or instructors should not always be judged by what students are able to accomplish in competitive contests, it should perhaps be mentioned that three students, comprising a stock judging team, representing the University, won first prize for excellence in stock judging at Brockton, Massachusetts, in competition with students from other agricultural colleges of New England.

The second annual Farmers' Week was a greater success than any one anticipated. The new departure of engaging special lecturers proved itself to be a good one. Three hundred and seventy-one people were in attendance. The special poultry course also had the largest attendance in the history of the institution. This bringing of people to the University gives us a chance to give a much higher grade of instruction where we have our equipment at hand than is possible in other forms of extension work. The following special lecturers were engaged last year for Farmers' Week:

Miss Anna Barrows of Columbia University, New York City. Lectures and demonstrations in Domestic Science.

Hon. John Hamilton, Superintendent of Farmers' Institutes, Washington, D. C. Lecture on Extension Work.

F. William Rane, State Forester of Massachusetts. Lecture on Forestry.

In the poultry course the following well known poultrymen took part:

Professor C. K. Graham, Connecticut Agricultural College.

Mr. A. F. Hunter, Abington, Massachusetts, Editor, American Poultry Advocate.

Mr. I. K. Felch, Natick, Massachusetts, Expert Judge of Poultry.

Mr. Thomas Wright, Marlboro, Massachusetts, Pigeon Expert.

"Farmers' Week" and the Short Poultry course should be continued and an effort should be made to introduce other subjects related to rural betterment.

It is hoped that during the coming year the barns can be moved from their present position to a place near where the sheep barn now stands. The growth of the University has been such that they are entirely out of place in their present location. Not only is this true but the danger in the present "tie up" from two bad diseases is great. A new cement and iron "tie up" properly ventilated should be erected when the change is made and the smaller of the present barns made into a horse barn

and place for young stock. The capacity for keeping cows at present is not sufficient to supply the college community with milk, and milk is not readily purchased from outside parties in the neghborhood.

It is also to be urgently recommended that the greenhouse be placed in control of the Horticultural department, as was the case up to three years ago, in order that work in this subject may be offered to students. Two prospective students have this fall been advised not to come to the Universities because facilities for giving the work at present were not adequate.

At the beginning of another college year it will be necessary to add an instructor in the Animal Industry department to give instruction in dairy work and one in the Horticultural department who has had special training in landscape gardening. The professor of Horticulture is teaching twenty-three hours a week this semester and has no help in carrying the field work in his department. The poultryman is giving instruction in Animal Husbandry at present but will have to devote his whole time to poultry work another year. The addition of these men will not make a larger force than was employed in these two departments when under the direction of Professors Gowell and Munson but the courses of study and students receiving the instruction have more than doubled.

The progress made in the different departments and their needs will be found in the reports of each which accompany this report.

Since July, 1907, the personnel of the instructors in the strictly agricultural departments has entirely changed. The college has been extremely fortunate in securing for the different departments men who are untiring in their efforts to build up a strong College of Agriculture and who are ever faithful to the duties which are imposed upon them.

Respectfully submitted,

WILLIAM D. HURD,

Dean of the College of Agriculture.

REPORT OF THE DEPARTMENT OF AGRONOMY

President G. E. Fellows:

SIR:—I have the honor to present the following report of the Department of Agronomy dated from July 1, 1907, to the present time.

The work of this department should be considered from two standpoints, namely: The management of the college farm and the development of the instructional work of the department.

REPORT OF THE FARM.

As in previous years the management of the college farm has been under my direction. Much the same crops have been grown as in other years. These have consisted of 135 tons of grass and clover; 125 tons of corn silage; about 1000 bushels of roots; ten acres of oats yet unthreshed; and 900 bushels of potatoes. The acquiring of the Woodard farm will enable us to grow a larger acreage of cultivated crops on the home farm and will do away with the rental of small parcels of land for a short period of time which has been decidedly unprofitable.

About one mile of woven wire fence has been built during the year. This and the buildings erected have called for a larger amount of labor of men and teams which does not appear to the credit of the department in the financial statement.

During the year the following implements and equipment have been purchased for use on the farm:

1 Hoover potato digger, 1 Worcester Kemp manure spreader, 1 Wiard sulky plow, 1 Laffaty jigger, 2 sets heavy harnesses, 1 Stevens fertilizer distributor.

For farm equipment besides various small tools there is needed next year: 1 threshing machine, 1 grain binder, 1 hay loader, 1 new dump cart, 1 two-row corn planter.

The tile draining authorized by the trustees some time ago has not as yet been done. It is hoped that conditions will be such that it can go on in 1909.

A root, potato, and vegetable storehouse costing about $1000, similar to those which Aroostook county farmers have, is needed, so that these crops can be held for better prices than can be obtained at the time of harvesting them.

INSTRUCTIONAL WORK.

The instructional work in the department has been carried on as in the past. One additional course "School Gardening for Teachers" was added during the year. Limited facilities and lack of room has made the development of laboratory work impossible.

Very little apparatus for class and laboratory use was added during the year. That part of the money appropriated for this purpose was left unexpended it being the intention to use it for equipping the laboratories in the new Agricultural Building.

A parcel of land to the east of the greenhouses was laid out into about seventy plots. On these were grown grasses, clovers, grains, and other plants for the purpose of student study, the benefit of visitors, and to procure dried specimens for class room use.

I would like to see a division of Agricultural Engineering and Farm Mechanics made in the department of Agronomy. The leading agricultural colleges have now established such work and the need of it in New England where the use of improved agricultural machinery has not until recently been general is apparent. To this end the second story in machinery hall should be fitted with shafting, pulleys, belting, a motor, and a full line of machines installed which could be studied and operated by students.

All available space for the storage of exhibition machinery was taken a year ago by firms desirous of having their implements on exhibition, hence no effort has been made to secure further gifts. The following voluntary contributions of machinery and apparatus have been added since my last report was printed:

Moline Pump Company, Moline, Illinois—2 Eli gasolene engines (one in section).

Brackett, Shaw & Lunt, Somersworth, N. H.—1 Miami gasolene engine.

American Steel & Wire Company—6 samples of wire fence.

Stowell Mfg. Co., Milwaukee, Wisconsin—1 set barn door hangers, 1 set hay fork appliances.

Oliver Chilled Plow Company—1 sulky plow, 1 landside plow, 1 swivel plow.

The department is badly in need of much equipment for instructional work. We go into the new building with very little apparatus of this nature. The following is a partial list of apparatus needed at once.

1 stereopticon and a large number of lantern slides, charts, maps, etc., 1 dynamometer, 1 surveyor's compass, 1 surveyor's level and rod, 1 chain, 1 steel tape, 6 brass volume weight tubes, 1 set pins, 1 small motor for soil physics laboratory, 1 centrifugal machine for soil analysis, 1 set aspirator tubes, 1 steam bath, 36 nests of beakers (1 to 6), 36 Bunsen burners, 2 sets Torsion balances with weights, 30 dissecting microscopes with instruments, 60 seed germinators, 36 1-yard tape measures, numerous blanks printed for laboratory use, 1 gross glass jars with screw tops, 1 gross glass bottles with screw tops, 1-2 gross 4″ glass vials, 1-2 gross 6

or 8″ glass vials, 2 ovens, 2 soil samplers, 20 brass tubes 2 x12 in., 15 glass percolators, 100 ft. glass tubing 1 1-2″ diameter, 36 spatulas 5″ blade, 4 sets balances with weights, 2 compound microscopes, 1 gr. porcelain evaporating dishes 2 1-2″, 1 gr. porcelain evaporating dishes 3 1-2″, 36 1-ft. rulers, 36 glass bottles, glass stoppers (1 pt.), 36 glass bottles, glass stoppers (1-2 pt.), 36 liter flasks, 36 galvanized iron measures for grain; a larger assortment of grains, grasses, seeds, etc., for class room use.

Shortly after the opening of the fall semester of 1907, Professor E. D. Waid took up his duties as assistant professor. He has been faithful in the discharge of his duties and has worked hard to help build up the department.

Respectfully submitted,

WILLIAM D. HURD,
Professor of Agronomy.

REPORT OF THE DEPARTMENT OF ANIMAL INDUSTRY

President G. E. Fellows:

SIR:—In compliance with your request I submit the following report of the Department of Animal Industry.

The courses offered have been changed and systematized to place them on a plane with those offered in similar institutions, and to more fully adapt them to the needs of our students. Three new courses have been added making twelve in all. Special attention has been given to stock judging and the completion of the new judging pavilion will facilitate that work very much.

During the past year several cows that had proved unprofitable have been sold and have been replaced by larger producers. Two registered Holstein-Friesian heifers and one American Cattle Club Jersey have been bought. The others were grade animals picked for production. The general average of the herd in the production of both milk and butter has been materially increased. The herd at present consists of fifty-two head—thirty-one cows, two bulls, and the remainder calves and yearlings. Seven breeds and their grades are represented. The Jerseys, Guernseys, Ayrshires, and Holstein-Friesians represent the dairy type. The Shorthorn and Hereford the beef type and the Red Poll the dual-purpose type. There is constant inquiry for breeding stock from this herd, more than can possibly be met with the present herd. It should be the aim to replace most of the grades with pure bred animals, both for a source of profit to the department and to have typical animals for examples for students and the numerous visitors.

The flock of sheep contains seventy pure-bred animals and consists of specimens of the Cheviot, Hampshire Downs, Oxford Downs, and Horned Dorsets. A large portion of the flock is made up of the Horned Dorsets and the rearing and marketing of winter lambs makes them of particular value. The swine herd consists of two Berkshires, three Chester Whites, and two large Yorkshires, besides fattening stock; all housed in the piggery that was built in 1907.

The boiler that was condemned as unsafe in the Dairy Building has been replaced by a smaller upright boiler that is sufficient to furnish power and heat water for the building at such times as the main heating plant is not in operation. Most of the machinery in the creamery that was there on loan by the manufacturers has been replaced by modern

machines, and a Simplex hand separator, an Empire hand separator, a twenty-four bottle Wizard tester, and a Victor size "A" combined churn and worker have been added by courtesy of the manufacturers.

During the year the department has had several gifts that have materially added to the equipment. Among these one of the most valuable was twin Guernsey calves donated by Mr. Lyman Blair of Greenville.

In the spring of 1908, looking forward to a Poultry Department, sufficient equipment consisting of brooder houses, brooders, incubators, and eggs from six breeds of hens for hatching about six hundred chickens was secured. In August this was turned over to Professor W. A. Brown, who has charge of the Poultry Department. Professor Brown also assists in teaching in the Animal Industry work.

The department will have lecture rooms in the new Agricultural Building, the lecture room now in use in the Dairy Building will be available for laboratory purposes. At present the dairy room is equipped with both power and hand machinery. A separation of this allowing the present dairy room for creamery operations would be advisable. A slight remodeling of the lecture room would make it into a farm dairy room where all the hand machinery could be used. Farthermore it would allow room for machinery which we cannot now use under the present arrangement.

At the present time there is no work in horse breeding being conducted by the department. The facilities for judging horses by the students are very meager, being limited to the farm horses. There is much adverse criticism by breeders because this line of work is neglected. If horses for the farm are needed they have to be bought in the open market. They should be reared here, thus setting an example for the students and encouraging that industry, the neglect of which costs the people of the state many thousands of dollars annually.

If the raising of hot house lambs is continued a small building that can be heated in severe weather is needed for a nursery. The department needs a modern cow stable and a place for rearing calves. The one in present use, although a model at the time it was erected, is far from being up to date at the present time, and often is a source of disappointment to visitors who come here to get ideas in remodeling their old or in erecting a new barn. During the year slight changes have been made to increase the room for tying cows. Every stall is full and several calves have to be kept under the barn. There is an increasing demand for milk from the college dormitories, fraternity houses, and for use in the dairy laboratory. This demand cannot be met unless facilities are provided for carrying a larger herd. A larger herd is also needed for instructional purposes. A modern stable large enough for fifty head of milch cows should be provided. It could be built as a wing to the main barn thus utilizing that as a storage barn for hay and other feeds.

Respectfully submitted,

P. A. CAMPBELL,
Professor of Animal Industry.

REPORT OF THE EXTENSION DEPARTMENT

President G. E. Fellows:

SIR:—Through the work of the Extension Department there were 175 demonstrations and lectures made from July 1, 1907, to date. These lectures and demonstrations were given in every county in the State and were attended by a total of 14,392 persons or an average of 82 persons per meeting.

In the correspondence courses there have been 145 enrollments, 45 having completed courses outlined, and 175 books have been sent to the correspondence students.

This department has published a monthly leaflet "Timely Helps for Farmers" that is mailed free to all who apply for it. These leaflets treat some topic that may be of interest to many rural people in a practical sort of a way.

The subject of these leaflets to date are as follows:

Vol. 1. No. 1. September, 1907. Some Plain Directions for Home Testing of Milk and Cream.

Vol. 1. No. 2. October, 1907. Some Suggestions on How the Farmer and His Family May Spend the Long Winter Evenings.

Vol. 1. No. 3. November, 1907. Feeding Milch Cows.

Vol. 1. No. 4. December, 1907. Stable Manure—Its Value, Proper Care and Management.

Vol. 1. No. 5. January, 1908. Winter Thoughts About Summer Insects.

Vol. 1. No. 6. February, 1908. Importance and Value of Home Seed Testing.

Vol. 1. No. 7. March, 1908. Timely Suggestions for the Orchard.

Vol. 1. No. 8. April, 1908. The Care of the Farm Woodlot.

Vol. 1. No. 9. May, 1908. Rearing Dairy Heifers.

Vol. 1. No. 10. June, 1908. Clover and Hay Production on the University Farm.

Vol. 1. No. 11. July, 1908. Renovating Old Orchards.

Vol. 1. No. 12. August, 1908. Lecture Courses by the College of Agriculture.

Vol. 2. No. 1. September, 1908. The Correspondence Courses Offered by the College of Agriculture.

Vol. 2. No. 2. October, 1908. How to Organize Nature Study Club Work in the Common Schools.

This, with some teaching in the Animal Industry Department, taking pictures, and making lantern slides for illustrative work, and teaching elementary agriculture for two weeks in each of four State Normal Schools for the summer term covers the work of this department for the past year.

During the coming year it is hoped to develop all lines of work already commenced; to carry on some coöperative experiments with a few farmers over the State; and to get in close touch with the schools of the State. Particularly those schools having to do with the education of the country youth, that these children may become acquainted in a degree at least with the principles that stand for success or failure in farm life.

During the year the department has been presented with an eight bottle Babcock Argos milk tester and a small set of balances for weighing samples of cream by the Vermont Farm Machine Company, Bellows Falls, Vermont.

The work of this department could be greatly facilitated and its efficiency increased by the addition of some machine to print circular letters that will closely resemble those written by the typewriter.

Respectfully submitted,

J. E. McCLINTOCK,

Supervisor of Extension Work.

REPORT OF THE DEPARTMENT OF FORESTRY

President G. E. Fellows:

SIR:—I have the honor herewith to present a report of the teaching of forestry in the University of Maine.

In the college year of 1906-1907 there were twenty-six students registered for forestry as a major subject, an increase of nine over the previous year. In the college year of 1907-1908 there were forty-six major students registered in the department. In addition to the regular students there were twenty-two others who elected work in forestry last year and the preceding year there were twenty-six.

The enrollment has increased in two years to nearly three times what it was in 1906 and is nearly five times greater than the registration three years ago, (1904-1905), while, on the other hand, the provisions for instruction and the funds available for the work have remained the same. The very material increase in the attendance now makes the need for assistance in the work of instruction an imperative one.

The work has been carried out along the lines laid down in the new schedule of two years ago, when new courses were added. The demand for the work is such that three more new courses are being added this year, the subjects to be treated in these courses being forest geography, forest history and forest protection. In addition, plans are being made to give a course in forest mapping if proper arrangements for the work can be made.

The practical scientific work for instructional purposes has been done in the University woodlot and in the wooded area within easy reach of the University. The cutting in the University woods to remove the undesirable growth and relieve the crowded condition has been continued and the work on one tract has been nearly completed. This work has been conducted on scientific principles without loss, enough material having been obtained to more than pay for the labor expended.

Requests have been received from private owners asking for assistance in the care of their wooded areas. A personal examination has been made of tracts having an aggregate area of a little more than one thousand acres,—plans for the management of the several tracts being discussed on the ground with the owner. The work of coöperation is to be continued in the spring, and it is planned at that time to plant about twenty-five acres altogether. About eighteen acres will be planted to

white pine which will require 20,000 seedlings. The remainder will be planted with red oak acorns.

New instruments and tools for the practical work have been purchased and the equipment of the department now consists of tree calipers, log scales, instruments for measuring the height of standing trees, steel tapes, compasses, chains, staff heads, planimeters, Pressler's increment borers, hand lenses, axes, saws and planting tools. Additional equipment is needed, however. With the number of students now enrolled in the department even the present outfit of instruments is too small. In order to properly conduct the practical work it is estimated that at least five hundred dollars worth of instruments is required.

To equip the timber testing laboratory designed for the department with the necessary testing machines and auxiliary apparatus will require about $3,500.

The department has a smaller equipment of books in the library than almost any other department in the University. It is estimated that fully $500 is required to purchase the recent English publications and the more important German and French books.

Respectfully submitted,

GORDON E. TOWER,

Professor of Forestry.

REPORT OF THE DEPARTMENT OF HORTICULTURE

President G. E. Fellows:

SIR:—Frequent changes in its staff the last few years has prevented a growth of the Department of Horticulture coördinate with that of other departments of the University. There has been the wear and tear of tools and equipment without a corresponding repair of things broken and replacing of things destroyed. Orchards and gardens have had to be cut down and plowed up to make room for new buildings. All this has tended to cripple the work of the department.

With better class-room and laboratory accommodations in the new Agricultural Building better work will be possible. To realize the greatest efficiency, however, considerable new equipment is needed. A start has been made by purchasing two hand-power spraying outfits, some seed testing apparatus, and a few of the smaller orchard and garden tools. A fruit packing table and a box nailing press have been made with the aid of student labor. A small cider press has been loaned the department by one of the manufacturers. Another packing table, costing $5, is needed and it is highly desirable that the department have at least one good power spraying outfit. A good one can be procured for $250. A small home canning outfit, such as is used in many parts of the country, should be provided that more definite instruction may be given concerning modern methods of profitably disposing of the surplus of orchard and garden. Such an outfit can be obtained for $25.

The department possesses no fruit and vegetable models. These are very useful in class and laboratory work. For $500 a good set could be obtained. Suitable glass cases should be provided for the display of these models. Cabinets for the display of small orchard and garden tools which we already have are also needed. All told these cases would cost about $200. The department needs a set of charts and maps costing $50. At the present time it shares four dissecting microscopes with another department. At least 20 new dissecting microscopes with accompanying needles, forceps, and scalpels should be obtained at once. Good outfits can be obtained for $4.00 a piece. Two good compound

microscopes costing $50 a piece for the use of advance students are also needed. We should have three good spring balances and a chemical balance for seed testing. $50 would obtain them. Means should also be provided for the construction of a small seed-testing incubator with perfect temperature control. One can be made for $100. A number of thin sections of old graft unions should be made and properly mounted for classroom study. These will cost $50.

Facilities for the study of landscape gardening are very meager. A number of additional books on this subject should be placed in the library and a good collection of small reprints of the famous landscape paintings should be obtained. $25 would make a good start toward such a collection. In addition means should be provided for obtaining a good set of lantern slides illustrating various types of landscape art. Lantern slides illustrating orchard, garden, nursery, and greenhouse practices and scenes should also be made. Perhaps these slides could best be made here at the University. $200 will make a start toward a good working collection.

Not only are new books on landscape gardening needed, but many new publications on other phases of Horticultural science should be placed at the disposal of the students. In addition to single library copies of certain publications (such as Beach's Apples of New York) at least a dozen extra copies should be obtained and put in one of the laboratories or offices of the department. Such a work is needed for constant reference by students in Pomology, but is too expensive for the average student to buy. This particular publication is nearly out of print now and in two or three years will very likely be practically unobtainable. It is very likely that within the coming year one or two other books will be published which should be obtained in the same way. $200 is needed for new books.

A new orchard should be started this coming spring. This semester 15 students taking work in Orchard Management and Pomology had to be taken to an orchard one and one-half miles from the University grounds to be given practice in picking, grading, and packing fruit. The same difficulties will be met with in giving practical work in the other orchard operations. The new farm bought by the College of Agriculture contains some excellent fruit land, four acres of which has already been prepared for tree planting. It will take $75 to properly plant this area with apples, pears, plums, grapes, and other fruits.

This year four juniors have elected work in Greenhouse Management and eight second year school course men are receiving training along the same line. The present range of greenhouses is old, out of date, and unfit to grow many of the greenhouse crops. A new set of greenhouses costing in the neighborhood of $5000 must be provided if students are to be given actual practice in modern methods of greenhouse management. $25 should be spent on cold frames to provide facilities for starting early vegetables for later transplanting to open ground.

At the present time I am alone in the department. New courses have necessarily been added to the catalog to keep pace with progress in the

horticultural world. One or two new subjects should still be added. To properly look after work in garden, greenhouse and orchard requires considerable time. There is an increasing demand on the part of farmers clubs and granges throughout the State for addresses on horticultural topics and demonstrations of horticultural practices. That more time may be given each phase of these growing activities I would ask for an assistant.

Respectfully submitted,

V. R. GARDNER.

Assistant Professor of Horticulture.

REPORT OF THE DEPARTMENT OF POULTRY HUSBANDRY

President G. E. Fellows:

SIR:—I have the honor to present the following report of the Department of Poultry Husbandry.

This department was established this year. The work of building it up was begun last spring by the Animal Industry Department. Eggs of six different breeds—the White Wyandottes, the White Leghorns, the Rhode Island Reds, the Light Brahmas, the Black Langshangs, and the Columbian Wyandottes—were purchased from reliable breeders in various parts of the State; the necessary equipment of incubators, brooders, colony houses, etc., was also procured and the whole put in charge of a competent man.

Upon my assuming charge of the department on August 1st, I found things in excellent condition, the chickens well grown and the equipment in good shape. Since that time we have been planning a department and so far have succeeded in having erected and partially equipped certain buildings sufficient for our needs for this coming winter.

The buildings erected at the present time are:

(1) Six colony houses, built for the accommodation of our laying and breeding stock.

(2) A combined fattening and killing house, the fattening house being 33 x 14 feet, and the killing house 17 x 14 feet in size. The former is equipped with the various kinds of crates and pens suitable for fattening work. The latter is equipped with water, cooling tanks, shaving boards, etc., and it is there that the student receives instruction and practice in the various methods of killing, dressing, packing, and preparing of poultry for market.

(3) An incubator house with brooder house attached. The incubator house is 25 x 40 feet in size. The lower part consists of an eight foot basement, rising six feet above the ground. This section is built of brick and cement, is fireproof and forms the main part of the building. It is divided into six rooms—three small rooms, an egg room, an oil room, a furnace room, and three larger rooms; one a large incubator room 25 x 14 1-2 feet for student purposes; an experimental incubator room and a small laboratory 10 x 14 feet. Rising above the basement is a story and a half frame structure which can at some time be turned into a residence for the poultryman but which, for the present at least,

will be used for a class room and carpenter shop. The brooder house is 15 x 30 feet in size and is arranged to accommodate six indoor, individual brooders.

(4) A feed room. We have at present the use of a part of the old No. 1 Maine State House for feed and storage purposes.

The following gifts and loans have been received by the department.

GIFTS

1 220-egg incubator from the Reliable Incubator and Brooder Company, Quincy, Ill.

LOANS

1 120-egg incubator by the Prairie State Incubator Company, Homer City, Pa.

To make our department as efficient as possible and to put it on an equal basis with departments in other universities and colleges doing similar work, we need the following: Some equipment for our incubator house, viz: from twelve to fifteen incubators of small size for the use of our students. It is desirable that these machines be of various types and makes. Some equipment for our laboratory, viz.: some chemical and physical apparatus for the testing of gases and temperatures affecting incubation; a microscope; some instruments for dissecting purposes, caponizing sets, etc. In our carpenter shop, where the students are taught a certain amount of rough carpentry as the building of small colony houses, feed hoppers, etc., we need a dozen hammers, a dozen saws, eight or ten squares, and sufficient lumber from time to time for the needs of the departments.

We must increase the size of our flock. Not only the number of birds in the breeds we have at present but also by the addition of certain other popular breeds and varieties. We must have houses to house this stock and in this connection will need from ten to twelve more colony houses for breeding and laying purposes; from six to eight smaller colony houses for the growing of young stock, and a winter laying house. We must have a better house in which to store our feed, a building that will be rat and vermin proof.

We also need certain equipment such as coops, models, charts, etc., to be used for classroom purposes. Our section in the library must be enlarged. Certain books and periodicals of recent date must be added to keep our students in touch with the current topics of our work.

Respectfully submitted,

W. A. BROWN,

Assistant Professor of Poultry Husbandry.

COLLEGE OF ARTS AND SCIENCES

REPORT OF THE DEAN, AND DEPARTMENTS

President G. E. Fellows:

SIR:—During the past year an effort has been made to organize this department of the University for the accomplishment of more definite lines of work. While no stated time of meeting has been agreed upon the members of the college meet as occasion requires for the discussion of matters in which they are concerned, and for the purpose of suggesting lines of action to the University Faculty. It is believed that this organization has accomplished its purpose and it would seem advisable more completely to affect this and appoint a stated time for holding meetings of the College.

The number of students in this College as reported in the last catalog was 180 which represents an increase of about 40% over the previous year. It is impossible at this time to state the present registration but it seems evident that there has been a slight increase in attendance.

One of the subjects which has engaged considerable attention during the past year has been the conditions upon which the Bachelor of Arts degree should be conferred. While no definite action has as yet been taken, the consensus of opinion would seem to indicate that there should be a change in this regard. Most of our state universities are conferring this degree under more liberal conditions than those which exist here. A proposition looking toward certain changes in this regard will doubtless be submitted for your consideration in the near future.

The general lecture course which was established in the fall of 1906 has continued up to the present time and has met with gratifying success. In the spring semester of 1907 the course of lectures was given by representatives of the departments of History, Philosophy, and Sociology. During the present semester the course of lectures is being delivered on the History of Science, including the departments of Mathematics, Physics, Chemistry, Biology, Biological Chemistry, and Botany.

The attendance at the summer term of 1908 showed an increase of six names over that of 1907. It was felt by all concerned that this was the most successful summer session which has yet been held. A large number of our students were teachers of experience who had completed a college course.

An effort is being made to unify the various interests of the University which are allied to one another and which would lie within the scope

of the College of Arts and Sciences. The Literati, the Debating Club, the Deutscher Verein, the Circle Francais, and the Dramatic Club are institutions which might properly be coordinated as departments of this college.

A large number of new courses have been added to the curriculum of this college, descriptions of which will be found in this year's catalog. Probably for the first time in the history of Maine colleges there will occur an exchange of professors between two of them. It has been arranged that Professor K. C. M. Sills of Bowdoin College, shall give a course of lectures here on Roman Literature, and that Professor G. D. Chase of this University, shall give a course at Bowdoin College on Roman Numismatics. It is believed that similar exchanges in other departments and with other colleges might prove mutually advantageous.

Respectfully submitted,

JAMES S. STEVENS,

Dean of the College of Arts and Sciences.

REPORT OF THE DEPARTMENT OF BIOLOGY

President G. E. Fellows:

SIR:—During the past two years the Department of Biology has had its efficiency very materially increased by the appointment of an Associate Professor of Botany, Dr. Mintin A. Chrysler, who has charge of the botanical side of biological instruction. The constant increase in the demand for a more thorough training in botanical lines for students in the College of Arts and Sciences and in the College of Agriculture made this appointment most desirable and the large increase in the number of students taking botany shows that it has been appreciated. Although the number of botanical courses has not been increased, the time given to several of the courses has been increased, and courses for which students did not always register are now always called for and given.

The students taking work in General Biology have increased so they are now handled in two divisions in recitation work, and three divisions in laboratory work. Should there be any further increase in the number it will be necessary to make three divisions for recitations and it may be necessary to make a fourth division for laboratory work.

The zoological side of biological instruction has been changed somewhat to coördinate it further with the botanical work and to put it in better form for students in the College of Arts and Sciences who desire a more thorough training in zoological lines, either as a preparation for teaching or for the study of medicine. Embryology, which, up to the present time, has been given as Advance Zoology whenever there was call for it, is now scheduled as a separate course, and the time for Animal Histology has been increased. The work for technical students, especially those of the College of Agriculture, has been slightly modified, and a new course in Forest Zoology has been added.

Since the last report a small greenhouse has been built, that is connected with the basement of Coburn Hall, and a basement laboratory, which is especially intended for Plant and Animal Physiology, has nearly been completed. The greenhouse is provided with a thermostat that keeps the temperature nearly uniform, and with a recording thermometer that registers the variations. It is not only most useful for growing material that is needed for laboratory work but it makes possible physiological experiments that could not be performed before the greenhouse was built. The new laboratory will provide good accommodations for ten students. Four others can be accommodated but they will be entirely

dependent on artificial light. In physiological work, it is frequently necessary to let preparations that are being used for experimental work stand from day to day. In the general laboratories, this is not possible as the tables have to be cleared for succeeding classes. This special laboratory will save much time and material and make it possible to perform many fundamental experiments that could not be attempted before.

A number of new pieces of apparatus have been purchased for the department. These have, for the most part, been such as were demanded by the increase in the number of students. The most valuable additions are fifteen compound microscopes, fifteen dissecting microscopes and a micro-spectroscope. Prof. Chrysler brought with him a large amount of valuable botanical material that forms a basis of much of the laboratory botanical work, and new material for both botany and zoology is constantly being added.

Among the pressing needs may be mentioned the following:

1. Space:

There are four instructors and one recitation room. A number of recitations have accordingly been held in laboratories that happen not to be needed for other purposes at the time. This is never satisfactory, as the laboratories are not arranged to bring the students near the instructor and the blackboard room is seldom adequate. At least one other recitation room should be furnished.

It is evident that every instructor should have an office that can be used as a student consultation room. At present the room that has the herbarium and chemical cases is the only room for such a purpose. This is occupied by all four of the department instructors, who not only have to use it for a consultation room and a room in which to transact the general routine that falls to each, but who are making use of it also as a preparation room to get material ready for their various classes, and as their "private" laboratory for the prosecution of their individual lines of research. It need not be pointed out that we are each very much in the other's way and that the class work and the research work suffers not a little as the result.

2. Instructors:

The increase in the number of students in the department, the necessity of having more than one division in some of the subjects, and the amount of time that it takes to prepare material for a laboratory period, combine to make the work for the present number of instructors too much. Many biological laboratory courses require that the instructor shall take the crude material and work it up to a finished product each time before it comes to the student. Take for instance a piece of wood: before its microscopic structure can be examined, it must be trimmed into a block of proper size, boiled to soften it and to get rid of the air, treated for some hours with hydrofluoric acid to get rid of the mineral matter, washed for some hours to get rid of the hydrofluoric acid, dehydrated through successive grades of alcohol to get rid of the water,

treated with ether and absolute alcohol to get it ready for embedding in celloidin, then embedded and the celloidin hardened. It is then ready for cutting on a special instrument with a knife that has a razor edge. The section is then run back through the grades of alcohol to water and double stained to bring out the structure, run back through the grades of alcohol to get rid of the water, and then passed to a clearing agent. Each section is then ready to be placed on a slide in balsam and covered with a thin cover slip. This latter process is done by each student but up to that point it is entirely the work of the instructor. Each kind of wood should be examined in sections cut in three directions which means going over part of the process indicated three times. I have gone over this detail in the briefest possible manner in order that you may understand that, while the student requires no preparation for the laboratory work, the instructor has much to do. In many cases, it would be much easier to prepare for two recitations than for one laboratory period, and the time taken by the laboratory is twice as long as that of the recitation. While not all of the courses require as much time for the preparation as is here given, the preparation is not exceptional by any means, and is frequently more complicated and time consuming.

I believe that the need for more instructors will be apparent. I would suggest the addition of an instructor in Entomology, who could take charge of the technical work, especially the work of the College of Agriculture, and an instructor in Botany, who could take charge of the technical work, especially the work of the College of Agriculture.

3. Apparatus:

We are still crowded to the limit for microscopes as the students have increased as rapidly as the microscopes have been added. We should have at least six more microscopes next year than we now have. When Professor Russell transfers his instruments, ten in number, to the Agricultural Building, we will be unable to accommodate our present students, as all of these instruments are now used for our purposes as well as his. We are also greatly in need of more dissecting microscopes, some physiological apparatus, a few skeletons and a photomicrographic apparatus.

Respectfully submitted,

GILMAN A. DREW,
Professor of Biology.

REPORT OF THE MUSEUM OF NATURAL HISTORY

President G. E. Fellows:

SIR:—During the past year much has been done to improve the efficiency and appearance of the Museum of Natural History. Because of the removal of the library it became possible a year ago last July to move the zoological collections and cases from the third floor to the first floor of the wing of Coburn Hall and to use the space thus vacated for the exhibition of geological and botanical collections. Six large display and storage cases were built and placed in the third floor of Coburn Hall, which, together with the cases that were there, have provided much more satisfactory space for the care and display of geological collections than was previously provided. Two of the new cases and two of the old cases are at present filled with botanical display material. This material will be removed as soon as provision can be made for it elsewhere. The geological collections have been cleaned and arranged and are now being relabeled. All of this work has been under the supervision of Professor Merrill, and most of it has been of a nature that has demanded his personal attention. He has succeeded in making a very creditable display and working collection out of what previously appeared, for want of care and arrangement, to be almost worthless.

The zoological collections have improved greatly in efficiency and appearance. The old cases were arranged in their new quarters and three center and seven wall cases were built for the remaining space. Much care and time has been given to labeling and rearranging the old material and through the efforts of Mr. Winch, the collections have increased greatly in number and in display value.

During the year the taxidermist, besides preparing many birds and small mammals for exhibition, has completed three notable pieces and has a fourth well under way. The three pieces consist of a young cow-moose that was killed by a locomotive, and was donated to the museum by the Fish and Game Commissioners of the State, a case of partridges and a case of gullemots and terns. All of these have been mounted with groundwork that represents the natural surroundings of the animals. The moose at present occupies only a portion of a case, but is expected to form one of a group as soon as satisfactory material for a group can be procured and put in place. The partridges, six in number, occupy a case by themselves near the center of the room and are

mounted in various attitudes that are consistent with their surroundings. The gullemots and terns occupy a wall case that is placed in the corridor of the first floor. It consists of five gullemots and two terns, which are represented as perched upon a ledge of rock. The uncompleted piece is much larger than any of the others. It consists of an adult and spike-horn buck and an adult and young doe. When completed it will have groundwork to represent the natural surroundings of these animals. The specimens that form this group were presented by Mr. H. H. Hanson, Mr. Frank P. Lane, and the taxidermist. This group occupies a conspicuous position near the door.

The most notable donations to the zoological collections this year have been made by Mr. Lewis R. Cary of the class of 1901, who collected and prepared as a gift to the museum, the skins of about eighty birds from Louisiana. Many of these have been mounted and are now on exhibition. They, together with those that are still to be mounted, form a greatly appreciated addition to the collection of water birds.

Others to whom the museum is indebted for many valuable donations are Messrs. A. H. Sampson, Albert Sampson, H. R. Wing, E. H. Dakin, E. R. Gross and Harry White. Many students and other friends of the University have contributed one or more specimens each. The combined donations of birds and mammals alone, number nearly three hundred specimens for the year.

The herbarium of probably ten thousand specimens, was all overhauled and rearranged last year. While the results are not apparent to the general visitor, the work required much time and patience and has put the collections in available form for reference. Facilities are not at hand for making much display of the botanical collections, but certain things, as a few of the medicinal plants or plant products and other plants or plant products that are of economic importance have been arranged for exhibition. A collection of the woods of the State has been started, largely through the donations of Mr. B. T. Harvey of the class of 1904, and, together with other material now on hand, will be placed on exhibition when cases can be provided for them.

The pressing needs of the museum are more room, and more cases. The geological material should have all of the cases in the room where it is displayed. More material is now in sight and it is possible to greatly increase the size and value of the collections as soon as adequate room for its display is assured. Much of the zoological material as the shells of native and exotic mollusks, are stored away in drawers, and there is no room to exhibit the alcoholic material. The botanical collections have hardly been put on display at all, but it is apparent what may be done with them when opportunity offers.

Respectfully submitted,

GILMAN A. DREW,

Director of the Natural History Museum.

REPORT OF THE DEPARTMENT OF CHEMISTRY

President G. E. Fellows:

Since the presentation of my last report, two years ago, the composition of the teaching force in this department has undergone some changes. Mr. James Seymour, Ph. G., B. S., has charge of all classes in qualitative analysis as well as special classes in the chemistry of the metals and in physical chemistry. Mr. W. F. Washburn, B. S., has charge of the work in elementary chemistry, being assisted by Mr. A. G. Durgin, B. S. Mr. R. E. Clayton, B. S., is instructor in Quantitative Analysis and has charge of exercises in chemical arithmetic. The work done by these instructors has been very satisfactory. Two new courses have been introduced one in the practical manipulation and blowing of glass and one in the chemistry of the metals, this is especially intended for engineering students who need a little more advanced knowledge of the metallic elements than obtained in the course in elementary chemistry. These courses have been given by Mr. Seymour. Summer before last a small laboratory was built in the attic of Fernald Hall, this has somewhat relieved the congested condition of our laboratories but they are still too full for convenience. We not only need other and larger laboratories but rooms for special work. The need of a new building becomes daily more apparent, especially as the course in chemical engineering is attracting more students to this department than in the past. I cannot, too forcibly, urge the erection of a large, modern and well equipped laboratory at an early date. We are at present working at a disadvantage and unless something is done to enlarge our facilities we will not be able to obtain the best results.

The far reaching development of chemistry in technical lines makes a course in chemical engineering imperative but in order to offer an up to date course we need the proper facilities for instruction and practical work. The teaching force of the department has in the past been able to grapple fairly well with the necessities of the hour but with the additional work due to the course in chemical engineering such as courses in technical chemistry, metallurgy and practical laboratory work it will become necessary to add at least one new member to the chemical faculty. During the past year we have been able to make some additions to our stock of apparatus, namely, a sartorius balance, an assay and a crucible furnace, a Paris calorimeter, a simple form of apparatus

for gas analysis and some platinum ware. There is much apparatus still needed and I add a list of those pieces which would be of most value at present. They are: A polarizing saccharimeter, a refractometer, a spectroscope, several balances, apparatus for electro chemical analysis, apparatus for lecture demonstrations and platinum ware. The sum of $800 would be sufficient for the purchase of the above.

A few reference books have been added to the department library but there are many still missing. I would respectfully insist upon the purchase of complete sets of periodicals as absolutely necessary for the pursuit of original research.

The new Springfield gas machine installed last year has given great satisfaction, the work in the laboratories has gone along smoothly without loss of time and the results have been good.

Respectfully submitted,

ALFRED B. AUBERT,

Professor of Chemistry.

REPORT OF THE DEPARTMENT OF ECNOMICS AND SOCIOLOGY

President G. E. Fellows:

SIR:—The Department of Economics and Sociology has made progress in several directions since my last report. (1) The number of students electing the department has greatly increased especially in the advanced work.

(2) Elementary Political Economy and Business Law is now required of engineering students. This has especially crowded the former course and there is no suitable room in the University for the work.

(3) Five new courses are now given which were not scheduled before, viz.: Anthropology, Ethnology, Municipal Government, History of Democracy and Economic History, although these are not all given every year.

(4) A department library has been started which is giving a constantly increasing efficiency to the work. The library already makes methods of work possible which were not possible before this time.

The needs of the department are many of course, but the greatest immediate necessities are: (1) a suitable room for the elementary Political Economy. The Library Lecture Room in which we now meet is unsuitable in size, location and equipment. (2) The department needs the constant acquisition of many important books. Strong works are being produced in this field of study with great rapidity and an efficient library must make numerous and regular additions. The work would be greatly improved by a permanent stereopticon in the lecture and classroom.

(3) There is need, when it becomes possible, of dividing this department into two independent departments, one of Economics and another of Social and Political Science, then as the University grows the latter can be separated into two departments, Sociology and Government.

This plan would necessitate another instructor at once but it would solve the problem of crowded classrooms and would enable the departments to do much better work for the beginners and conduct seminars for advanced students.

The social and political sciences have become prominent during the last few years and they are sure to increase in importance in the future. Our democratic life and institutions in America force upon our universities and colleges the necessity of thorough instruction in these subjects so vital to our public welfare and civic progress, and further advance by Maine in this field of modern work would be in every way beneficial to the University and State.

ROBERT J. SPRAGUE.

REPORT OF THE DEPARTMENT OF EDUCATION

President G. E. Fellows:

SIR:—The history of the Department of Education for the past year has been uneventful. The policy of strengthening the courses for high school teachers and administrative officers of the grade of principal and superintendent has been steadily pursued. Courses in the history of education, in administration, and in educational psychology were given last year and are now in progress with the addition this term of a course for superintendents in the application of educational theories to school courses and programs. A beginning has also been made this year in research study by high school principals who can use their own schools as means for the investigation of pressing problems in the educational field.

The attendance upon the courses in education during the summer school was very gratifying both as regards numbers and the character of the enrollment. The classes were large and enthusiastic and included experienced teachers from Washington, D. C., and from Massachusetts, as well as many superintendents from our own State. The lectures given by the State superintendent, Dr. Payson Smith, should receive special mention, so warm was the welcome from the students and so gratifying the attendance. The summer school courses in education give promise of such acceptance by the teachers of the State that the summer session may easily become the most important of the year.

Additions to the library of education have been constantly made during the past two years, still as the department broadens in work and as new books appear the need for books must continue.

The many calls for men to organize and conduct agricultural high schools are evidence that the time is favorable for the fitting of young men for work in agricultural education. The Department of Education in connection with the College of Agriculture is prepared to undertake this work as occasion may arise, and it is hoped that the young men of Maine who desire to follow teaching as a vocation will take advantage of this opportunity.

Respectfully submitted,

CHARLES DAVIDSON,

Professor of Education.

REPORT OF THE DEPARTMENT OF ENGLISH

President G. E. Fellows:

SIR:—The great loss experienced by the whole University community in the death of Professor Estabrooke has been felt with special keenness in the department of English where for seventeen years he gave loyally and faithfully the best efforts of his life. Those of us who have worked with him in the department shall ever cherish grateful memories of the ready sympathy and helpful counsel of this man who has furnished us with ideals of devotion to duty, high standards of work, and graciousness and gentleness of spirit.

For three weeks after the death of Professor Estabrooke the class work left by him was carried on by Mr. Prince and myself. We then secured the services of Mr. Charles P. Weaver, who has been appointed assistant professor in the department. Professor Weaver holds the B. A. and M. A. degrees from Wake Forest College, N. C., and has had two years of graduate work at Johns Hopkins University. He has had experience in teaching in secondary schools and in college and comes highly recommended for the work that he undertakes. Since his arrival the work of the department has been readjusted and all is running smoothly with every promise of successful results.

In order that the work in public speaking might be carried on with greater efficiency it was deemed advisable that Professor Daggett should give up his work in composition and devote his attention wholly to the public speaking. By this arrangement the burden of composition work on the other members of the department was such that it was found necessary to obtain aid and for this we have secured Mr. A. W. Sprague, B. A. (Maine) 1905, M. A. (Harvard) 1907, who takes a large part of the sophomore course in composition. It is desirable that more writing should be required in the freshman course in composition and to meet this need and to do the work temporarily carried by Mr. Sprague it will probably be necessary to employ another instructor for next year.

One of our most pressing needs is that of books. Books constitute the apparatus of this department and for successful work it seems imperative that an annual allowance as liberal as possible be granted for additions to the present meager equipment. We even lack texts of many important writers in the field of English literature to say nothing of scholarly treatises on literary history, and class work is constantly hampered by this deficiency. Time and thoughtful attention must be given to this matter of building up a departmental library and greatest care must be taken in order that the funds available may be most judiciously expended.

Respectfully submitted,

GUY ANDREW THOMPSON,

Acting Head of the Department.

REPORT OF THE DEPARTMENT OF GERMANIC LANGUAGES

President G. E. Fellows, University of Maine:

My Dear Sir:—Instruction is given 149 students of German by the undersigned and Miss Anne Margaret Merrill, B. A., Teaching Fellow in Germanic Languages. Miss Merrill had shown during her undergraduate course in the University of Maine so great aptitude for modern language work and had taken so high rank in all her studies that on being graduated in June, 1908, she was appointed Teaching Fellow for one year with permission to do graduate work in Germanic Languages. She has already shown that her pedagogical ability is equal to her scholarship.

German is taught this year 25 hours a week, thirteen hours of which are devoted to beginners, three to second year work in German Prose and Poetry, three to third and fourth year students in German Literary History of the 18th and 19th centuries, two hours to Scientific German, two to German Conversation and Composition, and two to Old Saxon. Next year it will be necessary to give at least 30 hours, and perhaps more, of German instruction.

It is now possible for students to take beginners German three hours a week the first term, and two hours a week the second term of the academic year. Until this year those students who had not had German before entering the University could not begin the subject here, unless they took a five-hour-a-week course for a whole year. This and the fact that most students have had French but no German in the Maine and other New England fitting schools and naturally prefer to continue a language already begun were responsible for the relative increase in numbers in the Romance department and the decrease in the German department before the present professor of Germanic Languages came to the University of Maine. He found when he took the position in 1906 fewer students of German than there had been in 1903. This in spite of an approximate annual increase in student attendance during the same period of ten per cent. No student can obtain a bachelor's degree at Bowdoin, Colby, or Bates College who has not had at least one year's work in both German and French. This has been the case at Harvard College for the past generation in spite of the elective sys-

tem for which it is largely responsible in the collegiate institutions of America today. It is probably safe to say that the general tendency in American colleges and technical schools is to require at least one year of German and one year of French before conferring any bachelor's degree in arts, science, or engineering. There are more reasons than one for this, among others, the fact that a reading knowledge of German is absolutely necessary for whoever pursues the advanced study of almost any subject. The University of Maine will take a forward step when it establishes a requirement for bachelors' degrees similar to that in force at both classical and technical institutions.

The undersigned would be recreant to his duty to the University and the State of Maine if he did not call attention to the failure in the Maine fitting schools and the University of Maine to recognize in a practical way the importance of the study of German. It was a Maine man—no other than Longfellow—who was among the first to emphasize the importance of German as a cultural and practical study. Two generations since his activity as a modern language teacher began, scores of students are being graduated at the State University of Maine who do not know a word of German. This would have been very proper one hundred years ago.

The new course in beginners' German mentioned above will be prerequisite for German 2a and 2b, a course given three hours a week the fall semester, and two hours a week the spring semester, more particularly for the benefit of engineering students. They will thus be able to take German at least two years in their four years' course and not have to over-register, as is sometimes the case when they take a beginners' course of five hours a week for a year.

This department plans to issue an annotated catalog of the books in the German Seminar (Department Library) for the especial benefit of the teachers of German in the Maine schools. Teachers will be permitted to borrow these books, which have been selected with the practical purpose of aiding both students and teachers of German. It seems almost unnecessary to add that this department needs many more books than it has.

Respectfully submitted,

JOSEPH WILLIAM CARR,

Professor of Germanic Languages.

REPORT OF THE DEPARTMENT OF GREEK

President G. E. Fellows:

SIR:—The professor of Greek in the University of Maine submits in his report a further swing of the pendulum marking the choice of academic studies. Not only in the fitting schools but in the colleges, Greek appeals less and less to students who are confronted with the necessity of making a choice in the apparently ever widening range of elective studies. Perhaps there is a tendency for them to go along the line of least resistance; at any rate the study of Greek is in lower repute than is a majority of the studies where one or two years represent the maximum of time which the student expects to devote to one department.

This phase of the elective system has impressed most professors of Greek, and possibly Latin as well, with the desirability of offering a greater range of courses that may be profitably pursued by students having no acquaintance with the ancient languages. The situation in brief would seem to be: more about the Greeks and Romans, if not less about Greek and Latin; more of the classical civilizations and what they have handed on to the later world, if not less about moods and tenses, and *oratio obliqua.*

This conviction has already led us to offer for the current year a three hour course in Greek history, to be followed in the second semester by a three hour course in the material remains of ancient Greece. The result has already placed the move outside the range of an experiment. It needs no prophet to be able to foresee that the outcome of this course both in the matter of attendance and in the results reached will be more satisfactory than any course that I have given since the establishment of the department nine years ago.

A one hour course for one year on the development of the Bible as a book, offered for the first time last semester, is appealing to a considerable number who know nothing of Greek or Hebrew.

Courses along similar lines represent, I believe, essential factors in delivering Greek studies from a part of the obloquy that has been their fate; and they will assist to a backward movement of the pendulum to position of superior balance to that obtaining at present.

Respectfully submitted,

J. H. HUDDILSTON,

Professor of Greek.

REPORT OF THE DEPARTMENT OF HISTORY

President G. E. Fellows:

SIR:—Since my last report some very desirable changes have been made possible. The history department must meet the needs of four classes of students: Those taking a major in history; those taking a major in some other subject in the College of Arts and Sciences, with a year or more of history as a collateral subject; technical students taking history for a single term; and graduate students. Formerly the technical students came in for such courses as would fit into their schedule, but last year arrangements were made by which they are taken in separate divisions, thus giving opportunity for better adaptation in both scope and method.

The library has been greatly strengthened for certain periods, especially for American history during and since the Civil War, Nineteenth Century European history, and the Reformation. The library is weakest in English history, and the present plan is to spend most of the available money for two years on that subject.

In graduate work we are now able to offer history as a minor subject for the degree of Master of Arts in several periods, but it has been necessary in some cases to refuse major work owing to lack of source material.

Where the purchase of entire sets is quite beyond our means for the present, we plan to get, as far as possible, the volumes covering specific fields; in this class would come Hansard's Parliamentary Debates, British and foreign state papers, the Rolls Series, Marten's Nouveau Recueil de Trailes, publications of various societies, especially those of England, etc. We are also in need of standard historical works in languages other than English; even in French and German we have very few good works.

There are so many writings of which we do not yet possess a single copy that our policy has been to avoid buying many duplicates, but with the increase of students that is now becoming a necessity.

Until such time as an independent department can be established there is need of an instructorship for constitutional history and political science. These courses are now given by the professor of Economics and the professor of History, and are necessarily limited.

Respectfully submitted,

CAROLINE COLVIN,

Professor of History.

REPORT OF THE DEPARTMENT OF LATIN

President G. E. Fellows:

SIR:—In behalf of the Department of Latin I beg to report a steady increase in the number of students in the department. Since last Commencement there has been an enrollment of 57 students in the summer and fall semesters. The department is now giving fourteen hours of instruction per week.

It may not be inappropriate to call attention here to the Latin work in the summer term. With the increase in the percentage of teachers studying in the summer the Latin courses have gained in importance. Of the ten departments offering courses last summer, the Latin was fifth in number of students enrolled.

The department has arranged an exchange of twelve lectures with the Latin Department of Bowdoin College, to take place in the second half of the present academic year. Professor Kenneth C. M. Sills of Bowdoin College will lecture on Virgil and his Literary Influence and in return I shall give at Bowdoin a course on Roman Numismatics.

There is demand for a new course in Roman History. It has not been possible to add it to the schedule this year owing to the number of courses already announced. Before giving such a course the department should add to its collection of archæological and historical material. I would recommend an appropriation of two hundred dollars for the purchase in Italy next summer of photographs, casts, antique objects, etc.

Since my last report the material equipment of the department has undergone no change beyond books added to the library.

Respectfully submitted,

GEORGE D. CHASE,

Professor of Latin.

REPORT OF THE DEPARTMENT OF MATHEMATICS AND ASTRONOMY

President G. E. Fellows:

SIR:—The Department of Mathematics and Astronomy has been fortunate in having but few changes in its teaching force during the two years since my last report. At the end of the college year in 1907 Mr. R. K. Morley, who had served two years as instructor in mathematics, resigned to continue graduate work in mathematics at Clark University. His place was filled by Mr. H. L. Sweet, a graduate of Amherst College. At the same time Mr. L. J. Reed, a graduate of this University in 1907, was elected instructor in mathematics and physics. From the beginning of the present college year, Mr. Reed's time has been given wholly to mathematics. One year ago Mr. H. R. Willard was promoted from instructor to assistant professor. The work of these gentlemen as well as that of Mr. E. E. Moots, who has been an instructor in the department for two years, is entirely satisfactory.

Instruction is now being given in this department to 379 students reciting in sixteen classes or divisions. For the next semester the number of classes or divisions will be seventeen, it being necessary, in order to accomplish first class work, to make an additional section of the sophomore mathematics. The department is giving instruction to the amount of seventy-six hours per week. Two students who had taken mathematics as a major subject graduated in 1907, one with the degree of B. A. and one with B. S.; one graduated in 1908 with the degree of B. A. One candidate received the degree of M. S. in 1908 for graduate work in mathematics, and two students are now registered for graduate work in that subject; ten undergraduates are registered with their major in mathematics.

The mathematical work of the freshmen has been rearranged for the present year, the work in plane trigonometry being given at the beginning of the year. In previous years we have found such great lack of uniformity in the students' preparation in algebra that it was difficult to adapt the instruction to the needs of the class, the work given being too hard for some and too easy for others. It is believed that by the new arrangement we may become well enough acquainted with the attainments of the individual students to grade the classes and give to each student that instruction in algebra for which he is really prepared.

The course in Civil Engineering as now arranged demands of this department instruction in practical astronomy for about forty members of the junior class each year. In order to give this instruction according to the approved, modern methods there should be a considerable addition to our equipment of astronomical instruments. The following is a fair estimate of the cost of the needed additions, the items mentioned first being most imperatively needed:

A combined transit instrument and zenith telescope...	$1,000 to $1,200
A small building with dome for the vertical circle....	400
A new pier in the observatory for the zenith telescope	50
A standard astronomical clock.....	400 to 600
A chronograph	150 to 250
A reflecting circle.....	200
An artificial horizon.....	50

In the near future there should be added to the observatory a room that may be heated and used for a computing room and also, perhaps, as a class-room. There is still great need of considerable additions to the mathematical section of the library, both single volumes and sets of bound volumes of mathematical journals. Several hundred dollars could be immediately and profitably used for this purpose. It would be of great advantage to the department to have two additional large recitation rooms fitted with slate blackboards. The rooms now used by some of our classes are unsuitable for mathematical instruction.

Respectfully submitted,

JAMES N. HART,

Professor of Mathematics and Astronomy.

REPORT OF THE DEPARTMENT OF PHILOSOPHY

President G. E. Fellows:

SIR:—I have the honor to submit the following report of the Department of Philosophy.

When Professor Fernald retired from the active professorship in philosophy, I was appointed to take charge of the department. Since my duties have just commenced, my report will consist of, first, an account of aims and plans, and secondly, a statement of what is urgently needed to carry out those plans.

Where one man must teach all the philosophy and psychology, to attempt to cover every subdivision of the field would result only in dilettanteism. It is my purpose, therefore, to concentrate upon a moderate number of subjects, devoting sufficient time to each to insure depth and thoroughness.

As to the selection of subjects: Emphasis in the advanced and specialized courses will be upon the philosophy of science. For the great majority of our students are interested primarily in science or its applications, and they cannot master the foundations of science without discipline in logic and philosophical criticism. These specialized courses in the philosophy of science will not be given a fixed form until next year, when I shall be better acquainted with the needs and desires and the preliminary training of our students. My first care has been to provide ample courses in the four fundamental subjects which must be taught in every philosophy department; namely, psychology, ethics, logic, and history of philosophy. These four subjects, dealing with the mind and its functions, are an essential part of a complete education. They are useful to the student in acquiring control over his own mental life; in learning how to study, how to think, and how to keep the mind in healthy condition. They afford information, also, which is indispensable in the studies of education, sociology, history, the classics, and general literature.

Such being, in a few words, the ideals and the plans of the department, I wish to speak of what is needed for their practical realization. The one great need is in the library. As regards class-room, laboratory, and apparatus, we have sufficient for our immediate needs. But there is an appalling lack of reading-matter. Merely to illustrate the void, I may instance the fact that, of all the great modern philosophers, only two are to be found on our shelves in reasonably complete sets. Of

the other modern philosophers, even those of the very first rank, we have mere fragments or nothing at all. We have not a copy of Kant's Critique of Practical Reason, nor of his Critique of Judgment; and not a single philosophical work of Montaigne, of Spinoza, of Leibniz, of Berkeley, of Hume, of Schelling, or of Hegel. The consequence is, that the history of philosophy has necessarily been taught from a text-book, with no readings from the philosophers themselves. The wants in psychology, ethics, metaphysics, logic, and periodicals, are equally pressing. What the library has already done, with the small funds at command, I appreciate at its full value. But we are in dire need of much larger funds for books and periodicals on philosophy and psychology.

Respectfully submitted,

WALLACE CRAIG,

Professor of Philosophy.

REPORT OF THE DEPARTMENT OF PHYSICS

President G. E. Fellows:

SIR:—Complying with your request I submit my report for the Department of Physics.

COURSES

During the past two years the following changes have been made in the courses offered in this department: Physics 9, a laboratory course running five hours a week for all junior mechanical engineers, and two and one-half hours a week for all junior civil engineers has been made a required course. This is also the course which is usually elected by students in the College of Arts and Sciences who take their year's work in science in this department, but who do not take the more mathematical courses given to the engineers. This makes so large a registration in this course that it is necessary for it to be given in six sections. This has increased the time of instruction required and has also made it necessary to purchase a considerable amount of additional apparatus.

Another course which was formerly given at intervals as an elective subject is now given yearly and required of the juniors in civil engineering. I refer to Physics 19—least squares. The number of students in this course is so large that it has been necessary this year to meet the class in two sections. While the brief amount of time allotted to the course is not sufficient to enable the students to attain a thorough mastery of the subject, it is thought that the fundamental principles upon which least squares is based may be presented. So much of the advanced work in the various lines of civil engineering requires a knowledge of this subject that it seems reasonable to make it one of the required courses for a student in that department.

For some years I have been giving a course of weekly lectures on the theory of electrical instruments and have occasionally given a course in the fall semester on theoretical electricity. This year these two courses have been combined into a course which comes three times a week covering the general ground of theoretical electricity. This year this course is being given by Professor Woodman. By the plan above outlined it is now required that students in electrical engineering shall devote thirteen hours to work in physics and students in mechanical and civil engineering shall devote twelve to this subject. This is in line with the requirements of the better class of technical institutions.

The department offers an elective course in laboratory optics and electricity which is designed for students in chemistry who have completed the more elementary course in physics. Very few students elect this. It would seem advisable to make this a required subject in order that the students in chemistry should get this work during their college course.

INSTRUCTORS.

In 1907-8 Mr. H. W. Bearce, a graduate of the University of Maine, acted as instructor and Mr. C. C. Murdock, of Colgate University, acted as tutor. Mr. L. J. Reed, a graduate of the University, divided his time between the departments of mathematics and physics, and Mr. George LaMarche, a student in the University, acted as student assistant.

This year an assistant professor has been added to the staff of instruction in L. E. Woodman of Dartmouth College and Columbia University. Mr. Woodman was instructor in this University a few years ago and is in every way qualified for the position he holds. Mr. J. L. Coon of Bucknell University, and Mr. E. A. Garlock of Purdue University, are serving as tutors and Mr. LaMarche is continuing his services as student assistant.

APPARATUS

During the past two years I have endeavored to strengthen the material side of the department, especially along the lines of workable laboratory equipment. While an enumeration of the various pieces of apparatus purchased would not be in order here I may say that the course in electrical measurements, mechanics and heat, and the general sophomore laboratory course have been materially strengthened in this regard.

The department could use to good advantage liberal appropriations from the funds of the University for several years to come. It is recognized by the heads of the engineering departments that it is most essential that students should be thoroughly grounded in their physics courses on the experimental as well as on the theoretical side.

BUILDING

For several years past I have called attention in my reports to the very great necessity of providing adequate quarters for the department of physics. While there are several buildings needed by the University at this time, I believe there is none the need for which has a better claim than a physics building. The University of Maine is from the very nature of the case the leading scientific institution in the State. It is a fact, however, that the other three colleges have either erected or provided for the erection of buildings for the department of physics. It is also obvious that such a building would relieve the class-room pressure to a greater extent than any other which is likely to be asked for.

Wingate Hall was built and designed for an engineering building and the departments of civil engineering and mechanics and drawing could

easily use the entire building to good advantage as they would be able to do if this department had a building of its own. Then too the electrical engineering department is occupying quarters much too small for its increasingly large number of students and a physics building would plan for rooms for the joint occupancy of these two departments in such subjects as electrical measurements and testing and the standardizing of electrical instruments. While the ideal arrangement involves the construction of a building devoted entirely to the department of physics, the commodious building now being erected for the College of Agriculture suggests the possibility of a building sufficiently large for the two departments of chemistry and physics for a sum not beyond the means of the University.

It is strongly urged that the President and the members of the Board of Trustees will consider the needs of this department before determining the nature of the buildings they propose to ask for at the coming session of the legislature.

Respectfully submitted,

JAMES S. STEVENS,

Professor of Physics.

REPORT OF THE DEPARTMENT OF ROMANCE LANGUAGES

President G. E. Fellows:

SIR:—When the undersigned took charge of the Department of Romance Languages in the fall of 1903 there were one hundred and fifty students enrolled and six sections necessitating twenty hours of teaching. At present, there are two hundred and seventy students and sixteen sections with forty-five hours of class-work. As is seen, there has been a steady increase in the number of students (80%), sections and hours; new courses have been constantly added, the number of sections of the existing courses increased, and the efficiency of the department correspondingly enhanced. The number of students would have been still greater but for the fact that it has been, this fall, considered advisable to turn away a large number from the Romance to the Germanic department.

The forty-five hours are distributed as follows: First year French, one section (5 hrs.); second year French, four sections (12 hrs.); third year French, three sections (9 hrs.); two courses in French literature, two hours each (4 hrs.); an elementary course in conversation and composition (2 hrs.); an advanced course in conversation and composition (2 hrs.); first year Spanish (3 hrs.); second year Spanish (3 hrs.); third year Spanish (2 hrs.); first year Italian (3 hrs.).

Three of the most important modern languages, French, Spanish and Italian, are taken care of in this department, some of the courses necessitating as many as three and four sections and some of these sections containing more than forty students; for this reason the department has been considerably hampered in its full development. There ought to be added Spanish conversation and composition, a second and third year Italian, advanced courses in French, Spanish and Italian literature, Old French, Old Provencal, Old Spanish, Old Italian, Comparative Literature and Comparative Philology of the Romance Languages. If this work is to be done, an additional instructor is absolutely necessary.

To enable us to carry on the necessary work with more advanced students, and to stimulate the spirit of scholarship, more books are needed for the department in the library. The great difficulty of the Romance Language department as far as library facilities are concerned

has been that although three of the most important modern languages, French, Spanish and Italian, not to mention the less important members of the Romance group, are represented therein, it has been possible thus far to grant to it only a very scanty allowance, and that but occasionally, entirely inadequate for the most urgent needs of even one of those languages. Even the great classics, old and new, and the standard books upon the literature and philology of the three languages, are but sparsely represented. Only by the annual expenditure of about $500 for books can it be hoped to gradually build up a departmental library worthy of an institution of the rank and importance of the University of Maine. Maps, pictures and other similar useful teaching materials illustrating the history of the literature and civilization of France, Spain and Italy, are likewise urgently needed.

Owing to the constantly increasing number of students, the present quarters of the department are unsatisfactory and inadequate. There is now only one small class-room devoted entirely to the use of the department. The work of each of the instructors is scattered over several rooms. Three spacious, well ventilated rooms with comfortable chairs are needed, one room for each of the three instructors, and also an office room with desks for the instructing staff.

There are now in the department an assistant professor, Mr. A. P. Raggio, Ph. D. (Harvard), and an instructor, Miss G. E. Fellows, A. B. (Wellesley.) Both are doing excellent work, and adding considerably to the efficiency of the department.

A French society, the Cercle Français, has been founded, for the benefit of the students of the university as well as teachers of French in the schools of the nearby towns, for the purpose of giving them an opportunity to converse in French and creating and fostering an interest in the intellectual life of France.

J. B. SEGALL,
Professor of Romance Languages.

REPORT OF DEPARTMENT OF PHARMACY

President G. E. Fellows,

SIR:—Since our last report eleven have graduated from this Department. With the present semester, eleven have entered the short course, making twenty-four pharmacy students registered at the present time.

There has been no material increase in equipment, either in books or apparatus since our last report.

The most striking present new factor in the educational world affecting pharmaceutical training is the marvelous rise and rapid development of National and State Pure Food and Drug Laws. This has already had tremendous influence upon the conduct of pharmacy and is materially altering its heretofore largely commercialized status. Its present and ultimate effect is certain to be of wide reaching and great public benefit. In effect, it is the accomplishment of a tremendous revolution;—yet effected by so silent and peaceful methods, and in so short a time as to be in the history of popular government, well nigh unprecedented. Its influence upon the work of the pharmacy colleges must be equally as radical as upon the practice of the profession. Higher standards and more thorough scientific training must be had and especially in the always-fundamental branch of applied Chemistry.

This department is striving to take full account of this force and to shape work and instruction in harmony therewith. Considerable work of a public nature made necessary by the recent law has already been done by this department particularly drug analysis and demonstrations of processes before the State Pharmacy Association, and assistance rendered to certain officials charged with the administration of the law.

The present condition of the Department, aside from insufficient material equipment, may therefore be said to be prosperous, and the above referred to signs of the times give sure proof that an even increased field of labor and of influence will come to it with advancing years, all of which added labors and responsibilities are welcomed, since no delight surpasses that derived from the giving of real public service. That such increased public service does not mean increased cost to the public may be noted from the fact that for the extra activities above outlined and undertaken by this Department during the past summer, no public expense was involved, save for a single item of $1.40, although several days were consumed and several hundred miles of travel made.

The recent completed inventory shows the total value of stock on hand, both maintenance and equipment, exclusive of shelving and other wooden fixtures, but including glass fixtures, amounting to $310.69*. Whatever the value of the work of this Department to the State, it is then obvious, as pointed out in another column, that it has not been a noticeable burden upon the taxpayers.

* Exclusive of books, magazines and pamphlets, in the general library.

The American Pharmaceutical Association has admitted to membership Mr. Wm. H. Ormsby, a graduate in this year's class, in recognition of his high rank in pharmacy. He has also recently passed the State Pharmacy Commission's examination with a rank of one hundred per cent in pharmaceutical chemistry.

Respectfully submitted,

W. F. JACKMAN,

Professor of Pharmacy.

COLLEGE OF TECHNOLOGY

REPORT OF THE DEAN AND DEPARTMENTS

December 14th, 1908.

President G. E. Fellows,
University of Maine.

SIR:—At your request I have during the year 1907-8 served as acting Dean of the College of Technology.

The following table a continuation of that made by Professor Boardman for several years past shows the registration in the three principal engineering departments.

Year.	Total Civils.	Total Elecs.	Total Mechs	Total in Univ.	Total Engs.	Per cent of Engs. to total.	Per cent of Civils to Engs.	Per cent of Elecs. to Engs.	Per cent of Mechs. to Engs.
1894–5	64	38	36	203	138	67.9	46.4	27.5	26.1
1895–6	59	53	47	243	164	67.3	36.0	35.8	28.8
1896–7	59	80	53	309	192	62.1	30.8	41.6	27.6
1897–8	64	77	61	306	202	66.0	31.6	38.1	30.3
1898–9	62	86	41	293	189	64.5	32.8	45.5	21.7
1899–0	75	82	36	316	195	61.7	38.5	42.0	19.5
1900–1	82	73	33	346	186	54.5	43.6	38.8	17.6
1901–2	102	86	36	350	223	63.7	45.7	38.6	15.7
1902–3	119	93	34	404	246	60.9	48.4	37.0	13.7
1903–4	138	107	52	433	297	88.6	46.6	36.0	17.5
1904–5	140	104	44	449	288	84.1	48.6	36.1	15.3
1905–6	138	112	33	476	303	63.7	45.5	37.0	17.5
1906–7	144	125	54	535	323	60.4	44.6	36.7	16.7
1907–8	149	120	56	580	325	56.0	45.9	36.9	17.2
1908–9	159	122	54	634	335	52.8	47.5	36.4	16.1

To these there are to be added for the present year in the chemical engineering course 12 students and in the chemical course 28 students. This makes the percentage of students in the College of Technology 59.1. The chemical engineering course introduced three years ago shows a satisfactory growth.

No regular meetings of the Faculty of the College of Technology have been held as the range of subjects that would naturally be open for discussion by this Faculty has been quite fully covered in the meetings of the executive committee of the engineering Faculty. The work of this committee has been of great value in unifying the engineering courses and the instruction in these departments. Recently, certain subjects relating to the general policy of this College have been brought forward, for the discussion of which it may seem advisable, in the near future, to call together all of the departments giving work that is required of students in the technical courses.

Some of the departments are much crowded for recitation and laboratory rooms. When the new agricultural hall is completed, the rooms on the third floor of Lord Hall will be released, thus giving relief for a time to the departments of electrical and mechanical engineering. The departments of civil engineering and mechanics and drawing ought to have all of Wingate Hall but are now required to share it with physics, Latin, and Greek together with some classes in mathematics, and modern language. It is greatly to be hoped that the department of physics may soon be housed in a building of its own.

The most imperative need of this College appears to be a new and modern chemical laboratory. With this provided, Fernald Hall could be converted into recitation rooms, and the crowding in both Wingate and Coburn Halls would be relieved. Along with this new building there will be need of a material addition to the teaching force in chemical engineering and chemistry. In the near future there will be need of a separate building for an engineering laboratory.

There is a steady improvement from year to year in the preparation of students at admission, but this improvement has not more than kept pace with the advanced standards of work in the various departments in this College. There are still many candidates for admission who can offer only the minimum requirements. It is perhaps not too soon to raise the question whether such candidates should not be required to register for a five years course.

Respectfully submitted,

JAMES N. HART,

Acting Dean of the College of Technology.

REPORT OF THE DEPARTMENT OF CIVIL ENGINEERING

President G. E. Fellows:—

SIR:—I herewith submit my biennial report and recommendations for the Department of Civil Engineering.

The past two years have witnessed a number of important changes and additions in the department. In my report of 1906 I recommended the appointment of a man to take charge of railway engineering, who should have the salary and title of assistant professor in order that this branch of engineering might be brought to a higher degree of efficiency in this institution. This appointment was made the following June, resulting in the creation, one year later, of a full professorship in this subject.

I also recommended in this report that the engineering courses be stated courses, without electives. After a thorough discussion by the Faculty and a study of the practice in this country, it was decided to make the courses stated, allowing certain substitutions with the advice and consent of the heads of the engineering departments.

It is believed that these two changes together with the addition of more and higher priced instructors to the engineering departments, thus allowing an interchange of courses, have resulted in an increased efficiency of the department, an increased interest of the students, and in a broader and more liberal course of study.

During 1906 a careful comparison of the course in civil engineering as given here was made with about thirty representative institutions, resulting in 1907 in a revision of the course. Many changes and additions, consistent with existing conditions, were made. A comparison of the catalogue for 1906-7 with that for 1907-8 will give these changes in detail. One of the most important changes is the development of parallel courses, extending over the last one and one-half years, in railroad engineering and hydraulic engineering. The same time is devoted to each, and the student is allowed to elect between the two. This election allows him a small amount of specialization, but does not prevent him from obtaining the fundamental principles in the other subject.

That these changes have been possible is due principally to the addition of more and better instruction. Seven years ago practically all of

the technical work of this department was given by two men, one the head of the department and the other an instructor. The latter was usually appointed for three years with an increasing salary. On the expiration of this time he was expected to leave and another man was engaged at the minimum salary. This method threw nearly all of the burden of the most important courses upon the head of the department, who was usually overworked to such a degree that he could ill afford sufficient time to devote to important matters of general interest, as well as to practical work. It led to unbalanced and insufficient courses as well as resulting in subjects not properly taught. In other words the department was not stable. However at that time there were 102 students registered in the department compared with 144 during the last year.

At present the force of instruction consists of the head of the department, who teaches structural and hydraulic engineering; the professor of railroad engineering, who teaches this subject together with highway engineering; an instructor, who teaches hydraulics and structural designing; an instructor, who teaches surveying and sanitary engineering, and a tutor, who assists in the above named subjects. In addition, it is necessary to have three or four student assistants during the field season.

At the present time both of the instructors are men who have had excellent experience in their work. Such experience is imperative in order to properly teach these courses, and in fact, structural designing can hardly be taught without having had practical experience. I would therefore urge the appointment of an assistant professor to take charge of this latter subject, that it may be held at its present high standard, and increased in its efficiency.

During the past two years the Junior Civil Society has been in excellent condition. Lectures have been delivered before the society by Professors Swain, Allen, Porter, and Breed, of the Massachusetts Institute of Technology; Mr. H. K. Barrows, a former professor in the University of Vermont and at present District Engineer of the U. S. Geological Survey; Mr. B. W. Guppy, Bridge Engineer of the Maine Central R. R., and Mr. J. A. Holmes, Div. Engineer of the Charles River Basin Commission. These engineers have come to us without fee, the only cost being their expenses. The funds necessary to meet these expenses have been for the most part raised by the students. As this institution is located far from engineering centres, I consider that the benefit derived by meeting different engineers and hearing them talk is of much importance to the student. It is necessary to have them come from a considerable distance, resulting in rather heavy expenses. I would recommend an appropriation for this purpose, say three or four hundred dollars per year.

I called attention in my last report to the need of more and better equipment for testing materials, hydraulic work, etc. I wish to again refer to this need, and to urge the construction of a building sufficient to house the necessary apparatus. Much has been done during the past

two years in equipping testing laboratories, but much more remains to be done.

Further needs of this department are more instruments for surveying purposes to accommodate the increasing numbers taking this subject, two or three planimeters, added equipment for the cement laboratory and added space for instruments, recitations, etc.

Especially important is the consideration of the congested condition of the building in which the department is housed. The building is commodious enough for the present needs of the two departments of Civil Engineering, and Mechanics and Drawing, but with the added crowding caused by the departments of Greek and Latin, and Physics, together with the fact that the rooms are used by other departments, it is impossible to produce the best work. It is my opinion that much depends upon a relief from present conditions.

I wish to acknowledge the receipt of $100.00 in money, and considerable cement for testing purposes, from the Alpha Portland Cement Co. The money was used toward the purchase of an Olsen cement testing machine.

During the past two years valuable additions have been made to the library in the way of engineering literature. It is earnestly hoped that much more may be added in the future.

Additions in the way of instruments have been made as follows:—

One Price current meter, one Keuffel & Esser transit, one C. L. Berger & Son Transit, one Keuffel & Esser wye level, one Gurley 20-inch wye level, and one Johnson movement plane-table. All of these instruments are of excellent make and are in first class condition.

The results of the past two years have seemed to indicate that the department is in excellent condition, which is of course gratifying to the head of the department. Much credit is due to the energetic and faithful manner in which his assistants have attended to their duties, without which help progress would have been small indeed.

Respectfully submitted,

H. S. BOARDMAN,

Professor of Civil Engineering.

REPORT OF THE DEPARTMENT OF ELECTRICAL ENGINEERING

President G. E. Fellows,

SIR:—The Electrical Engineering Department is in urgent need of more room for experimental work; we have but the one laboratory, which is used to its full capacity. Laboratory telephone equipment that has been presented to us is now stored away out of sight and out of use, for lack of a room to put it in; also high tension apparatus, constructed by senior students, is not available for use as there is no appropriate place for its installation. We hope that all of the room in the attic of Lord Hall can be placed at the disposal of the Mechanical and Electrical departments, as soon as the Agricultural departments move into their new building.

A much larger lecture room is needed in Lord Hall: it seems advisable to make two of the small rooms on the second floor into one, for this purpose. We trust that as soon as possible such a room can be equipped with a modern lantern, or "Reflectoscope," and suitable cabinets made for demonstration apparatus belonging to the departments using the room.

The drawing rooms both in Lord Hall and Wingate Hall should have a better system of artificial lighting. It is a serious matter to have a large number of students doing accurate work at the risk of temporary trouble, or permanent injury, to the eyes. Recent development in the art of illumination brings the cost involved in making the change within reach, and it is hoped that something can be done at once to improve this situation.

The poverty stricken condition of the equipment of the Electrical Department has been relieved somewhat by the addition of alternating current machinery and instruments, during the past two years. Equipment is urgently needed to give a wider range of demonstration and laboratory work. The individual items and the amounts involved are as follows:—

Three 2 KW. transformers, 55,110,550, 1100 volts	$90 00
Switchboard terminals and tips for cables	50 00
A low reading alternating current voltmeter	48 00
Two current instrument transformers (100 to 5 and 100 to 10)	22 00
Demonstration equipment, such as high tension insulators, circuit breakers, frequency and power factor meters	150 00

Modern lighting apparatus: flaming and luminous arc-lamps, nernst lamps, and types of reflectors	140 00
An A. C. indicating and recording wattmeter	90 00
A voltage regulator, and recording voltmeter and ammeter	180 00
A hot wire voltmeter and hot wire ammeter, portable	65 00
A single phase railway motor for A. C. and D. C.	400 00
An interpole 10 HP. variable speed D. C. motor	240 00
An electric furnace for electro-steel investigation in connection with thesis work	200 00
Thesis work expense, and expenses connected with construction, by students of special laboratory apparatus in Electrical Engineering Practice time, each year	200 00
Senior student labor to assist in the laboratory, and help to correct reports with the large classes in the spring term	100 00
Total	$1,975 00

Respectfully submitted,

W. K. GANONG,

Professor of Electrical Engineering.

REPORT OF THE DEPARTMENT OF MECHANICAL ENGINEERING

President G. E. Fellows,

SIR:—I have the honor to present the following report, for the Department of Mechanical Engineering.

The courses given by the Mechanical Engineering Department embrace work in the recitation room, drawing room, laboratory, and shop. Each of these divisions is considered by itself in the development of the working efficiency of the various courses.

The work in the recitation room calls for little apparatus, but there should be provided in Lord Hall, one lecture room fitted with a good projection lantern, or reflectoscope. The usefulness of a lantern in certain courses cannot be overestimated.

Some arrangement ought to be made for department libraries, located near the recitation or drawing rooms of each department. In them should be kept the theses, which have been presented for degrees in the department, and such reference books as are the more frequently used. The removal of the agricultural classes to the new Agricultural Hall will make room for a department library or reference room for the electrical and mechanical engineering departments, and also give additional room, which is much needed, for recitations and designing.

The drawing room should be supplied with a table for each junior and senior student in the department. Room will soon be available so that this may be done. A rearrangement of the artificial lighting is urgently needed. The present lamps were arranged for the old tables and have never been adapted to the new ones. The Seniors must work in this room two or more afternoons per week and during the later part of the period depend upon the artificial lighting. To work with the present lighting is harmful to the eyes. This is an extremely important matter.

The work of the Mechanical Engineering Laboratory divides itself into three parts; first, Strength of Materials, or Applied Mechanics; second, Hydraulics; and third, Steam and Gas Engineering, or Thermodynamics. In the development of our laboratory the Strength of Materials has so far been given the greater consideration, and to this has been devoted the major portion of our appropriations. The usual commercial tests of materials are for the most part readily made. The

apparatus still needed here is of the sort permitting the illustration and investigation of shearing stresses and strains, and hardness, and the accurate determination of conditions existing during the test.

In the Hydraulic division, we are able to calibrate weirs and orifices, illustrating the use of certain hydraulic measuring apparatus. It is doubtful whether it will be wise to attempt a further development of this branch until we may be able to have a building devoted especially to laboratory work, and a very considerably enlarged appropriation for apparatus.

Our equipment for the experimental study and illustration of steam and gas engineering is of a rudimentary sort. We should begin to develop this part of our laboratory. But I hesitate to make specific requests for appropriations owing to the lack of a suitable place to put such apparatus as is needed. The steam boilers and engines in the old power plant can be readily made good use of in steam and gasolene engine work, but it is out of the question to maintain the boilers there under steam, and in no other way may the old building be kept warm enough for work in the cold season. In a paragraph written for the Bulletin of General Information, I expressed the hope that we might have a brick building on this same site to house these engines and boilers. I do not now feel that this would be wise as we must certainly have a much larger building than this contemplated, to provide for adequate engineering laboratories for the engineering departments, else we cannot hope to compare favorably with other state colleges, so far as these departments are concerned. I believe we should hold our place among other state universities in this respect and plan for as great a development as do they. I also believe that the time is surely coming when there will be at each state university, an engineering experiment station, devoted to the study of technical problems of particular interest to the state.

For our present needs there should be provided for the laboratory the following apparatus:

1-separating calorimeter	$50 00
1-micrometer caliper	6 00
1-revolution counter	5 00
1-barometer	10 00
1-gas engine indicator	50 00
2-platform scales	60 00
4-pressure gages	20 00
2-high temp. thermometers	15 00
1-timber dolly	5 00
1-gasolene torch	2 00
1-protractor	2 00
1-surface condenser	200 00
	$425 00

All of the above are for use with apparatus which we now have. The surface condenser is particularly desirable in connection with the Corliss engine, to enable us to make more complete tests. Some of the above apparatus is required in connection with outside tests in various industrial establishments, where the students are granted the privilege of studying the operation of practical engineering installations.

I have already called attention in another report to the absolute need of another instructor in the department, principally for work in the laboratory. Unless this can be arranged, it will be necessary to discontinue some of the important work given in the spring term.

In the shop, the wood-working department is being fitted with twelve new wood-turning lathes, making a total of eighteen. As we already have twenty benches, we shall be equipped in the carpentry and pattern making courses to teach eighteen students in each division, which is as many as one instructor may efficiently care for. The equipment of the forge-shop has been completed by the addition of the small tools necessary in the work. Eighteen students can be accommodated.

There remains the need of equipping the machine-shop with sufficient machinery to accommodate the students registering for the work. To do this we should make provision for fifteen or sixteen students per division, which will require three standard engine lathes, cost about $800.00, one wet tool grinder, cost $82, and one speed lathe, cost $52. At present we are much hampered by the lack of these tools.

The courses in wood and forge-work begin to show marked improvement. Mr. E. W. Davee, the instructor in these courses, has devoted the past two summers to study at the Massachusetts Institute of Technology Summer School, with especial regard to the development and improvement of the instruction given here and the methods used. The machine tool course has been improved by the purchase of much small equipment, and of two engine lathes of the latest improved design, and by the adoption of a revised order of exercises, arranged with especial regard to the introduction of all important operations in machine tool processes, in the order of their importance and with a frequency proportioned thereto.

Resume.

NEEDS OF THE DEPARTMENT

Lecture-room fitted with projecting lantern.
A departmental library, or reference room.
Eight or ten drawing tables.
Rearranged illumination in drawing room.
Small apparatus for laboratory.
An additional instructor.
An engineering laboratory building, for all engineering departments; probable cost, $65,000.
Equipment for same, consisting of hydraulic stand-pipe, water-wheels,

steam and gas power apparatus, etc.

Three standard engine lathes.

One speed lathe.

One wet tool grinder.

Appropriation necessary to supply above, except building, etc., for laboratory, recitation room and drawing room, $600; for machine shop, $1,000.

Respectfully submitted,

A. C. JEWETT,

Professor of Mechanical Engineering.

REPORT OF THE DEPARTMENT OF MECHANICS AND DRAWING

President G. E. Fellows,

SIR:—During the past year the courses in drawing have been rearranged, descriptive geometry being now given as an integral part of a continuous course in drawing for all engineering students, the course being scheduled for six hours a week throughout their first and second years. A course in free-hand drawing, six hours a week for one semester, is offered for non-engineering students.

Instruction in drawing is now being given to 135 freshmen and 120 sophomores, in technical mechanics to 85 juniors, and in advanced mechanics to three seniors, by a teaching force consisting of the professor in charge of the department, an instructor, a tutor, and a student assistant.

Any increase in the number of students registering for work in the department will necessitate the services of at least one additional tutor.

New drawing desks and stools have recently been provided for the north drawing room but there is still urgent need for additional drawing room space in Wingate Hall, the work being now scattered in two buildings to the great inconvenience of all concerned.

It was found necessary this year to schedule four hours of drawing on Saturday morning in order to provide space and time accommodations, for the number of students registered for the work.

Respectfully submitted,

CHAS. P. WESTON,

Professor of Mechanics and Drawing.