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OF THE VARIOUS

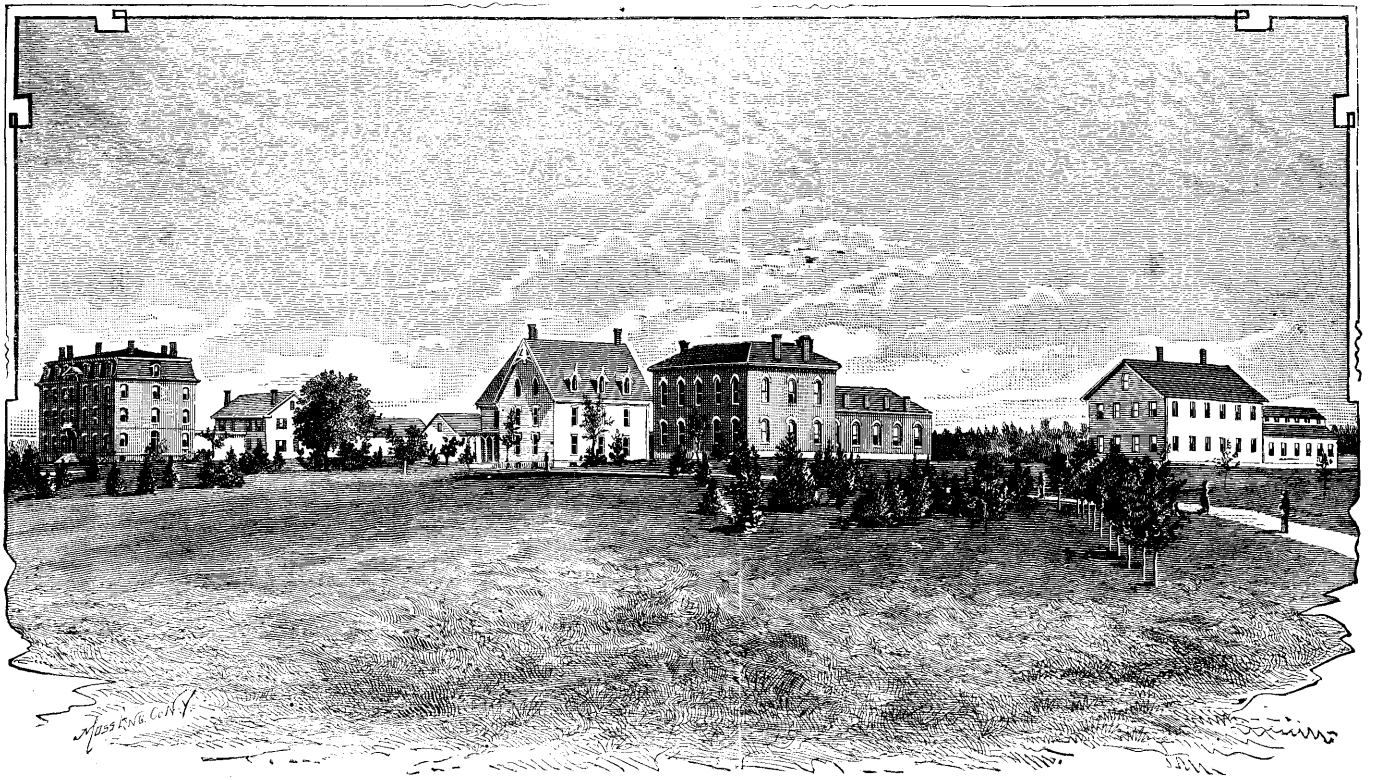
Public Officers and Institutions

FOR THE YEAR

1890.

VOLUME II.

AUGUSTA:
BURLEIGH & FLYNT, PRINTERS TO THE STATE.
1892.



PRINCIPAL BUILDINGS OF THE MAINE STATE COLLEGE.

Oak Hall and Boarding-House. Wingate Hall. Chemical Laboratory. Shop.

ANNUAL REPORTS

OF THE

TRUSTEES, PRESIDENT AND OTHER OFFICERS

OF THE

State College of Agriculture

AND THE MECHANIC ARTS,

Orono, Me., 1889.

Published agreeably to a Resolve approved February 25, 1871.

AUGUSTA:
BURLEIGH & FLYNT, PRINTERS TO THE STATE.
1890.

TRUSTEES' REPORT.

To His Excellency, the Governor and the Honorable Council:

The Trustees of the State College of Agriculture and the Mechanic Arts herewith respectfully submit their twenty-first annual report, embracing a brief statement by the Trustees, the full reports of the President, Professor of Agriculture and other members of the Faculty, together with the report of the Treasurer.

They do not deem an extended report on their part, necessary, as the essential facts pertaining to the Institution are fully set forth in the several reports referred to above, to which attention is invited.

The changes in the board of trustees should receive notice at their hands.

Within the year, the statute limitation of age has deprived the board of the valuable aid and council of the Hon. Lyndon Oak of Garland, who for twenty-two years had faithfully and efficiently served the State and the college in the capacity of trustee, and since 1884 as presiding officer of the board. His connection with the college as one of its directors through nearly all its history, his soundness of judgment and his fidelity to the accepted trust have rendered his services of inestimable value.

A change of the law by which the Secretary of the State Board of Agriculture was made, *ex-officio*, a member of the Board of Trustees of the State College, has also deprived this board of the very helpful and efficient services of the Hon. Z. A. Gilbert of East Turner. Mr. Gilbert had served as a trustee since 1880, and had rendered the board valued

aid not only in their duties relating to the general affairs of the college, but particularly as a member of the farm committee.

Hon. C. P. Allen of Presque Isle, has been appointed to fill the vacancy occasioned by the expiration of the term of office of Hon. Lyndon Oak. Mr. Allen is a graduate of the college, and brings to the discharge of his duties, a devotion to its interests which cannot fail to make his services of especial value.

J. Fred Webster, Esq., of Bangor, who has been treasurer of the college since 1883, has found the demands of his business so exacting that he has deemed it necessary to resign this office. It is due Mr. Webster to state that he has discharged the responsible duties of the treasurership in a very acceptable manner. Prof. G. H. Hamlin of Orono, has been chosen treasurer to fill the vacancy occasioned by Mr. Webster's resignation.

It is a source of gratification to the trustees that the affairs of the college, in the offices of instruction, on the farm, and in the Experiment Station have been ably and judiciously managed by the officers immediately in charge.

They believe the college is fulfilling the purposes for which it was established and commend it to the favor and generous support of the citizens of the State.

WM. H. STRICKLAND,

President of the Board of Trustees.

PRESIDENT'S REPORT.

To the Trustees of the Maine State College of Agriculture and the Mechanic Arts:

GENTLEMEN: Agreeably to the endowment act approved July 2, 1862, requiring an annual report to be made regarding the progress of each college established under the act, I have the honor to submit a statement of changes and progress in this Institution during the past year.

With the expectation that no legislative session will occur in 1890, it has not been deemed essential to append reports in detail from each officer of the college, but rather to summarize in a few reports the facts regarded most worthy of notice.

RECORD OF CHANGES AND PROGRESS.

The principal changes on the college campus within the year have been such as were contemplated when an appropriation for college purposes was made at the last session of the legislature. A road running past the experiment station, extending from the farm buildings to the boarding house has been completed, except that a coating of gravel will be required for it, and has been found to afford a convenience in travel even greater than was expected of it.

The foundation wall of Wingate Hall has been in part rebuilt and it is believed to be throughout in condition to withstand the action of frost. Several buildings have been painted, including the president's house, the boarding-house, the "Frost" house, now occupied as a chapter house by the

Beta Theta Pi Society, and the so-called "White" house formerly known as the farm house.

The boarding house has been continued white and the other buildings have been painted in colors with manifest improvement in effect as observed by all visitors to the college.

The changes in the "White" house and especially those resulting from its proposed future use are entitled to fuller notice. The crowded condition of Oak Hall for the past year seemed to require that ampler accommodations for students should be provided. The most feasible plan that presented itself, was to make other provision for the families of the farm foreman and the janitor, occupying the "White" house, and devote that building to the use of students as a chapter house. The satisfactory results attending a three years' trial of leasing a building to one society strengthened the conviction that the needed accommodations for students could best be secured and with the least expense, by arranging to lease another house to another society.

Accordingly two small cottages have been built for the families of the farm foreman and the janitor, that for the former being located near the farm buildings, and that for the latter, near the pumping station of the new water system, at a short distance from the Stillwater river. These buildings have not exceeded in cost fifteen hundred dollars. The "White" house has been leased to the Q. T. V. Society for a period of seven years, and a transfer has been made of some twenty-five students from the over-crowded halls to this building, it is believed with advantage to both those transferred and those who remain.

The young men of the society have fitted up their rooms in their new quarters very tastefully and will undoubtedly find in them a pleasant college home, while the young men remaining in the halls have also the space they need for comfortable living and the successful prosecution of their studies.

Among the changes of the year, also in the line of advancement, the establishing of a new water system holds a prominent place. This system contemplates the distribution of soft

water from the Stillwater river to the different buildings and to the grounds for horticultural and other purposes, and includes a brick house for pumping station with engine and other required apparatus, between 2000 and 3000 feet of main pipe, six inches in diameter, with offshoots of smaller pipe to the buildings, and several hydrants suitably located for fire protection. This work has been carried on under the immediate supervision of Prof. Hamlin. With this system complete, the principal buildings will be supplied with abundance of soft water as also with hard water, excellent and pure, from the artesian well, for drinking purposes.

To the shop six additional forges have been supplied, and to the departments of mechanical and civil engineering, needed drawing tables. Apparatus for the several departments provided for by appropriation, has been in part secured. The physical laboratory has been equipped with about $1000 worth of apparatus, and work in it has been carried on since the first of September with gratifying results. When fully equipped it is destined to add largely to the value of instruction in physics.

In the library, four new cases have been added, to provide space for books already at hand. Reasonable additions, as will appear by report elsewhere, have been made to the library, by the binding of books and periodicals, by gifts and by purchase.

To the chapel room in Coburn Hall two hundred folding chairs, suited to the purposes of the room, have been added, and six oak chairs upholstered in maroon leather, have been placed upon the platform. This room with its tasteful fittings and lighted by gas, is a pleasant one for evening lectures as well as for chapel services.

Without attempting to mention all the material changes of the year, suffice it to say, that those made have been along lines of progress and have contributed to the securing of better conditions for the educational work which the college is seeking to do.

COMMENCEMENT AND DEGREES.

The exercises of the Eighteenth Annual Commencement are indicated by the the following programme:

1889. June 22, Saturday, 7.30 P. M., Sophomore Prize Declamation.

23, Sunday, 7.30 P. M., Baccalaureate Discourse by Rev. C. F. Allen, D. D.

24, Monday, 7.30 P. M., Junior Exhibition.

25, Tuesday, 9 A. M., Meeting of the Trustees.

1 P. M., to 4.00 P. M., College Halls open to Visitors.

1.30 P. M., Military Exercises.

8.00 P. M., President's Reception.

26, Wednesday, 9.30 A. M., Commencement Exercises.

3.00 P. M., Meeting of the Alumni.

The Prentiss Prize, for excellence in declamation, sophomore class, was equally divided between Charles Norton Taylor, Hampden, and Alden Palmer Webster, Orono, with honorable mention made of George Edward Thompson, Orono, and Cyrus Hamlin, Bangor.

The Prentiss Prize, for excellence in composition, junior class, was awarded to Chandler Cushman Harvey of Fort Fairfield, writer of essay entitled "Immensity of the Universe," the committee making honorable mention of Everett Fenno Heath of Bangor, writer of "Education of the Illiterate Masses," and of Joseph Riley Rackliffe of Hampden, writer of "Continental Unity."

The Libbey Prize for best agricultural essay was awarded to George Melville Pillsbury, North Scarboro', writer of essay on "Drainage" with honorable mention by the committee of Fred Percy Briggs, Hudson, writer of essay on "Early *vs.* Late Cut Hay."

The Prentiss Prizes are given by Mrs. H. E. Prentiss of Bangor, and the Libbey Prize by Hon. Samuel Libbey of Orono.

Awards were made for highest standing in "scholarship and deportment" in the sophomore and freshman classes by the generosity of a lady who desires that her name shall not be made public. In the sophomore class, William Rowe Farrington of Portland, proved to be entitled to the award by a rank of 96.9 on a scale of 100; James Walter Davis of Yarmouthville, with a rank of 93.4 and Fred Charles Moulton of Hiram, with a rank of 92.4 receiving honorable mention. In the freshman class, the award was made equal to Robert Heywood Fernald of Orono, and John Clinton Gibbs of South Turner, each attaining a rank of 97.3; Arthur Curtis Grover of West Bethel, with a rank of 94.4 and Job Prince of South Turner, with a rank of 92.3 securing honorable mention.

The baccalaureate discourse on Sunday evening by Rev. Dr. Allen, formerly president of the college, was characterized by his accustomed vigor of thought and earnestness, and was listened to with deep interest by a large congregation.

The exercises of Commencement Day were honored by the presence of His Excellency the Governor of the State with members of the Council and other State officials.

The subjects of essays and the names of candidates who received degrees are herewith submitted.

BACHELOR'S DEGREE.

Degree of Bachelor of Science—Course in Agriculture: Fred Percy Briggs, Hudson, Concentration; George Gifford Freeman, Cherryfield, Improper Management of Farms.

Course in Chemistry—Jere Sweetzer Ferguson, Searsport, Spectrum Analysis; George Melville Gay, Damariscotta, American Merchant Commerce; Mortimer Frank Wilson, Orono, Immigration.

Course in Science and Literature—Eben Raymond Haggett, Newcastle, Money in Society in the United States;

Nellie Louise Leavitt, Norridgewock, Self Culture; Nellie Waterhouse Reed, Stillwater, Development.

Degree of Bachelor of Civil Engineering—Joseph Willard Edgerly, Princeton, Work of the Young Men's Christian Association; John Reed, Benton, Nicaraguan Ship Canal; Gilbert Scovil Vickery, Bangor, Railroads; Mark Elmer White, Ashland, Engineering.

Degree of Bachelor of Mechanical Engineering—Charles Granville Cushman, North Bridgton, Steam Boiler Explosions; Fred Stevens, Winter Harbor, Work of the Engineer.

MASTER'S DEGREE.

Master of Science—Edson Forbes Hitchings, Bucksport, Thesis, Silk Culture and the Producers of Silk.

Civil Engineer—George Fuller Black, Portland, Thesis, Foundations; Heywood Sanford French, Boston, Mass., Thesis, Pipe Sewers and House Connections; Edwin Dwight Graves, North Anson, Thesis, A Comparison of Two Feasible Routes for the Location of a Railroad; Joseph Grant Kelley, Bar Harbor, Thesis, An Original Survey.

Mechanical Engineer—James Frederic Lockwood, New York City, N. Y., Thesis, Design of Hydraulic Engine to Operate Passenger Elevator in the Eiffel Tower, Paris; Elmer Ellsworth Merritt, Chicago, Ill., Thesis, Mowing Machine; William Webber, Chicago, Ill., Thesis, Knotting Mechanism of the McCormick Twine Binder.

Upon Alfred B. Aubert, Professor of Chemistry, Maine State College, was conferred the degree of Master of Science, and upon George Perkins Merrill, class of 1879, Washington, D. C., the degree of Doctor of Philosophy.

INSTRUCTION.

In the offices of instruction the changes of the year have been slight. In consequence of a change in the arrangement of studies in the several courses, which took effect in the autumn of 1888, it was found necessary to provide instruc-

tion for the junior class in German in the the spring term of the present year. Accordingly Mrs. Mary L. Fernald, who had taught the classes of Prof. Rogers while he was in Europe in the autumn of 1888, was continued in charge of the class in German, which had commenced the study under her instruction.

Lieut. Hatch, in addition to his military duties has kindly continued to give instruction in one of the mathematical branches during each term of the year, in the spring, in analytical geometry, and in the present autumn, in calculus.

Mr. Hart, during the present autumn, has had charge of the class in practical astronomy, giving the instruction both in the class room and in the field. An assignment to another instructor, of this branch of study, which I had taught for nearly twenty years, was rendered necessary that I might obtain time for instruction in the physical laboratory.

Accordingly, students have been admitted to the physical laboratory during the autumn, and the class room instruction in physics has thus been supplemented in a very essential way.

Dr. Russell, of the experiment station, has given the instruction in veterinary science, thus relieving Prof. Balentine for a portion of his additional duties in connection with the station. Mr. Fred P. Briggs, assistant to Prof. Harvey, and a recent graduate of the college, has given instruction in physiology the present term, in order to allow Prof. Harvey needed time for his work as botanist and entomologist to the experiment station. It is a pleasure to add that in the modifications which have been noticed, in the assignment and work of instructors, the quality of instruction hitherto given has been well maintained.

LIBRARY.

The change of the library from the chemical laboratory to Coburn Hall brings it so near the president's house that it has been deemed more convenient for the president to take charge of it than for any other officer of the college.

Accordingly, since the early part of the present term, I have had immediate oversight of it.

The reorganization of the library referred to in the last report, as in progress, has been completed. Four new cases have been supplied and all the books have been classified, catalogued and arranged in accordance with what is known as the Dewey system. This work of revision has been thoroughly performed by Miss Harriet C. Fernald, and has brought the library into condition of available service and usefulness. Appreciation of the valuable work accomplished is shown by the increasing use of the library by students and officers of the college.

The librarian's report of last year contains the following statement relative to the number of books: "There are now on the accession list 4,400 volumes of bound books belonging to the college library, and 400 volumes which belong to the Experiment Station. There are also 375 volumes of unbound books which should be bound at once, in order that they may be catalogued with others and rendered of service to the institution. There are several hundred volumes of pamphlets which should be provided with cases in order that they may be readily accessible, and there are about 400 volumes of duplicates in the library. The books belonging to the Experiment Station are not allowed to be taken from the room except by officers of the institution, but the students are allowed to use them as freely as the others in the room, so that the whole number of the volumes to which the students have accesss is 5,215."

Within the year, the unbound volumes have been bound, together with a portion of the pamphlets. With accessions by gift, by exchanges, by purchase and by binding, the number ot volumes in the college library is 5,540, and in the part of the library assigned to the Experiment Station 507, making the total number to which students have access 6,047. The duplicates include 284 bound volumes.

The pamphlets are not reported, as the number is not great, and as it is the policy of the library to keep the number small by having the more valuable ones bound.

A library liberally and judiciously used, is an educational agency of the highest value.

It is a matter for congratulation that the college library, to the full limit of the books it contains, is in such condition that its material is fully available. Its great need is of more books, especially of current publications. This is a department of the college to which its friends may contribute with the assurance that every dollar invested in it will be not only of immediate but of permanent value.

THE BLAKE HERBARIUM.

It is gratifying to acknowledge the generous gift of J. G. Clark, Esq., of Bangor, in purchasing and presenting to the college the large and choice collection of plants, known as the Blake Herbarium.

In order to present more definitely the nature and value of the gift, and the appreciation with which it was received, I append the resolutions passed by the college faculty, and the account of it, published at the time, by the *Whig and Courier* of Bangor, and extensively copied by other papers.

Resolutions adopted by the college faculty, at their regular session May 27th, 1889:

WHEREAS, The Maine State College has recently come into possession of the valuable herbarium of the late Rev. Joseph Blake, D. D., of Andover, Mass., through the liberality of Johnathan G. Clark, Esq., of Bangor, Me.;

Therefore, be it resolved, That we, the members of the Faculty of the Maine State College, unanimously express to Mr. Clark our gratitude for his generous act, by which the collections of the college have received such an important and valuable addition.

Resolved, That we appreciate the great labor and scholarship of the late Rev. Dr. Blake which enabled him to make such a large and valuable collection, and we congratulate his friends and relatives that it can be kept together at the Maine State College as the Blake Herbarium.

Resolved, That copies of these resolutions be prepared and presented to Mr. J. G. Clark, Mrs. Joseph Blake and the Bangor papers for publication.

Account of the gift as published in the *Whig and Courier:*

A SPLENDID GIFT.

"J. G. Clark, Esq., presents the Maine State College with one of the first herbariums in the country.

Through the great generosity of Jonathan G. Clark, Esq., of this city, the Maine State College has just come into possession of the large and valuable herbarium of the late Rev. Joseph Blake, D. D., of Andover, Mass.

This valuable collection was purchased of Mrs. Blake by Mr. Clark for one thousand dollars and donated to the college. The collection is to ever remain the property of the college and be known as the Blake Herbarium.

The herbarium embraces specimens collected by Dr. Blake in Otisfield, Maine, the place of his birth, at Wells, the home of his wife, and at Cumberland, Maine, where he was engaged in pastoral work for many years. Besides the specimens collected in Maine there are many species from Gilmanton, N. H., and Andover, Mass.

Dr. Blake was an enthusiastic botanist and indefatigable collector, and during nearly forty years' active interest in botany greatly augmented his collections by exchange. Among his specimens are found the labels of the most noted American and foreign collectors.

The herbarium embraces, of flowering plants and cryptogams, not less than fourteen thousand specimens. Of flowering plants and vascular cryptogams, between six and seven thousand are mounted and there are fully as many duplicates as unmounted specimens.

The collection of lower cryptogams embraces many hundred specimens of mosses, lichens and fungi. The collection of fungi is especially rich in Maine species, determined by such prominent botanists as Cooke, Berkely, Farlow, Peck, Ellis and others embracing the greatest number of fungi ever gathered in the State by one man.

Besides about twenty-seven hundred species from eastern North America there are specimens from the Western States, Mexico and the West Indies.

The foreign plants include species from Great Britain, France, Belgium, Switzerland, Hungary, Scandinavia, South Africa (Natal) and India.

Rev. Dr. Blake was born in Maine and his collections were largely made in this State, therefore it is appropriate that his herbarium become the property of the State College.

It must be most gratifying to the friends and relatives of Dr. Blake that through the commendable liberality of Mr. Clark his collections can be kept together and in the State.

This collection will add very much to the facilities at the college for studying botany, and become through the information gained from it by students from year to year a living and lasting monument to the memory of the enthusiastic collector and generous donor."

May we not hope that other friends of the college may emulate Mr. Clark's generosity and strengthen other departments of the college as Mr. Clark has strengthened that of botany?

COLLEGE FARM AND STOCK.

The changes in the farm and stock and the nature of the work carried on and in progress on the farm, will appear by Prof. Balentine's report.

It is a source of no little satisfaction to be able to state that the last dollar of indebtedness growing out of the necessary destruction of the herd in 1886, has been paid through the provision made for cancelling the debt by the legislature. The farm is thus freed from a burden which has been nothing less than oppressive. From the stock which has been placed upon the farm this season, representing as it does several breeds, together with such additions as can be made within the limits of the appropriation for this purpose, there seems to be no good reason why a valuable and profitable herd may

not be developed; a herd large enough to consume the greater part of the hay which the farm produces.

It is a source also of satisfaction that, with stock restored, more thrifty methods of farm practice can be adopted than have been possible during the past three years.

The importance of the farm appears when we consider the three-fold office sought to be fulfilled by it, first as an educational factor of the college, especially for the students in agriculture, secondly, as a station for experimental investigations and researches, and thirdly, as a farm in the ordinary sense of the term but designed to illustrate the best methods of practice.

In charge of the Professor of Agriculture there is no good reason why it should not meet all reasonable requirements as a farm and as an educational appliance to his department.

With whatever land may be needed assigned for experimental purposes, there is no good reason why the farm may not well fulfil its function as an adjunct to the Experiment Station. To render it most highly serviceable in its three-fold capacity, will be the endeavor, we may rest assured, of all who have to do with its management.

EXPERIMENT STATION.

The extent and variety of experimentation and research undertaken by the station are such as could not have been attempted under a less liberal provision than that made by the national government.

Its work of investigation is, and almost of necessity must be, of a twofold character. First, it must address itself to such problems in the agriculture and horticulture of the State as press for immediate or early solution; the great number of practical questions which farmers ask, and on which they desire information, and which they can neither afford the time nor the expense, to answer for themselves. In answering many of these questions they can, however, by working with the station, render great assistance.

In attempting a fulfillment of this function of the station, that is, in keeping its lines of work adjusted to the requirements of everyday life on the farm, appears the wisdom of that arrangement by which representatives from the State Agricultural Society, from the State Horticultural Society, and from the State Board of Agriculture, have a place in the station council.

Through the suggestions and aid of these representatives, it is believed the station can render a more useful service than otherwise would be possible, to their great constituencies, the farmers of the entire State.

Secondly, in addition to its work in response to the most obvious requirements, including fertilizer control and seed control, the station evidently will not fulfil its highest office unless it address itself also to some of the profounder problems of agricultural science, problems which require long time and most careful research for solution. Such problems do not always appear at once as practical, but when solved are almost invariably found to be of the highest utility.

The work accomplished by the station during the past year appears in the reports by the director. Two meetings of the station council have sufficed to outline the course of experimentation and the subjects to be investigated.

At the recent meeting of the American Association of Agricultural Colleges and Experiment Stations, held in Washington, D. C., the Maine college and station were represented by Prof. Balentine and the director, Prof. Jordan. The advantages arising from an interchange of views at such gatherings more than compensate the trouble and cost of attendance. The station is reasonably well equipped with apparatus and application for the investigations in progress and is carrying forward its work in a systematic manner.

CONCLUSION.

In a former portion of this report, attention was directed to the material changes and progress, made possible by the part of the State appropriation assigned to the year 1889. The part assigned to 1890 provides for elevating the roof of the analytical laboratory and thus furnishing a room for the class in mineralogy, for the construction of a greenhouse for the department of horticulture and for the supplying of lathes, planers and foundry to the mechanical shop. Attention is called to these several objects that specific plans in regard to them may be seasonably made.

The student's publication, the *Cadet*, has been creditably maintained and in a spirit rendering it worthy of generous support.

The Young Men's Christian Association has exerted a healthful influence in the college and is an agency for good, worthy of all encouragement. The education we seek to give can be of little value except as associated with high moral and Christian purposes.

The spirit generally manifested by the students has been commendable and has given evidence of an increasing regard for good government, motives of right proving almost invariably the prevailing motives.

An exception occurring near the close of the autumn term, through certain injudicious and highly exaggerated newspaper reports, has been given a notoriety greater than the circumstances warranted.

It is true, rigorous discipline has been deemed necessary. It is also true that manly and earnest students, falling into error, receive discipline in the spirit in which it is administered and profit by it, and after the period of discipline is over continue loyal and law-abiding. Students not intrinsically vicious may be relied upon to respect and uphold even rigorous government when it is found necessary.

In the substantial acquisitions made in the studies of the several courses, the year has been a fitting companion of those

that have preceded. Good working ability and earnestness of purpose are among the valuable characteristics of our students.

Those associated with me in instruction have exhibited their wonted fidelity to duty, and constant courtesy and consideration.

From the labors of the past year, we turn with hopefulness to those of the new year, earnestly desiring, to the extent that the responsibility rests upon us, to render this institution in the largest sense, helpful to those who seek it for educational training and thus cause it to fulfil to the limit of its ability, the positive requirement of the act of endowment, "to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

Respectfully submitted,

M. C. FERNALD, *President.*

Department of Agriculture.

President M. C. Fernald:

The usual amount of class room work has been accomplished by the students in this department during the year.

The instruction in veterinary science which has heretofore been given by the Professor of Agriculture has been transferred to F. L. Russell, V. S. That the instruction in this important part of an agricultural education should be given by a competent veterinary surgeon has been urged by me in previous reports. That it is now an accomplished fact is a subject for congratulation for all interested in the prosperity of the college. The change marks a step of progress in the development of the agricultural course which is thoroughly appreciated by the students.

Under the new arrangement the student receives sufficient theoretical and practical instruction in veterinary science to treat ordinary cases of disease requiring treatment among farm stock and to perform the simpler operations in surgery. Careful examinations are made of a large number of horses and other animals as to soundness, to enable those receiving instruction to form opinions which will be of use in the purchase and sale of stock.

The appropriation of $1500 for the purchase of stock for the farm by the last legislature, has resulted in placing upon the farm by the trustees, one Holstein cow and one Holstein bull from the herd of Mr. Russell, North Andover, Mass., one five-year-old Guernsey cow and heifer calf, 2 two-year-old Guernsey heifers, which have since dropped heifer calves, and

COBURN HALL.

one yearling Guernsey heifer, all from the herd of Mr. Wm. P. Perkins of Wayland, Mass.

There have also been purchased 2 two-year-old Maine State Registered Jerseys from the herd of Mr. C. I. Bailey of Winthrop, Me. All of the above mentioned animals are good representatives of their respective breeds.

In addition there have been purchased four grade short horn cows, one grade Holstein cow, and one two-year-old grade Holstein heifer, and one cow of unknown breeding. These animals with those owned by the experiment station, furnish representative animals of four different breeds, and several animals of common stock which are available for inspection and comparison by the students in this department and are very valuable for purposes of instruction.

With these animals for a nucleus the farm will soon have a herd of blooded stock and be able to recover from the effect of selling off the hay during the past four years.

The hay crop the past season was good, 178 tons being harvested, weighed as it went into the barn, at an expense of $1.80 per ton.

The grain crop was light on account of the rust, 430 bushels were harvested from 18 acres, consisting of barley, oats, barley and pease, oats and pease, and oats, barley and pease.

Potatoes and garden truck have been produced and sold to the value of $223.50.

The farm books show a balance to the credit of the farm of $716.57 for the year ending April 15th.

The farm has been presented with a six foot Buckeye mower by the Richardson Manufacturing Company of Worcester, Mass. This machine has done excellent work with the roughest usage.

It is a machine that can be easily handled with a pair of 900lb. horses. I can recommend it to the favor of the farmers of the State.

A U. T. K. spring tooth cultivator has been placed on the farm for trial. It has been used on the hoed crops dur-

ing the season and is one of the most satisfactory implements of its kind.

All farm implements and machinery presented to the college are placed on exhibition in the basement of Coburn Hall for the inspection of students and visitors at the college.

The institution is thus slowly building up a permanent exhibition of agricultural implements and machinery which is proving useful as a means of instruction to students, and of advertisement to the manufacturers.

To my personal knowledge, several sales have been made by manufacturers or agents on account of visitors having seen the machines in this exhibition. It is to be hoped that manufacturers will find it to their advantage to advertise their goods in this way.

Repairs are needed on the stable in the way of shingling, new floors, etc.

Some disposition should be made of the old White barn. In its present condition it is unsightly and of little use for storage.

Some provisions should also be made for a tool and cart shed. At present there is no convenient place for housing property of this kind. Carts and wagons are necessarily left exposed to the weather when they should be under cover.

The pasture by the river in front of the college buildings would present a much better appearance if it were cleared up. The remains of the old stone walls on different parts of the farm should also be cleared away. They not only look badly but are harboring weeds and bushes.

Respectfully submitted,

WALTER BALENTINE.

Farm Inventory, December 1st, 1889.

LIVE STOCK.	
HORSES.	
1 Percheron-Norman stallion (leased)	
1 Pair mares, 8 years old	$400 00
2 Yearlings	150 00
CATTLE.	
1 Holstein cow	250 00
1 " bull, 1 year old	100 00
1 Guernsey cow, 5 years old	225 00
2 " heifers, 2 years old	300 00
1 " " 1 year old	75 00
3 " heifer calves	75 00
1 A. J. C. C. Jersey bull, 1 year old	100 00
2 Jersey heifers, 2 years old	80 00
2 " heifer calves	30 00
7 Grade cows	325 00
SHEEP.	
1 Shropshire buck, 4 years old, registered	30 00
3 " " lambs	20 00
10 " ewes	120 00
4 " ewe lambs	40 00
SWINE.	
14 Shoats	98 00
FARMING TOOLS AND IMPLEMENTS.	
VEHICLES.	
1 Farm wagon	50 00
1 " with hay-rack	25 00
1 Hay-rack with wheels	25 00
1 Two-horse dump-cart	30 00
1 Single " with forward wheels	20 00
1 Light express wagon	40 00
1 Double-seated pung	25 00
1 Pung, old	5 00
1 Road cart	30 00
MACHINERY.	
1 Buckeye Mower	50 00
1 Bradley " No. 6	50 00
1 Eureka "	50 00
1 Horse Rake	20 00
1 Eclipse Corn Planter	25 00
1 Mudgett Hay Tedder	25 00
2 Double harpoon hay forks, with carriers, ropes and pulleys,	20 00
4 Sward plows	40 00
1 Sub-soil plow	10 00
1 Fillibrown Harrow	6 00
1 Randall "	10 00
1 Thomas Smoothing Harrow	15 00
1 Potato digger	8 00
1 Kemp Manure Spreader	50 00
1 Winnowing machine	10 00
1 Queen of the Harvest Seed Separator	10 00
1 None Such Hay Cutter	3 00
1 Peerless Corn Sheller	1 00

Farm Inventory—Concluded.

1 Planet, Jr., Planter	$3 00
1 Mathew Seed Drill	1 00
1 Planet, Jr., Cultivator	5 00
1 Corn planter	10 00
1 Root cutter	5 00
1 Feed truck	3 00
7 Scythes with snaths	3 50
5 Drag rakes	1 00
8 Hand rakes	75
3 Cant-dogs	3 00
1 Barrel lifter	50
1 Bush scythe and snath	1 00
1 Stone hoe	25
7 Hay forks	1 75
4 Manure forks	1 00
2 Iron rakes	1 00
4 Potato hooks	1 00
1 Hay knife	1 00
1 Spading fork	75
2 Barn hoes	50
2 Axes	1 00
2 Crow bars	2 00
1 Shuffle hoe	45
1 Steelyard	1 50
1 Platform scale	5 00
1 Bull staff	50
2 Feed baskets	1 00
2 Grindstones	3 00
1 40-gallon boiler	3 00
1 Harness	45 00
1 "	20 00
Dairy apparatus	100 00
Household furniture and furnishings	325 00
PRODUCE.	
130 tons of hay	1300 00
440 bush. mixed grain	200 00
LUMBER AND WOOD.	
9 M. cedar shingles	20 00
20 cords wood	60 00
Total	$5202 45

Summary of Farm Inventory.

Live stock	$2418 00
Farming tools and implements	779 45
Dairy apparatus	100 00
Household furniture and furnishings	325 00
Produce	1500 00
Lumber and wood	80 00
Total	$5202 45

Report of Military Department.

ORONO, MAINE,
November 23, 1889.

To President M. C. Fernald:

During the past college year, the work in the Military Department has been conducted in much the same manner as in previous years, and I am glad to be able to report that the condition of the department is, on the whole, eminently satisfactory.

At the commencement of the spring term for a period of about ten weeks, the weather being unsuitable for out door drill, the time allowed the department was given to the theoretical instruction of the first three classes, and to the practical instruction indoors of the freshman class in the School of the Soldier. The instruction for the senior class was by lectures on military science; the subjects treated by these lectures being Army Organization, Army Administration, Marches, Field Fortifications, Lines of Battle, Frederick's Military System, Napoleon's Military System and a few of the world's great battles. The instruction received by students during the entire course, tends to develop an interest in everything relating to military principles, and I believe this time, devoted to a brief explanation of the most important subjects of warfare, is profitably employed. As the military department of the college is permanent in character, I would recommend that, when the means are afforded, a few standard works on strictly military subjects be introduced into the growing library. They would afford assistance to the mili-

tary instructor, and would be also pleasant and profitable reading for the students.

The instruction for the junior and sophomore classes was by recitation in Upton's Infantry Tactics. The course in Tactics is divided equally between these two years. The sophomore class study the School of the Soldier and School of the Company; and the junior class complete the work to include the School of the Battalion. These recitations greatly facilitate the practical instruction, when the companies appear on the drill ground and prepare for their difficult duties the members of the junior class, who the next year become commissioned officers. The drill of the freshman class in the School of the Soldier tends to straighten up the men, and correct errors of individual carriage; its importance cannot be over estimated. During the latter part of the spring term, drills were conducted in the school of the company and battalion with occasional skirmish drills and dress-parades.

At the commencement of each fall term the battalion of cadets is radically changed. The commissioned and non-commissioned officers have just been appointed to their respective positions, and a new class of privates takes the place of a class just graduated. This constant changing should be fully taken into account in comparing our relative merits with other military organizations which are permanent in character.

Toward the close of the fall term arrangements were made for a competitive drill between the two companies, to take place near the close of the term in connection with a military ball. The two companies under the commands of Capt. John Bird 2d, and Capt. Joseph R. Rackliffe, worked unusually hard in preparation for the event. The drill occurred November 2nd, at the Orono town hall, and attracted attention throughout the State; nearly every militia organization in the State being represented in the audience. The judges were Col. Victor Brett and Capt. Frank L. Hoyt from the Maine militia, and Lieut. Lester W. Cornish, 5th Cavalry, In-

structor at Amherst college from the regular army. As the result of a very close contest the victory was awarded to Company "A."

It is but just to express my entire satisfaction with the manner in which the officers and non-commissioned officers have performed their duties; and especially is this due to Capt. Bird and Capt. Rackliffe who have put their companies in better condition than they have been in during my connection with the college.

During the month of October, target practice was held for the entire battalion. There was no lack of interest in this work. By a new regulation of the War Department fifty rounds of ammunition are allowed each student each year. This increased allowance will afford opportunity for more attention in the future to this important subject. The official scores made during this month exhibit great improvement, and show the existence in the battalion of material for excellent marksmen.

Near the close of the term, Company "B" accepted a challenge from the Sons of Veterans for a competitive drill in Bangor. The drill took place in that city November 20th. As usual it was very interesting and showed a fine exhibition of tactics. Col. Brett and Major Emerson as judges, decided the contest in favor of Company "B," commanded by Capt. Rackliffe.

The attendance at drill during the year has been satisfactory except on the part of a small number of students. There has been since I have been at the college, a few students, not over ten altogether and at any time, who have resorted to every excuse to avoid attendance, and have managed in one way and another, by various excuses, to absent themselves from a large percentage of the drills. At my suggestion, a college regulation was adopted, requiring all students to be present each term at not less than seventy-five per cent of the drills and military exercises held during actual attendance at college, as a condition of graduation; and also prescribing that an additional amount of theoretical work may

be assigned to students excused from drill on surgeon's certificate of disability. I believe that this rule should be rigidly enforced in order to secure the punctual attendance of every student not physically disqualified.

During the spring term, in addition to my military duties, I instructed the civil and mechanical engineers of the sophomore class in Analytical Geometry; and, during the fall term I instructed the same divisions of the junior class in Calculus.

Very respectfully,

Your obedient servant,

E. E. HATCH.

2nd Lieut. 18th Infantry,

Prof. Mil. Science and Tactics.

TREASURER'S REPORT.

To the Trustees of the Maine State College of Agriculture and the Mechanic Arts:

GENTLEMEN :—I herewith submit my annual report of the receipts and expenditures for the College during the past year.

Maine State College in account with J. FRED WEBSTER, *Treasurer.*

RECEIPTS.

Cash on hand December 8, 1888	$ 3,208 12	
State of Maine appropriation	20,000 00	
Interest from Lombard Investment bonds	270 00	
" " City of Bangor bonds	180 00	
" " Security Loan and Trust Company bonds	180 00	
" " Coburn estate	3,622 00	
" " State of Maine	7,179 50	
Tuition of students	2,065 00	
Experiment station, on account of construction	750 00	$37,454 62
EXPERIMENT STATION.		
United States appropriation	15,000 00	
W. H. Jordan, director	385 40	15,385 40
		$52,840 02

DISBURSEMENTS.

For salaries	$14,094 04
" note	6,000 00
" interest	372 79
" water works	2,743 34
" insurance	92 50
" expense of trustees	183 54
" library	800 00
" advertising	60 00
" repairs	1,000 00
" work shop and tools	300 90

DISBURSEMENTS—CONCLUDED.

For construction	$5,408 40	
" Coburn Hall	1,100 00	
" sundry departments—apparatus	2,000 00	
" civil engineering	200 00	
" military department	100 00	
" stock	1,463 70	
" improvement	500 00	$36,418 31
EXPERIMENT STATION.		
For field and feeding experiments	1,113 90	
" general expenses	1,014 84	
" chemical laboratory	2,214 23	
" construction	1,132 61	
" salaries	7,700 77	
" library	365 53	
" stationery and postage	23 87	
" travelling expenses	235 40	
" live stock	3 03	
" Botany and Entomology	109 42	
" Meteorology	328 75	
" Veterinary science	834 27	
" printing	980 67	
" fertilzer inspection	145 77	
" department of Horticulture	92 74	
" insurance	100 00	16,395 80
Cash in treasury December 19, 1889	-	25 91
		$52,840 02

CONDITION OF ENDOWMENT FUND.

	$	
Coburn estate	100,000 00	
Invested in State of Maine 5% bonds	118,300 00	
" City of Bangor 6% bonds	3,000 00	
" Lombard Investment Company 6% bonds	3,000 00	
" Security Loan and Trust Company 6% bonds	3,000 00	
* " Hallowell C. and S. Academy 6% bonds	4,000 00	$231,300 00

*Suspended payment of interest.

J. FRED WEBSTER, *Treasurer.*

ORONO, December 24, 1889.

This is to certify that I have examined the above account, and it is correct.

WM. H. STRICKLAND, *Auditor.*

SUMMARY OF

METEOROLOGICAL OBSERVATIONS

TAKEN AT THE

MAINE STATE COLLEGE of AGRICULTURE and the MECHANIC ARTS,

Latitude, 44° 54′ 2″ N. Longitude, 68° 40′ 11″ W.

FROM JANUARY, 1869, TO JANUARY, 1890.

BY PRESIDENT FERNALD.

Height of instruments above the level of the sea, 134 feet until June, 1879, and 129 feet since that date.

Explanations, Deductions and Remarks.

The hours of observation are the same as those formerly adopted by the Smithsonian Institution, viz: 7 A. M. and 2 P. M , and 9 P. M., local time.

The figures in the columns headed "Force or pressure of vapor," show the height at which a column of mercury is maintained by the weight of the moisture of the air.

The warmest day of the year 1889 was June 30th, when the mean temperature was 75°.1, and the coldest day was February 23d, when the mean temperature was 8°.0 below zero.

The highest temperature (89°.0) recorded during the year was on the 18th of May, and the lowest temperature (20°.3 below zero) on the 24th of February.

The range of temperature between the two extremes is 109°.3, which is less by 3°.6 than the average range between the extremes for the last twenty-one years.

The warmest day within the period covered by the tables was August 7th, 1876, when the mean temperature was 85°.3, and the coldest day January 8th, 1878, when the mean temperature was 17°.2 below zero. The highest temperature (96°.7) occurred on August 6th, 1876, and the lowest temperature (35°.6 below zero) on January 8th, 1875.

A comparison, as regards temperature, of the several months of 1889, with the mean temperature of corresponding months for twenty-one years, is given below:

Months.	Mean Temperature from 1869 to 1889, inclusive.		Mean Temperature for 1889.
January	15°.50	25° 04	10°.04 warmer.
February	18°.74	15°.20	3°.54 colder.
March	27°.12	32°.93	4°.81 warmer.
April	40°.03	45°.07	5°.04 "
May	52°.58	56°.82	4°.24 "
June	62°.50	64°.74	2°.24 "
July	67°.51	66°.41	1°.10 colder.
August	65°.50	64°.23	1°.27 "
September	57°.35	60°.43	3° 08 warmer.
October	45°.87	43°.98	1°.89 colder.
November	33°.83	38°.93	5°.10 warmer.
December	21°.55	27°.56	6°.01 "

The year 1889 (mean temperature 45°.11) averaged 2°.76 warmer than the mean temperature of the twenty-one years under notice.

The latest spring frost was on April 24th, and the earliest autumnal frost on the morning of October 3d, followed by destructive frosts on October 16th and 17th.

The principal thunder storms of 1889 occurred on May 1st, June 6th, 10th, 15th and 27th, July 13th and 14th, August 9th, 10th and 20th and October 2nd.

The rainfall and melted snow of 1889 amounted to 42.94 inches, a quantity less by 2 33 inches than the average for twenty-one years; the snowfall was 64.30 inches, a quantity less by 31 inches than the average for the same period.

The number of days in 1889 on which the sky was at least eight-tenths covered with clouds was 105, or 29 per cent of the whole number. The number of days on which at least .01 of an inch of rain or snow fell was 133, or 36 per cent of the whole number; the number of days, therefore, without any considerable quantity of rain or snow, was 23.2, or 64 per cent of the whole number.

During the months of May, June, August and September the prevailing wind was S. W. and S.; during October, N E. and N.; during the other months of the year, N. W. and W. Heavy winds prevailed on January 10th, February 22nd and 23rd, March 13th and 14th, April 22nd, May 5th, July 16th, September 18th, November 15th and December 12th, 21st, 26th, 27th and 30th.

The prevailing wind for the twenty years, from 1869 to 1889, inclusive, was from the north-west and west. The relative direction and force of the wind for this period are indicated approximately by the following numbers: N. W. and W., 4; S. W. and S., 3; S. E. and E , 1; N. E and N., 2.

The principal auroras of 1889 were on the evenings of April 7th, June 17th, July 18th, October 23, November 17th, 20th, 21st and 25th, and December 16th and 21st; that of April 7th being especially brilliant. The principal lunar halos were on January 8th, February 4th, 8th and 13th, March 10th and 15th, May 13th and December 8th, 10th and 30th, and the principal solar halo on February 8th.

The Zodiacal light was especially conspicuous on the evening of December 16th.

The barometer indicated the greatest pressure in the month of December, and the least in the month of March. The range between the two extremes was 1.946 inches. The least mean pressure was during March and the greatest during December, when the average height of the mercury in the barometer at an elevation of 129 feet above the sea level was 29.954 inches.

The mean humidity of the air for the year was .78

SUMMARY BY MONTHS—1889.

Months.	Thermometer in the Open Air.										Rain and Snow.		Clds.	Winds.				Barometer.			Relative humidity or fraction of saturation.		
	Mean of warmest day.		Mean of coldest day.		Highest temperature.		Lowest temperature.		Mean of maximum temperatures.	Mean of minimum temperatures.	Mean of three daily observations.	Amount of rain and melted snow—inches.	Amount of snow—inches.	Mean percentage of cloudiness	Per cent of direction and force.				Barometer height reduced to freezing point of water.					
	Day.	Temperature.	Day.	Temperature.	Day.	Temperature.	Day.	Temperature							N. W. and W.	S. W. and S.	S. E. and E.	N. E. and N.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.
		°		°		°		°	°	°	°													
January	17	47.1	30	7.5	9	51.7	20	- 1.8	32.20	16.91	25.04	5.37	15.50	.56	.45	.26	.07	.22	30.534	28.927	29.847	100	45	80
February	17	37.2	23	- 8.0	17	45.1	24	-20.3	27.24	4.64	15.20	5.20	28.30	.46	.54	.24	.16	.06	30.740	29.100	29.907	100	29	74
March	24	44.4	1	22.4	23	56.8	1	3.7	41.82	24.48	32.93	4.62	4.00	.58	.42	.14	.12	.32	30.336	28.781	29.728	100	28	71
April	26	59.5	2	33.6	18	69.6	8	23.4	55.66	35.90	45.07	1.93	4.00	.57	.39	.32	.07	.22	30.380	29.309	29.851	100	27	71
May	19	70.9	1	46.2	18	89.0	27	37.4	68.06	46.25	56.82	1.86	–	.50	.27	.58	.09	.06	30.178	29.363	29.816	100	26	73
June	30	75.1	18	53.5	30	86.4	19	41.6	74.36	55.55	64.74	4.93	–	.60	.28	.59	.11	.02	30.303	29.360	29.852	100	43	81
July	31	73.1	24	59.8	1	83.4	16	48.1	74.04	58.21	66.41	3.23	–	.56	.33	.32	.16	.19	30.206	29.548	29.837	99	44	80
August	2	73.6	26	57.7	2	82.7	27	42.8	74.64	55.75	64.23	1.65	–	.50	.27	.41	.13	.19	30.271	29.619	29.917	100	47	83
September	6	70.9	29	39.6	4	84.1	30	31.7	71.30	51.21	60.43	2.21	–	.55	.29	.47	.12	.12	30.264	29.293	29.924	100	43	83
October	1	59.4	24	29.3	2	63.9	24	16.6	52.87	35.55	43.98	4.04	–	.56	.29	.23	.07	.41	30.342	29.431	29.910	100	38	80
November	3	52.2	30	22.7	3	58.7	16	18.8	46.88	31.42	38.93	4.50	6.00	.51	.39	.30	.07	.24	30.440	29.141	29.902	100	42	80
December	9	44.0	4	4.6	9	50.4	4	- 1.5	35.05	19.63	27.56	3.40	6.50	.55	.57	.09	.14	.20	30.833	28.887	29.954	100	45	80
	Jun		Feb.		May		Feb.																	
Year	30	75.1	23	- 8.0	18	89 0	24	-20.3	54.51	36.29	45.11	42.94	64.30	.54	.37	.33	.11	19	30.833	28.781	29.870	100	26	78

SUMMARY BY YEARS—From 1869 to 1889, inclusive.

Year	Temperature in the Open Air.											Rain and Snow.		Clds.	Winds.				Barometer.								
	Mean of hottest day.		Mean of coldest day.		Highest temperature		Lowest temperature		Mean of maximum temperatures	Mean of minimum temperatures.	Mean of three daily observations.	Amount of rain or melted snow in gauge—inches.	Depth of snow—inches.	Mean percentage of cloudiness.	Per cent of direction.				Barometer height reduced to freezing point.			Force or pressure of vapor in inches.			Relative humidity or fraction of saturation.		
	Day.	Temperature.	Day.	Temperature.	Day.	Temperature.	Day.	Temperature.							N. W. and W.	S. W. and S.	S. E. and E.	N. E. and N.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.
		°		°		°		°	°	°	°																
1869,	July 11	74.2	Jan. 22	-3.8	July 11	87.2	Mar. 6	-22.0	50.01	33.37	41.77	44.72	84.92	.55	.41	.29	.14	.16	30.519	28.858	29 780	.826	.005	.250	100	25	76
1870,	July 24	82 8	Jan. 14	-9.7	July 24	94.0	Feb. 4	-17.0	53.02	35.45	44.26	40.98	78.75	.50	.35	33	10	.22	30.578	28.902	29.791	.878	.016	.279	100	13	74
1871,	May 30	76.0	Jan. 23	-14.9	May 30	88.6	Jan. 23	-20.6	50.44	33.33	41.92	41.63	80.50	.50	.42	.33	.10	.15	30 585	29.000	29.795	.956	.006	.244	100	17	75
1872,	July 16	79.5	Dec. 25	-11.8	June 30	90.6	Dec 25	-23 0	50.02	33.22	41.60	48.54	113.00	.53	.37	.28	.13	.22	30.446	28.712	29.706	.793	.011	.258	100	23	77
1873,	July 30	75.5	Jan. 30	-4.9	July 26	92.0	Jan. 30	-26.5	49.93	31.28	40.93	40.78	124.00	.49	.38	.30	.10	.22	30.680	28.423	29.794	.778	.009	.232	100	20	74
1874,	July 15	76.3	Jan. 26	15.5	July 15	86.3	Feb. 2	-26.0	50.18	32.21	41 35	44.94	132.00	.52	.37	.36	.08	19	30.719	28 981	29.825	.794	.009	.240	100	19	76
1875,	Aug. 29	74.8	Nov 30	-9.8	Aug. 29	87.8	Dec 20	-23.0	48.49	30 11	39.58	41 94	93.80	.50	.40	.30	.09	.15	30.550	28.939	29 814	.844	.014	.239	100	24	76
1876,	Aug. 7	85.3	Feb. 24	13.4	Aug. 6	96.7	Dec 26	-21.5	50.74	32 32	42.03	52.37	123.00	.49	.43	.30	.08	.19	30.783	28.458	29.808	.935	.014	.250	100	21	76
1877,	Aug. 24	75.1	Jan. 25	-11.3	June 1	89.0	Jan 26	-32.5	52.45	33.63	43.39	40.17	66.50	.52	.34	.30	.12	24	30 494	28.888	29.837	.762	.009	.269	100	19	76
1878,	June 30	81.9	Jan. 8	-17.2	June 30	93.5	Jan. 8	-35.6	52 07	35.38	44.34	48 57	59.50	.56	.33	.33	.13	.21	30.554	28 794	29.796	.872	.009	.280	100	20	78
1879,	July 16	77 8	Dec. 21	-11.7	Aug 2	88.0	Dec 27	-26.0	50.10	31.67	41.62	46.73	112.00	.51	.38	.37	.07	.18	30.638	28.537	29.851	.843	.012	.258	100	15	75
1880,	July 10	82.3	Feb. 2	-4.4	July 10	94.8	Jan. 14	-15.4	52.05	33.50	43.85	33.81	69.00	.50	.39	.23	.18	.20	30.644	29.090	29 874	.790	.015	.269	100	23	75
1881,	Aug. 5	78.1	Feb. 2	-9 1	Aug. 5	91.0	Jan. 2	-18.2	52.11	34.98	43.87	42.80	54 50	.54	.45	18	.14	.23	30.647	28.919	29 862	.891	.019	.281	100	21	77
1882,	Aug. 6	80.7	Jan. 24	-10.0	Aug. 5	92.0	Jan. 25	-22.4	50.76	33.10	42.54	41.26	110.00	.49	.46	.18	.12	.24	30.724	29.121	29.885	.819	.016	.261	100	24	75

1883,	July 6	75.1	Dec. 23	-13.1	July 7	85.6	Jan. 6	-25.0	50.04	31.79	40.72	40.60	53 00	.48	.41	.30	.13	.16	30 641	28.750	29 904	.860	.015	.259	100	18	78
1884,	Aug. 18	77.2	Dec 20	10.4	Aug. 18	86.0	Jan. 28	-29 0	51 57	33.23	42 85	44.95	90 00	.56	.35	.33	.14	.18	30.716	28.768	29.875	-	-	-	106	16	81
1885,	July 25	76.4	Jan 22	11 5	July 25	89 2	Jan. 31	-22.3	50.54	32.30	41.37	52.99	108.00	.49	.41	.32	.11	.16	30.608	28.800	29.849	-	-	-	100	24	79
1886,	July 7	78.0	Jan 12	15 3	July 7	92.5	Jan 12	-26 5	52.20	33.24	42.61	48.04	136.50	.53	.40	.35	.10	.15	30.731	28.556	29.889	-	-	-	100	10	78
1887,	July 2	82.5	Jan. 9	-13.8	July 2	93 3	Jan. 9	-29.0	51.05	32.99	42.07	52 88	115 25	.52	44	.31	.09	.16	30 810	28 917	29 883	-	-	-	100	20	79
1888,	July 5	78.5	Jan. 15	-6.9	Jan 23	93.4	Jan 25	-19.6	49.79	32 02	41.26	58.04	134.60	.56	.51	.16	.13	.20	30.686	28.859	29.851	-	-	-	100	29	79
1889,	June30	75.1	Feb 23	-8.0	May 18	89.0	Feb 24	-20 3	54.51	36.29	45.11	42.94	64.30	.54	37	.33	.11	.19	30 833	28.781	29.870	-	-	-	100	26	78
	1876.		1878.		1876.		1878.					Mn.	Mean.														
21 yrs	Aug. 7	85.3	Jan. 8	-17.2	Aug. 6	96.7	Jan. 8	-35.6	51.05	33.64	42.35	45.27	95.30	.52	.41	28	.11	.20	30.833	28.423	29.840	-	-	-	100	10	76

APPENDIX.

CATALOGUE

OF THE

Maine State College of Agriculture and Mechanic Arts.

ORONO, MAINE, 1889–90.

TRUSTEES:

WM. H. STRICKLAND, Esq., Bangor, *President.*
Hon. WM. T. HAINES, B. S., LL. B., Waterville, *Secretary.*
Capt. CHARLES W. KEYES, Farmington.
Hon. FRED ATWOOD, Winterport.
Gen. R. B. SHEPHERD, Skowhegan.
ARTHUR L. MOORE, B. S., Limerick.
RUTILLUS ALDEN, Esq., Winthrop.
Hon. CHARLES P. ALLEN, B. S., Presque Isle.

TREASURER:

Prof. G. H. HAMLIN, Orono.

EXECUTIVE COMMITTEE:

WM. H. STRICKLAND, Esq.
Gen. R. B. SHEPHERD.
Hon. WM. T. HAINES.

EXAMINING COMMITTEE:

His Excellency EDWIN C. BURLEIGH.
Rev. CHARLES F. ALLEN, D. D.
WM. B. LAPHAM, M. D.

FACULTY.

MERRITT C. FERNALD, A. M., PH. D., PRESIDENT,
and Professor of Physics and Mental and Moral Science.

ALFRED B. AUBERT, M. S.,
Professor of Chemistry, and Secretary of the Faculty.

FRANCIS L. HARVEY, M. S.,
Professor of Natural History.

GEORGE H. HAMLIN, C. E.,
Professor of Civil Engineering,

ALLEN E. ROGERS, A. M.,
Professor of Modern Languages, Logic and Political Economy.

WALTER BALENTINE, M. S.,
Professor of Agriculture.

WALTER FLINT, M. E.,
Professor of Mechanical Engineering.

JAMES N. HART, B. C. E.,
Instructor in Mathematics and Drawing.

LIEUT. EVERARD E. HATCH, 18th U. S. INFANTRY,
Professor of Military Science and Tactics.

HOWARD S. WEBB, B. M. E.,
Instructor in Shop-Work, and Registrar.

FREMONT L. RUSSELL, B. S., D. V. S.
Instructor in Veterinary Science.

FRED P. BRIGGS, B. S.
Assistant in Natural History.

AARON E. SPENCER,
Steward.

STUDENTS.

POST GRADUATE.

Wilson, Nathaniel Estes, B. S.	Orono.

SENIOR CLASS.

Andrews, Frank Orris,	Rockland.
Babb, George Herbert,	Sebago.
Bird, John, 2d,	Rockland.
Blackington, Ralph Harvey,	Rockland.
Bowden, George Irving,	So. Penobscot.
Cargill, Carroll David,	Livermore Falls.
Clark, Hugo,	Lincoln.
Coffin, Alphonso John,	Harrington.
Croxford, Walter Everett,	Jackson.
Dow, Fred Todd,	Gorham.
Drew, Albert Wilson,	Canaan.
Dunton, Harris Drummond,	Boothbay.
Farrington, Horace Parker,	Cape Elizabeth.
Gould, George Pendleton,	Stillwater.
Grover, Nathan Clifford,	West Bethel.
Hardison, Allie Crosby,	Caribou.
Harvey, Chandler Cushman,	Fort Fairfield.
Hastings, Allie Mills,	Rockland.
Hayes, Samuel Henry Tewksbury,	Oxford.
Heath, Everett Fenno,	Bangor.
Jones, Leon Houston,	Boston, Mass.
Kelley, Edward Havener,	Belfast.
Kenniston, Irving Chase,	Boothbay.
Keyes, George Edwin,	Hampden.
Morey, Elmer Lake,	Colombo, Ceylon.

Morrill, Edmund Needham,	Deering.
Owen, John Wesley, Jr.,	Saco.
Peirce, Varna John,	Hudson.
Pierce, William Bridgham,	Hudson.
Pierce, William Barron,	Harpswell.
Pillsbury, George Melville,	North Scarboro'.
Quincy, Fred Grant,	Masardis.
Rackliffe, Joseph Riley,	Hampden.
Reed, Fullerton Paul,	Boothbay.
Sawyer, Frank Wade,	Milford.
Swan, Clarence Buzzell,	Oldtown.
Wallace, Chester Jay,	Jackson.
Webb, Winfield Scott,	Caribou.
Webber, Gilman Hodgdon,	East Boothbay.
Wight, Ralph Holbrook,	Belfast.
Williams, Charles Sampson,	Portland.

JUNIOR CLASS.

Arey, Ralph Jesse,	Hampden.
Bailey, William Melvin,	Malden, Mass.
Clark, Edmund,	Bethel.
Clayton, Charles,	Bangor.
Davis, James Walter,	Yarmouthville.
Farrington, Wallace Ryder,	Cape Elizabeth.
Farrington, William Rowe,	Portland.
Flanagan, John Henry,	Rockland.
Graves, Joseph Colburn,	Orono.
Hall, Bert Austin,	Shapleigh.
Hamlin, Cyrus,	Bangor.
Keith, William Everett,	Oldtown.
Keyes, Prescott,	Litchfield Corner.
Kilbourne, Charles Herbert,	North Waterford.
Lord, Robert William,	Skowhegan.
Menges, Hugo Gustave,	Bangor.
Merrill, True Lander,	Orono.
Merrill, Edwin Reuel,	Yarmouthville.
Miller, Albert Morton,	Waldoboro.
Morris, William Allen,	Bangor.
Moulton, Fred Charles,	Hiram.
Page, Warren Robin,	Hampden.
Patten, William Nickels,	Cherryfield.
Scott, Clarence,	Olamon.
Starrett, Henry Vaill,	Warren.
Steward, John White,	Skowhegan.
Taylor, Charles Norton,	Hampden.
Thompson, George Edward,	Orono.
Tirrill, Leonard Alexander,	Holden.
Valentine, William Alton,	Bethel.

SOPHOMORE CLASS.

Alexander, John Francis,	Richmond.
Atherton, George Frederic,	Newry.
Atkinson, William Hacker,	Brunswick.
Bourne, Frank Augustus,	Bangor.
Bristol, Mortimer Leonard,	Canton Ctr., Conn.
Butterfield, William Rowe,	Milford.
Clark, Roscoe Conkling,	Bethel.
Cobb, Charles Edward,	Patten.
Danforth, Ernest Wilbur,	Brunswick.
Doolittle, Herbert Edward,	Northfield, Mass.
Farrington, Mellen Edward,	Brewer.
Fernald, Robert Heywood,	Orono.
Gibbs, John Clinton,	So. Turner.
Grover, Arthur Curtis,	West Bethel.
Hatch, Ernest Stearns,	Lovell Centre.
Healey, Warren Evans,	Rockland.
Hersey, Jacob Frye,	Patten.
Holden, William Cross,	So. Windham.
Maguire, George Patrick,	Biddeford.
McKechnie, Willard Erastus,	Princeton.
Nealley, Calvin Henry,	Monroe.
Prentiss, Harry Mellen,	Brewer.
Prince, Job,	So. Turner.
Randlette, Charles Maurice,	Richmond.
Rich, George Frank,	Bethel.
Timberlake, Stanley Milton,	No. Turner Bridge.
Tolman, Frank Stevens,	Milo.
Tyler, Joseph Albert,	Farmington.
Williams, LaForest Charles,	Athens.

FRESHMAN CLASS.

Alexander, James Almore,	Richmond.
Alford, Abbott Edwin,	Oldtown.
Buck, Hosea Ballou,	Stillwater.
Crosby, Walter Wilson,	Bangor.
Durham, Leroy Tolford,	Monroe.
French, Charles Frederick,	Glenburn.
Gannett, Charles Henry,	Augusta.
Gray, Jesse Alexander,	Oldtown.
Hamlin, Edwin Thompson.	Bangor.
Hammatt, William Cushing,	Bangor.
Haynes, Charles Irving,	Bangor.
Hutchinson, George Weymouth,	Orono.
Jack, Walter Dows,	Topsham.
Jerrard, John,	Bangor.
Johnston, Chesley Metcalf,	Bangor.
Kittredge, Charles Prentiss,	Milo.
Lewis, Hugh McLellan,	So. Berwick.
Morris, John Richard,	Bangor.
Robinson, Harry Orman.	Bangor.
Smith, Harry Maubic,	Bangor.
Smith, Lizzie Louise,	Veazie.
Smith, Ralph Kendrick,	Bangor.
Steward, George Henry Colburn,	Orono.
Webster, John Milton,	Augusta.
Wilson, Pearly Rupert,	Solon.
Young, Thomas Jefferson,	Athens.

SPECIAL STUDENTS.

Bond, Edward Edmund,	Orono.
Clergue, Bertrand Joseph,	Bangor.
Fernald, Henry Elmer,	So. Levant.
Webster, Alden Palmer,	Orono.

SUMMARY.

Post Graduate,	1	Sophomores,	29
Seniors,	41	Freshmen,	26
Juniors,	30	Special,	4
		Total,	131

PRIZES FOR 1888.

Prentiss Prize, for best Junior Essay, awarded to Chandler Cushman Harvey of Ft. Fairfield.

Prentiss Prize, Sophomore Declamation, awarded to Charles Norton Taylor of Hampden, and Alden Palmer Webster of Orono.

Libbey Prize, for best Agricultural Essay, awarded to George Melville Pillsbury of No. Scarboro.

Award for highest standing, Sophomore Class, to William Rowe Farrington of Portland.

Award for highest standing, Freshman Class, to Robert Heywood Fernald of Orono, and John Clinton Gibbs of South Turner.

MILITARY DEPARTMENT.

COBURN CADETS.

Second Lieutenant EVERARD E. HATCH, 18th U. S. Infantry, Commanding.

Cadet EDWARD H. KELLEY, Major and Commandant of Cadets.

Cadet NATHAN C. GROVER, First Lieutenant and Adjutant.

Cadet CHANDLER C. HARVEY, First Lieutenant and Quartermaster.

Cadet WILLIAM R. FARRINGTON, Sergeant Major.

	Co. A.	Co. B.
Captain	John Bird 2d	Joseph R. Rackliffe.
1st Lieutenant	Alphonso J. Coffin	George H. Babb.
2nd "	Everett F. Heath	Fred T. Dow.
3rd "	Samuel H. T. Hayes	Horace P. Farrington.
1st Sergeant	Wallace R. Farrington	Edwin R. Merrill.
Sergeant	William N. Patten	William E. Keith.
"	Hugo G. Menges	Robert W. Lord.
"	William A. Morris	Henry V. Starrett.
"	Clarence Scott	Edmund Clark.
Corporal	George F. Rich	Robert H. Fernald.
"	William C. Holden	Arthur C. Grover.
"	Frank S. Tolman	Charles M. Randlette.
"	Harry M. Prentiss	Mortimer L. Bristol.

Armorer, Walter E. Croxford.

Band Leader, George E. Keyes.

Band Sergeant, Cyrus Hamlin.

COLOR GUARD.

Color Sergeant, John W. Steward.

" *Corporal*, George F. Rich.

" " William C. Holden.

" " Arthur C. Grover.

DESIGN OF THE INSTITUTION.

It is the design of the Maine State College of Agriculture and the Mechanic Arts to give, at a moderate cost, the advantages of a thorough, liberal and practical education. It seeks to do this by means of approved methods of instruction, and especially by making prominent the system of practically applying in the drawing-room, in the laboratory, in the shop and in the field, the lessons of the class-room. It thus endeavors to make its courses of high practical value.

By the act of Congress granting public lands for the endowment and maintenance of such colleges, it is provided that the leading object of such an institution shall be, "without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to Agriculture and the Mechanic Arts."

While the courses of study fully meet this requisition, and are especially adapted to prepare the student for agricultural and mechanical pursuits, it is designed that they shall be also sufficiently comprehensive, and of such a character, as to secure the discipline of mind and practical experience necessary for entering upon other callings or professions.

CONDITIONS OF ADMISSION.

Candidates for admission to the Freshman Class must be not less than fifteen years of age, and must pass a satisfactory examination in Arithmetic, Geography, English Grammar (especial attention should be given to Orthography, Punctuation and Capitals,) History of the United States, Physical Geography, Book-Keeping, Algebra to Logarithms, and Plane Geometry.

Although the knowledge of Latin is not required as a condition of admission, yet the study of this language is earnestly recommended to all who intend to enter this Institution.

Candidates for advanced standing must sustain a satisfactory examination in the preparatory branches, and in all the studies previously pursued by the class they propose to enter.

Satisfactory testimonials of good moral character and industrious habits will be rigidly exacted. They should be presented on the day of examination.

The Friday following the last Wednesday of June, and the day of the beginning of the first term in August, are the appointed times for the examination of candidates at the college.

Arrangements have been made by which applicants accommodated by the plan may pass examination for admission without incurring the expense of coming to Orono. The gentlemen named below have been appointed examiners in the sections of the State in which they severally reside.

C. P. Allen, B. S.,	Presque Isle.
H. M. Estabrook, M. S.,	Gorham.
E. S. Danforth, B. S., S. W. Gould, B. S.,	Skowhegan.
Henry K. White, A. M.,	Newcastle.
Rev. W. R. Cross,	Milltown, N. B.
A. C. Dresser, A. B.,	Rockland.
I. C. Phillips, A. B.,	Wilton.
Hon. N. A. Luce,	Augusta.
W. R. Whittle, A. B.,	Ellsworth.
W. E. Sargent, A. M.,	Hebron.
Edwin P. Sampson, A. B.,	Saco.
A. D. Hall, A. B.,	Bethel.

Examiners will indicate to parties applying, the time and special place of examination. Arrangements have also been made with the Seminary at Bucksport and with the Academy at Hampden, by which students from these institutions may be admitted to the college on certificate of qualification from the respective Principals.

All candidates, wherever they may arrange to be examined, should make early application to the president of the college. Applications will be recorded and regarded in the order of their reception.

COURSES OF INSTRUCTION.

Five full courses are provided, viz: A course in Agriculture, in Civil Engineering, in Mechanical Engineering, in Chemistry, and in Science and Literature.

The studies of the several courses are essentially common for the first year, and are valuable not only in themselves, but also as furnishing a necessary basis for the more technical studies and the practical instruction of the succeeding years.

Physical Geography, required on admission, serves as a suitable introduction to Geology, which is taken up in each of the courses. Physiology serves as an introduction to Comparative Anatomy, and Algebra, Geometry and Trigonometry, taught in the first year, are needed preliminaries to the higher mathematics and the practical applications required in Surveying, Engineering proper and Astronomy. Botany, Chemistry and Physics are highly important branches, common to all the assigned courses, and hence taken by all the students who are candidates for degrees.

Rhetoric, French and English Literature from the early part of the line of studies which later includes German, Logic, History of Civilization, United States Constitution, Political Economy, and Mental and Moral Science, branches, several of which relate not more to literary culture than to social and civil relations, and to the proper preparation for the rights and duties of citizenship.

Composition and Declamation are regular exercises in all the courses throughout the four years. For the characteristic features of each course, reference is made to the explanatory statements following the several schemes of study.

SPECIAL COURSES.

Students may be received for less time than that required for a full course, and they may select from the studies of any class such branches as they are qualified to pursue successfully. Students in Special Courses are not entitled to degrees, but may receive certificates of proficiency.

DEGREES.

The full course in Civil Engineering entitles to the Degree of Bachelor of Civil Engineering; the full course in Mechanical Engineering, to the Degree of Bachelor of Mechanical Engineering; the full course in Agriculture, Chemistry, or Science and Literature, to the Degree of Bachelor of Science.

Three years after graduation, on presentation of a satisfactory thesis with the necessary drawings, and proof of professional work or study, the Bachelors of Civil Engineering may receive the Degree of Civil Engineer; the Bachelors of Mechanical Engineering, the Degree of Mechanical Engineer; the Bachelors of Science, the Degree of Master of Science.

COURSE IN AGRICULTURE.

FIRST YEAR.

First Term.	*Second Term.*
Physiology.	Botany.
Rhetoric.	French.
Solid Geometry.	Logarithms and Trigonometry.
P. M. Labor on Farm.	P. M. Labor on Farm.
Free-Hand Drawing.	Mechanical Drawing. (F. of T.)
Dissecting.	Botanical Laboratory Work. (L. of T.)

SECOND YEAR.

First Term.	*Second Term.*
Botany.	Qualitive Chemistry.
General Chemistry.	Physics. (F. of T.)
French.	German.
Physics.	Surveying. (L. of T.)
P. M. Laboratory Work in Botany.	English History (L. of T.) for ladies.
Laboratory Work in Physics.	P. M. Field Work and Forge Work.
	Laboratory Physics.
	French Translations for V.

THIRD YEAR.

First Term.	*Second Term.*
Agricultural Engineering, including Farm Implements, Farm Drainage and Mechanical Cultivation of the Soil.	Agricultural Chemistry, Landscape Gardening, Horticulture and Arboriculture and Farm Accounts.
Agricultural Chemistry or Advanced Chemistry, for V.	Zoology and Entomology.
English and American Literature.	Logic.
German.	P. M. Laboratory Work and Experimental Farming or *Analysis of English Authors, and German Translations.
P. M. Laboratory Work or *Analysis of English Authors and Translations from French.	

FOURTH YEAR.

First Term.	*Second Term.*
Cattle Feeding and Dairy Farming.	Stock Breeding and Veterinary Science. Sheep Husbandry and Cultivation of Cereals.
Comparative Anatomy.	
History of Civilization.	Mineralogy and Geology.
Political Economy.	U. S. Constitution.
P. M. Experimental Farming and Agricultural Botany or *Translations from German.	Mental and Moral Science.
	P. M. Thesis and Laboratory Work and Theme and Thesis Work.

*To be taken in Course in Science and Literature in place of study preceding.

EXPLANATORY STATEMENTS.

This course is designed to fit young men to follow Agriculture as a profession with success, as well as to prepare them for the intelligent performance of the duties of citizenship.

To this end, the curriculum of studies is largely scientific and technical, not omitting, however, those branches that have been referred to as pertaining to social and civil relations.

The instruction in Agriculture is given largely by lectures, and embraces subjects of great practical importance to the farmer, which are briefly explained under the following heads:

Agricultural Engineering.—Combined with recitations in mechanics from a text-book, lectures are given on the principles of construction and use of farm implements, illustrated by charts to the extent possible, on the construction of roads, culverts and masonry, and on soil physics, or the relations of the soil to heat and moisture, the mechanical conditions of the soil best adapted to plant growth, and the objects to be gained by cultivation.

Agricultural Chemistry.—Under this head are considered the various methods of retaining and increasing the fertility of the soil, the sources, composition and methods of valuation of commercial and farm manures, together with the principles governing their treatment and application, the composition of cattle foods, their changes and uses in the animal system, and the value and economic use of the various kinds of fodders.

Landscape Gardening.—The object of this study is to furnish correct ideas of the manner of laying out and beautifying grounds. This subject is followed by lectures on Horticulture and Arboriculture.

Cultivation of Cereals.—Lectures are given upon the best methods of cultivating the principal farm crops.

Dairy Farming.—This embraces the chemical and physical properties of milk, and the principles and practical operations that underlie its production and manufacture into butter and cheese.

Sheep Husbandry.—The characteristics and comparative merits of our different breeds of sheep are discussed, also their adaptability to different conditions and uses.

Botany.—Following recitations and practical work in Botany, lectures are given upon fungi injurious to the farmer.

Chemistry.—One term is devoted to General Chemistry, two terms to Agricultural Chemistry, one-half term to Organic Chemistry, and

the afternoons of several terms are devoted to laboratory practice, including analysis of farm products.

Zoology and Entomology—In Zoology the larger groups of the animal kingdon are taken up and described in lectures which are illustrated by means of diagrams, models, or the objects themselves, and the students are required to make critical studies of typical animals of each group. Such laboratory practice is regarded an indispensable training for the more advanced study of the higher animals, and also forms the basis of the study of Historical Geology.

The studies in Entomology are conducted in a similar manner. After a general review of the orders has been given, illustrated by such common insects as are familiar to all, the beneficial and injurious are taken up more in detail, their round of life described, together with the injuries the latter do to the products of the farmer, the gardener and the fruit raiser, as well as to our forests and building materials, and the best known means of keeping them in check. For the purpose of making the instruction as practical and impressive as may be, many of the injurious insects are carried through their transformations in the class-room, where each student can note the various changes from day to day, and learn to recognize these insect enemies in any stage of their existence; and each member of the class is required to devote some time in field-collecting, and in observing the habits and work of insects in nature.

The subject of bee-keeping is taken up quite at length; the different kinds of bees in a swarm, their habits, anatomy, and the mode of collecting the different products are all described and illustrated by means of elaborate models, while artificial swarming, the mode of hybridizing a swarm, and the advantages of the same, with the most approved methods now in use for the care and management of bees, are also fully described.

Comparative Anatomy—Under comparative anatomy are taken up the anatomy and physiology of our domestic animals, together with a brief outline of our wild animals, so far as time permits. This is followed by instruction in stock breeding and veterinary science.

Mineralogy and Geology—A preliminary course of lectures is given on mineralogy, followed by laboratory practice in the determination of minerals, and in lithology, special attention being called to gypsum, limestone, and such other minerals as are of direct importance to the students of agriculture.

The instruction in Geology is by means of illustrated lectures and excursions, critical attention being given to the origin and formation of soils.

Law—A course of lectures is given to the Senior Class on International and Rural Law.

Throughout the course, the endeavor is made to inculcate established principles in agricultural science, and to illustrate and enforce them to the full extent admitted by the appliances of the laboratory and the farm. So far as possible, students are associated with whatever experimental work is carried on, that they may be better fitted to continue such work in after life.

Those who complete this course receive instruction also in Mathematics, French, German, English Literature, Logic, United States Constitution, Political Economy, and Mental and Moral Philosophy, and on presenting satisfactory theses upon some agricultural topic, are entitled to the degree of Bachelor of Science.

The Course in Science and Literature includes French and German, the general, mathematical, and most of the scientific studies of the agricultural course. Instead of certain branches quite purely technical in the latter course, History, and English and American Literature are substituted.

In the special laws of the State passed in 1872, it is provided that young ladies "who possess suitable qualifications for admission to the several classes may be admitted as students in the college."

In arranging the course in Science and Literature, reference has been had to this enactment. From this course, however, young men who desire it are not excluded, as on the other hand, young ladies are not excluded from any of the other courses.

COURSE IN CIVIL ENGINEERING.

FIRST YEAR.

First Term.	*Second Term.*
Solid Geometry.	Logarithms and Trigonometry.
Rhetoric.	Botany.
Physiology.	French.
P. M. Free-Hand Drawing.	Mechanical Drawing. (F. of T.)
Dissecting.	P. M. Botanical Laboratory Work. (L. of T.)
Labor on Farm.	Labor on Farm.

SECOND YEAR.

First Term.	*Second Term.*
Descriptive Geometry.	Analytical Geometry.
General Chemistry.	German.
French.	Physics. (F. of T.)
Physics.	Surveying. (L. of T.)
P. M. Mechanical Drawing.	Qualitative Chemistry.
Laboratory Work in Chemistry.	P. M. Field Work.

THIRD YEAR.

First Term.	*Second Term.*
Calculus.	Calculus. (F. of T.)
Henck's Field Book and R. R. Surveying.	Decriptive Astronomy. (L. of T.)
German.	Mechanics. (F. of T.)
P. M. Field Work and Drawing.	Graphic Statics. (L. of T.)
	Logic.
	P. M. Isometric and Cabinet Projection and Perspective.

FOURTH YEAR.

First Term.	*Second Term.*
Civil Engineering.	Civil Engineering, Designs and Specifications.
Stereotomy. (F. of T.)	
Sanitary Engineering. (L. of T.)	Mineralogy and Geology.
Practical Astronomy.	U. S. Constitution.
Political Economy.	P. M. Designing and Thesis Work.
P. M. Higher Surveying.	

EXPLANATORY STATEMENTS.

The object of this course is to give the student a thorough knowledge of Higher Mathematics, Mechanics, Astronomy and Drawing, and, at the same time, a thorough drill in the use and care of the ordinary engineering instruments and in the application of the mathematical principles and rules, so that the graduates can at once be made useful in engineering work and be fitted, after a limited amount of experience in the field, to fill positions of importance and trust. The course is also arranged so as to afford, so far as can be, the education required to prepare the graduate for a responsible position among *men*, as well as among engineers.

In this course the work is identical with that of the other courses during the first year. During the fall term of the Sophomore year, students in this course work two hours each afternoon, in the drawing room, on free-hand and mechanical drawing. In the last term of this year, the subject of land surveying is taken up. The first eight weeks are devoted to tinting, shading, etc., in water colors, while the remaining twelve weeks are given to practical surveying. Besides an hour's recitation each day, the class is engaged two hours, either in the field or drawing room, becoming familiar with the use and care of instruments, putting into practice the problems found in the text-book, and making actual surveys.

In the first term of the Junior year, Henck's Field Book is used as a text-book, from which the student obtains methods of running railroad curves, putting in switches and turnouts, setting slope-stakes, and the calculation of earthwork. This is supplemented with examples worked by the student, and lectures on levelling, preliminary and final surveys, and on the resistance to trains offered by grades and curves, together with the theory and construction of country roads, streets and pavements. These methods of the text-book, so far as possible, are applied in the field by the execution of the preliminary and final surveys of a railroad from the college buildings to some point on the Maine Central R. R., together with the necessary drawings, calculation of earthwork and estimate of the cost of building and equipping the same.

The subject of Applied Mechanics is taken up the last term of this year, in which the students receive a thorough training in the principles underlying construction, illustrated as far as possible by practical examples, in which these principles are applied. During

this term, each student in the class works two hours each day in the drawing room, where isometric, cabinet and perspective projection are taught by means of lectures and problems drawn by the students.

During the first term of the Senior year an extended topographical survey, with the plane table and stadia measurements, is made, based upon a previous trigonometrical determination of the principal points. During this term the students are also taught the use of the current meter and apply their knowledge in the actual measurement of the volume of the Stillwater river.

In the recitation room during this term the principles of the strength of materials are taken up, supplemented by information as to durability, preservation and fitness for special purposes. The theories of ties, struts, beams, foundations, retaining walls and arches, are fully treated.

Stone cutting is taken up this term, by lectures and practical problems, each student being required to make a complete set of working drawings of the most common forms of masonry arches.

Six weeks of this term are devoted to sanitary engineering; especial attention being given to ventilation, heating, purity of water supply and the proper drainage of houses and towns.

The first part of the last term of this year is devoted to the theory of roof and bridge trusses, the principles of hydraulics as applied in engineering practice, lectures on the locomotive engine, while the greater part is given to the application of the principles already learned, to the designing and calculation of various kinds of engineering structures, and to making out estimates and specifications.

This, together with the preparation of a satisfactory thesis, completes the work in the course of Civil Engineering.

MINERALOGY AND GEOLOGY.

Mineralogy is taught by an introductory course of lectures, followed by laboratory practice in the determination of minerals and rocks, especial attention being given to their value for building purposes. This is immediately followed by a course of lectures in Geology, together with excursions for the purpose of studying the rocks *in situ*, and also superficial deposits. Critical examinations are made in various railroad cuts of the hardness, slaty structure, jointed structure, etc., as bearing upon the cost of excavation.

ASTRONOMY.

In the last part of the spring term, Descriptive Astronomy is taken by the students of the Junior Class, and Practical Astronomy in the first term, Senior year.

The course in Astronomy is designed to enable students to determine with accuracy geographical positions. The principal instruments employed are chronometer, sextant, transit, and for work of precision, the Repsold vertical circle, an instrument made in Hamburg, Germany, in 1874, for this institution. Practical instruction is given in the use of these instruments, and in the most approved methods of reducing observations for the determination of latitude and longitude.

DEGREES.

Students in this department secure the degree of Bachelor of Civil Engineering on graduating, with the full degree of Civil Engineer three years after, on presentation of a satisfactory thesis, with proof of professional work or study.

COURSE IN MECHANICAL ENGINEERING.

FIRST YEAR.

First Term.	*Second Term.*
Solid Geometry.	Logarithms and Trigonometry.
Physiology.	Botany.
Rhetoric.	French.
Free Hand Drawing.	Mechanical Drawing. (F. of T.)
Dissecting.	Botanical Lab'y Work. (L. of T.)
P. M. Labor on Farm.	P. M. Labor on Farm.

SECOND YEAR.

First Term.	*Second Term.*
Descriptive Geometry.	Analytical Geometry.
French.	Drawing and Kinematics.
Physics.	Physics.
General Chemistry.	Surveying.
P. M. Carpentry.	Qualitative Chemistry.
Lab'y Work in Chemistry.	P. M. Mechanical Drawing and Forge Work.

THIRD YEAR.

First Term.	*Second Term.*
Calculus.	Calculus. (F. of T.)
Kinematics.	Descriptive Astronomy. (L. of T.)
Vise Work.	Mechanics and Machine Design.
P. M. Machine Drawing.	Logic.
	Elements of Mechanism.
	Link and Valve Motions.
	P. M. Isometric and Cabinet Projection and Machine Drawing.

FOURTH YEAR.

First Term.	*Second Term.*
Steam Engineering.	Steam Engineering.
Practical Astronomy.	Wood Turning.
Political Economy.	Hydraulic Engineering.
P. M. Machine Drawing and Designing.	Mineralogy and Geology.
	U. S. Constitution.
	P. M. Machine Drawing, Designing and Thesis Work.

EXPLANATORY STATEMENTS.

It is the design of this course to give such a knowledge of Mathematics, Mechanics, Principles of Mechanism, Drawing and Manual Art as shall enable the student successfully to enter practical life as an engineer, with the same thorough education in subjects required to fit him for the general duties of life as is afforded by the other courses.

The first two years' work is identical with that of the students in Civil Engineering, except that carpentry and forge work are taken the second year in place of part of the drawing. In the Junior year, the first term is devoted to the geometry of machinery, showing the students how different motions may be obtained independently of the power required. Special attention is here given to the subject of gearing, and a full set of problems worked out, illustrating cases commonly occurring in practice. In the second term of this year the subject of the geometry of machinery is continued by lectures on other methods of transmitting motion, as by belts, cans, couplings, and links. Considerable time is given to the study and designing of the various valve and link motions used on the steam engine. During the same term instruction is given in mechanics and the laws of the strength of materials, the student being required to design machine details in accordance with those laws.

The first part of the first term, Senior year, is employed in studying the laws of the expansion of steam and their influence upon the construction of steam engines and boilers, the subject being illustrated by experiments on the shop engine, with the aid of an indicator. During the remainder of the term, the students are engaged in designing engines and other machines, and in making detail drawings of the same, such as would be required to work from in the shop.

During the last term, Senior year, the study of steam engineering is continued in its application to compound engines, and the subject of hydraulic engineering is taken up briefly, by lectures on the storage of water for power and the theory and construction of modern water wheels.

TEXT-BOOKS AND BOOKS OF REFERENCE.

Weisbach,	Mechanics of Engineering.	Smith,	Steam Engine.
Goodeve,	Elements of Mechanism.	Smith,	Steam Boilers.
MacCord,	Kinematics.	Trowbridge,	Steam Boilers.
MacCord,	Slide Valve.	Zeuner,	Valve and Link Motions.
Van Buren,	Strength of Machinery.	Auchincloss,	Valve and Link Motions.
Knight,	Mechanical Dictionary.	Clark,	Manual.

SHOP WORK.

There are now three shops equipped according to the Russian system, and work in these is required of all students in this course. The first term of the Sophomore year, two hours of each day are devoted to work in carpentry, special attention being given to accuracy of workmanship.

During the second term of the same year, the student receives instruction in forge work, including the welding and tempering of steel. A course in vise work during the first term of the Junior year gives the student practice in the various methods of shaping and fitting metals by the use of the chisel, hack-saw and file. During their second term, the Junior students in this course take turns in running the shop engine, and are taught the rules of safety and economy in this branch of Engineering. Instruction in wood-turning is given during the last term of the Senior year.

DRAWING.

The work in drawing commences with a course in Free-Hand and Elementary Mechanical Drawing, extending through the Sophomore year.

The first term of the Junior year, the student spends the time allotted to drawing in working out practical problems on the construction of gear teeth, cams, etc., and in elementary practice in line-shading and tinting.

The second term of this year is devoted to isometric projection, and the making of finished drawings in ink and in water colors. In the first term of the Senior year, the student prepares an original design of some machine, makes working drawings of its details on tracing cloth, and finally prepares copies by the blue-print process. The afternoon work of the spring term consists of making calcula-

tions for designs of engines and boilers, the construction of the necessary working drawings, and making thesis drawings.

The remarks under Course in Civil Engineering, with regard to Astronomy, Mineralogy and Geology, apply also to this course, and to them reference is made.

Theses are required of all students as a condition of graduation, and must be on some subject directly connected with Mechanical Engineering.

Students in this course receive the degree of Bachelor of Mechanical Engineering upon graduation, with full degree of Mechanical Engineer three years afterwards upon presentation of a satisfactory thesis and proof of professional work or study.

COURSE IN CHEMISTRY.

FIRST YEAR.

First Term.	*Second Term.*
Physiology.	Botany.
Rhetoric.	French.
Solid Geometry.	Logarithms and Trigonometry.
P. M. Labor on Farm.	P. M. Labor on Farm.)
Free Hand Drawing.	Mechanical Drawing. (F. of T.)
Dissecting.	Botanical Lab'y Work. (L. of T.)

SECOND YEAR.

First Term.	*Second Term.*
General Chemistry.	Qualitative Chemistry.
Botany.	Physics.
French.	German.
Physics.	Surveying.
P. M. Lab'y Work in Botany, Physics, Chemistry.	P. M. Field Work. Laboratory Physics.

THIRD YEAR.

First Term.	*Second Term.*
Chemistry.	Chemistry.
German.	Zoology and Entomology.
English and American Literature.	Logic.
P. M. Laborartoy Work.	P. M. Laboratory Work.

FOURTH YEAR.

First Term.	*Second Term.*
Chemistry.	Chemical Laboratory Work.
Comparative Anatomy.	Mineralogy and Geology.
History of Civilization.	U. S. Constitution.
Political Economy.	P. M. Laboratory Work.
P. M. Laboratory Work.	

EXPLANATORY STATEMENTS.

This course aims to supply a want felt by students who wish to enter certain industries in which a somewhat extensive knowledge of Chemistry is important. The first two years are mainly like those of the other courses, Qualitative Analysis being, however, obligatory for these students in the second term of the Sophomore year.

During the junior year, daily recitations are held in advanced Inorganic Chemistry. In the Senior year, advanced Organic Chemistry is taken up. Sophomores have one exercise a week in Elementary Chemical experiments. The afternoons are devoted to Quantitative Chemical Analysis by the Junior and Senior students of the course. The work consists of the most useful gravimetric and volumetric methods, beginning with the simple estimations, which are followed by more complex analyses of alloys, minerals, fertilizers, farm products, &c. A short course in the assay of gold and silver is also given.

The class-room text-books used by this department are: Remsen's Chemistry and Naquet's Principes de Chimie. In the Laboratory are used: Cratt's Qualitative Chemical Analysis, Fresenius' Quantitative Chemical Analysis, Frankland's Agricultural Chemical Analysis, Flint's Examination of Urine, Rickett's Notes on Assaying, Appleton's Quantitative Analysis, and Classen's Quantitative Analysis.

Valuable books of reference are found in the library.

Students taking qualitative analysis must furnish a deposit of at least five dollars when they begin; those taking quantitative analysis are required to deposit at least seven dollars. Students taking the Course in Chemistry or an extended course in quantitative analysis are expected to provide themselves with a small platinum crucible.

The students, after passing all the required examinations and presenting satisfactory theses upon some chemical subject, graduate with the degree of Bachelor of Science.

Post graduate and special students can make arrangements with the Professor of Chemistry for an advanced or special course of laboratory work and recitations.

TABLE OF HOURS—First Term.

	Seniors.	Juniors.	Sophomores.	Freshmen.
7.30 A. M.	Chapel Services.	Chapel Services.	Chapel Services.	Chapel Services.
7.45 A. M.	History of Civilization, I, IV, V. Civil Engineering, II.	German, I, II, IV, V. Kinematics, III.	General Chemistry.	Geometry.
8.40 A. M.	Stock Feeding and Dairy Farming. I. Advanced Chemistry, IV. Practical Astronomy, II, III, V.	English and American Literature, I, IV, V. Calculus, II, III.	Botany, I, IV, V. Descriptive Geometry, II, III.	
9.35 A.M.	Stereotomy (f. of t.), II. Sanitary Engineering (l. of t.), II. Comparative Anatomy, I, IV, V. Steam Engineering, III.	Agricultural Engineering, I. Vise Work, III. Advanced Chemistry, IV.	French.	Rhetoric.
10.30 A.M.	Political Economy.	Agricultural Chemistry, I. Field Book, Road and Railroad Surveying, II. Vise Work, III.	Physics.	Physiology.
P. M.	Laboratory and Farm Practice, I. Higher Surveying, II. Designing and Drawing, III. Laboratory Work, IV. German Translations, V. Military Exercises.	Laboratory Work, I, IV. Field Work, II. Machine Drawing, III. Analysis of English Authors and French Translations, V. Military Exercises.	Laboratory Work in Chemistry. Laboratory Work in Botany, I, IV, V. Laboratory Work in Physics. Mechanical Drawing, II. Carpentry, III. Military Exercises.	Labor on Farm. Free-Hand Drawing. Dissecting, two hours per week. Military Exercises.

Note.—Roman numerals refer to courses as follows: I, Agriculture; II, Civil Eng.; III, Mech Eng.; IV, Chemistry; V, Science and Lit.

TABLE OF HOURS—SECOND TERM.

	SENIORS.	JUNIORS.	SOPHOMORES.	FRESHMEN.
7.30 A. M.	Chapel Services.	Chapel Services.	Chapel Services.	Chapel Services.
7.45 A. M.	Mineralogy. Geology.	Agricultural Chemistry, etc., I. Calculus(F. of T), II, III. Advanced Chemistry, IV. Descriptive Astronomy. (L. of T.) II, III, V.	German, I, II, IV, V. Drawing and Kinematics, III.	
8.40 A. M.	Mental and Moral Science, I, V. Civil Engineering (F. of T.), II. Contracts, Specifications, etc., II. Wood Turning, III. Laboratory Work, IV.	Logic.	Qualitative Analysis. Analytical Geometry, II, III.	Botany.
9.35 A.M.	Stock Breeding and Veterinary Science and Cultivation of Cereals, I. Steam Engineering & Hydraulics, III. Laboratory work, IV.	Zoology and Entomology, I, IV, V. Applied Mechanics (F. of T.), II. Graphic Statics (L. of T.), II. Elements of Mechanism (F. of T.), III. Link and Valve Motion (L. of T.), III.	Qualitative Analysis.	French.
10.30 A.M.	U. S. Constitution.	Zoology and Entomology, I, IV, V. Mechanics and Machine Design, III.	Physics. (F. of T.) Surveying, (L. of T.) English History (L. of T.), for ladies.	Logarithms and Trigonometry.
P. M.	Thesis and Laboratory Work, I. Designing and Thesis Work, II. Machine Drawing and Thesis Work, III. Laboratory Work, IV. Theme and Thesis Work, V. Military Exercises.	Laboratory and Garden Practice, I. Isometric and Cabinet Projection, and Perspective, II. Drawing, III. Laboratory Work, I, IV. German Translations, V. Military Exercises.	Forge Work, I, III. Field Work, I, II, IV, V. Laboratory Physics. French Translations, V. Military Exercises.	Labor on Farm. Mechanical Drawing. (F. of T.) Laboratory Work in Botany. (L. of T.) Military Exercises.

LABOR.

It is a characteristic feature of the college, that it makes provision for labor, thus combining practice with theory, manual labor with scientific culture.

The maximum time of required labor is three hours a day for five days in the week.

The larger part of the labor is educational, and for such labor no compensation in money is made. Students in the lowest class perform non-educational labor when required by the college and receive compensation, according to their industry, faithfulness and efficiency. The maximum price paid is ten cents an hour. In arranging for compensated labor, it should be understood that the college does not engage to furnish opportunities for such labor continuously, but rather as the farm and other interests require.

The students of the three upper classes carry on their principal labor in the laboratory, the drawing-rooms, the workshops, or in the field, and for such labor they receive no pecuniary consideration, since it is of a purely educational character.

MILITARY INSTRUCTION.

Thorough instruction in Military Science is given by an officer detailed by the Secretary of War from the active list, United States Army, and is continued throughout the entire course. All able-bodied male students receive instruction in the school of the soldier, company and battalion drill. Arms and equipments are furnished by the United States Government. The uniform, furnished by students, is a dark blue blouse similar to the regulation blouse of an army officer, but with the State of Maine buttons and gilt braid on cuff, and for officers, the chevrons and shoulder straps of red and gold; the pants of lighter blue with gilt braid on outside seams; the cap blue with gold wreath ornament. The uniform is required to be worn during military exercises, and it is recommended that it be worn at recitations and at other class and general college exercises.

LOCATION.

The college has a pleasant and healthful location, between the villages of Orono and Stillwater, about a mile from each. Stillwater

river, a tributary of the Penobscot, flows in front of the buildings, forming the western boundary of the college farm, and adding much to the beauty of the surrounding scenery.

The Maine Central Railroad, over which trains pass many times each day, has a station at the village of Orono. The college is within nine miles of the city of Bangor, and is consequently easily accessible from all parts of the State.

FARM AND BUILDINGS.

The college farm contains three hundred and seventy acres of land, of high natural productiveness, and of great diversity of soil, and is therefore well adapted to the experimental purposes of the Institution.

Wingate Hall, the building first erected, affords excellent accommodations for a limited number of students. The lower rooms of this building are appropriated to general and class purposes.

Oak Hall contains forty-eight rooms, and has connected with it a boarding-house for students. With these buildings, the Institution furnishes desirable accommodations for one hundred and twenty-five students.

The Laboratory contains two apparatus rooms, a lecture room, a weighing room, a recitation room, and rooms for analytical and other purposes, and is in all respects admirably adapted to the wants of the chemical department.

The Shop, built during the summer of 1883, is equipped for instruction in three departments of mechanical work, viz: filing, forging and working in wood.

Coburn Hall is occupied by the departments of Natural History and Agriculture. In addition to the rooms needful for the two departments named, it contains a large audience-room, a commodious room for the College Library, and a room especially arranged for a Physical Laboratory.

APPARATUS.

The College is furnished with valuable apparatus for the departments of Agriculture, Chemistry, Physics, Civil Engineering and Mechanical Engineering, to which additions are made as the exigencies of the several departments require. Models have been

made by instructors and students and others have been purchased that serve for purposes of instruction.

LIBRARY.

The library contains above six thousand volumes, a large part of which has been obtained through the generosity of the late Ex-Governor Coburn. Valuable additions have also been made to it by other friends of the college, only a small number of the volumes having been purchased with money appropriated by the State. It is earnestly hoped that so important an auxiliary in the education of the student will not be disregarded by the people of the State, and that liberal contributions will be made to the library, not only of agricultural and scientific works, but also of those profitable to the general reader.

The following periodicals are supplied by the college to the library: American Journal of Science and Art, Popular Science Monthly, National Live Stock Journal, Journal Royal Agricultural Society (England), Journal Franklin Institute, American Engineering Magazine and Railroad Journal, Century Magazine, Atlantic Monthly, Harper's Monthly Magazine, North American Review, Forum, Education, American Machinist, Science, American Naturalist, Botanical Gazette, The Engineer, Agricultural Science, Political Science Quarterly, Engineering News, Electrical Engineering, Garden and Forest.

READING ROOM.

The reading room is supplied with a number of valuable newspapers and periodicals. Grateful acknowledgment is herewith made for the following papers, generously sent by the proprietors to the college:

American Cultivator, American Sentinel, Aroostook Republican, Gospel Banner, Eastern Farmer, Kennebec Journal, Lewiston Journal, Maine Farmer, Maine Industrial Journal, New England Farmer, Oxford Democrat, Piscataquis Observer, Portland Transcript, Somerset Reporter, Daily Whig and Courier, Zion's Herald, Official Gazette U. S. Patent Office, Bangor Daily Commercial, Farmington Chronicle, Phillips Phonograph, Springvale Advocate, Mount Desert

Herald, Maryland Farmer, Dexter Gazette, Eastport Sentinel, Bee Journal, American Garden, Mirror and Farmer, Temperance Record, The Industrialist (Kansas), Oldtown Enterprise, Aroostook Herald, Hampden News, Oxford County Advertiser, Boston Evening Transcript, Bangor Daily News, Morning Star, Rockland Free Press, North Star, Rockland Courier Gazette, Aroostook Times, National Farmer, The Farmer's Home.

The following papers are furnished by subscription, principally by the students:

American Machinist, Cultivator and Country Gentleman, Scientific American Supplement, Eastern Argus (furnished by S. W. Gould), Lewiston Evening Journal, Journal of Education, Sanitary Engineer, Popular Science News, Washington Post, Boston Herald, Portland Express, Boston Record, Boston Globe (furnished by A. M. Miller), Portland Daily Press, Weekly Inter Ocean, Harper's Weekly, Science.

CABINET.

The natural history collections of the college include about nine hundred named and mounted species of the flowering plants of Maine, the Blake Herbarium consisting of foreign and indigenous phœnogams and cryptogams numbering about fourteen thousand specimens, the Ellis collection of North American fungi of twenty-three hundred species, a collection of several hundred specimens of marine algæ and several small miscellaneous collections, a collection of sections of tropical species of wood presented by the Department of Agriculture at Washington, and a similar collection of the United States species from the Census Bureau.

The college also has a working collection of carefully selected forms representing the prominent groups of the animal kingdom; a large and valuable collection of Maine insects, carefully mounted and authentically named, and a fine collection of marine animals in alcohol, mostly from the coast of Maine, donated to the college by the United States Fish Commissioner. The above collections, together with charts, diagrams, skeletons, models, microscopes and other apparatus for illustrating the studies in natural history, are on exhibition in Coburn Hall.

On exhibition also are a good series of the more common minerals and ores supplemented by a collection presented by the National Museum, a collection of building stones from many of the Maine

quarries, and a collection presented by the Smithsonian Institution, together with a series of microscopical sections of building stones, given by G. P. Merrill, M. S. Ph. D. In the same room is exhibited a series of typical fossils which illustrate the various geological horizons, together with a collection of Indian stone implements, and various curiosities presented by the friends of the Institution.

PUBLIC WORSHIP.

All students are required to attend daily prayers at the college, and public worship on the Sabbath at some one of the neighboring churches, unless excused by the President.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

The students of the college maintain an active organization of the Young Men's Christian Association, holding meetings weekly. Its elevating influence in the college is clearly manifest, especially in the earnest and high moral and Christian life of those who constitute its membership.

EXPENSES.

Tuition is thirty dollars a year, divided equally between the two terms. The cost of material and repair of tools for the course of instruction in the vise shop is ten dollars; in the forge shop, nine dollars; in the wood shop, four dollars.

Laboratory expenses are at cost of glassware broken, injury to apparatus, and chemicals used. A deposit of five dollars is required of students entering upon a term's work in Qualitative Analysis, and of seven dollars per term from students in Quantitative Analysis. Room rent is four dollars for the first term and five dollars for the second term of the college year.

Students residing too far from the college to *live* at home are required to room and board at the college, unless special permission to live elsewhere be granted by the President. Students receiving such permission pay room rent and fuel rent as though residing at the college.

Bedding and furniture must be supplied by the students, who also furnish their own lights. Tables, chairs, bedsteads, sinks and husk mattresses can generally be purchased at the college at reduced rates.

The price of board will be at cost, and will be determined from term to term. In the history of the college, the price has ranged between $2.60 and $3.12 per week; washing averages not more than sixty cents per dozen.

The warming by steam of single rooms (each suitable for two occupants) has averaged for the past six years about eleven dollars a room for each term. The expense of heating recitation rooms and rooms for general purposes has been about two dollars a term for each student, and the incidental expenses, including pay for the services of janitor, pay for bringing mail, for cleaning and renovating rooms, for general repairs, &c., have been about three dollars per term for each student.

From the items given, with an allowance of a few dollars a year for necessary text-books, quite an accurate estimate of needful expenses can be made.

The college term bills are payable, one-half at the commencement, and the remainder at or before the close of each term.

As security for the payment of college bills, a bond of one hundred and fifty dollars with satisfactory securities is required. A blank form of bond will be given with the ticket of admission.

MEANS OF DEFRAYING EXPENSES.

The terms are so arranged that the long vacation occurs in the winter, that students may have an opportunity to teach during that time. The summer vacation is in the haying season, when farm labor is most profitable. By availing themselves of the opportunities thus afforded, together with the compensation for labor on the college farm, industrious and economical students can cancel the greater part of their college expenses.

SCHOLARSHIPS.

The trustees make provision for the establishment of free scholarships by the following action:

Voted, That any individual or society paying to the Treasurer a sum not less than seven hundred and fifty dollars, shall be entitled to one perpetual free scholarship in the college.

OFFICERS OF THE ALUMNI ASSOCIATION.

PRESIDENT.

PROF. G. H HAMLIN, Orono.

RECORDING SECRETARY.

PROF. WALTER FLINT, Orono.

CORRESPONDING SECRETARY.

CHAS. S. BICKFORD, Presque Isle.

TREASURER.

PROF. W. H. JORDAN, Orono.

NECROLOGIST.

E. M BLANDING, Bangor.

CLASS SECRETARIES.

1872. E. J. HASKELL, Saccarappa.
1873. J. M. OAK, Bangor.
1874. W. BALENTINE, Orono.
1875. E. F. HITCHINGS, Bucksport.
1876. N. P. HASKELL, Orono.
1877. S. W. GOULD, Skowhegan.
1878. E. C. WALKER, Lovell.
1879. F. E. KIDDER, Denver, Colo.
1880. A. H. BROWN, Oldtown.
1881. A. T. INGALLS, So. Bridgton.
1882. C. S. BICKFORD, Presque Isle.
1883. C. E. PUTNAM, Boston, Mass.
1884. G. H. ALLEN, Portland.
1885. J. N. HART, Orono.
1886. R. K. JONES, Findlay, Ohio.
1887. H. S. WEBB, Orono.
1888. W. J. HANCOCK, Saco.
1889. F. P. BRIGGS, Orono.

GRADUATES.

CLASS OF 1872.

Name and Occupation. *Residence.*

Benjamin F. Gould, C. E., Farming and Real Estate, Holliston, California

George E. Hammond, C. E., Civil Engineer, Navy Yard, Portsmouth, N. H.

Edwin J. Haskell, B. S., Silk Manufacturer..... Saccarappa

Heddle Hilliard, C. E., Civil Engineer ..... Oldtown

Eber D Thomas, B. S , Civil Engineer..... Grand Rapids, Mich.

George O. Weston, B. S., Farmer. .... Norridgewock

CLASS OF 1873.

Russell W. Eaton, C. E., Supt. Merchant's M'f'g. Co. Montreal, Quebec

George H. Hamlin, C. E., Professor Civil Engineering, Maine State College, Orono

Fred W. Holt, C. E. Supt. G. S. R. R.,..... St. George, N. B.

John M. Oak, B. S., Salesman .... Bangor

*Charles E. Reed, C. E., Agent Columbia Bridge Co., Dayton, Ohio

Frank Lamson Scribner, B. S., Professor Botany and Horticulture, University, Knoxville, Tenn.

Harvey B. Thayer, B. S., Druggist..... ..... Presque Isle

CLASS OF 1874.

William A. Allen, C. E., Chief Engineer, M. C. R. R ... Portland

Walter Balentine, M. S., Professor of Agriculture, State College, Orono

William H Gerrish, B S., M. D , Physician..... Royalton, Vt.

John I. Gurney, B. S., Florist..... Dorchester, Mass.

David R. Hunter, B. S... ..... Oakland, Cal.

Louise H. Ramsdell, B. S , (Mrs. Milton D. Noyes, Farmer,) Atkinson

*Deceased.

CLASS OF 1875.

Name and Occupation. *Residence.*

Solomon W. Bates, C. E., Solicitor of Patents and Mechanical Engineer, Portland
Wilbur A. Bumps, C. E., M. D., Physician.....Dexter
*Samuel H. Clapp, C. E., Teacher.....Danvers, Mass.
Lewis F. Coburn, C. E., Civil Engineer.....Crescent City, Cal.
Charles F. Colesworthy, B. S., Merchant.....Pendleton, Oregon
*Charles F. Durham, C. E., Teacher.....Crescent City, Cal.
Alfred M. Goodale, B. S., Supt. Boston M'f'g Co., Waltham, Mass.
Edson F. Hitchings, C. E., M. S., Instructor Natural Science, E. M. Con. Sem'y, Bucksport
Whitman H. Jordan, M. S., Director Agricultural Experiment Station, Orono
Edward D. Mayo, M. E., Mill Furnisher and Draughtsman, Minneapolis, Minn.
Albert E. Mitchell, M. E., Engineer of Signals, N. Y. & L. E. & W. R. R., New York City, N. Y.
Allen G. Mitchell, C. E., Div. Supt. Penn. R. R., Gallitzen, Penn.
*Fred L. Moore, B. S., Teacher.....California
Luther W. Rogers, B. S., Merchant.....Waterville
Minott W. Sewall, M. E , with Pneumatic Dynamite Gun Co., New York City.
George M. Shaw, C. E , Principal of Schools.....Oroville, Cal.
Wesley Webb, M. S., Editor Farm and Home.....Dover, Del.
*Edgar A. Work, C. E.....U. S. Military Academy

CLASS OF 1876.

Edmund Abbott, B. S., M. D., Physician.....Providence, R. I.
Charles P. Allen, B. S., Lawyer and Banker.....Presque Isle
Elbridge H. Beckler, C. E., Chief Engineer, and Supt. Mon. Cen. R'y, Helena, Mon.
Fred M. Bisbee, C. E., Druggist.....Wachita, Kansas
Edward M. Blanding, B. S., Editor Maine Industrial Journal, Bangor
Charles M. Brainard, B. S., Lumberman.....Skowhegan
*George H. Buker, B. S., Apothecary.....Presque Isle
Florence H. Cowan, B. S., Teacher.....Lynn, Mass.

*Deceased.

Name and Occupation. *Residence.*

Oliver Crosby, M. E Treasurer and Manager, American M'f'g Co., St. Paul, Minn.
Vetal Cyr, B. S., Principal Madawaska Training School, Fort Kent
James E. Dike, C. E., City Engineer and County Surveyor, Devil's Lake, Dakota
*Willis O. Dike, B. S. ..... Gorham
Horace M. Estabrooke, M S., Ass't Prin. Normal School, Gorham
Arthur M. Farrington, B. S., D. V. S., Ass't U. S. Bureau of Animal Industry, Washington, D. C.
George O. Foss, C. E., Ass't Engineer, N. P. R. R., Butte, Mon.
William T. Haines, B. S., L. L. B., Lawyer ..... Waterville
Henry F. Hamilton, B S., D. D. S., Dentist. ..... Boston, Mass.
Newall P. Haskell, B. S., Farmer ..... Orono
Edward S. How, M. E., Office Light House Board, Treas. Dept., Washington, D. C.
Philip W. Hubbard, B. S., Nursery Business... .. Alhambra, Cal.
Samuel M. Jones, M. E., Merchant ..... Worcester. Mass.
Albert A. Lewis, B. S., Clergyman ... . Bath
Herbert A. Long, M. E., Farmer..... ...Roque Island, Machias
Luther R. Lothrop, C. E., Division Engineer N. Pac. & Mon. R. R., Helena, Mon.
Nelson H. Martin, B. S., Clerk ..... Ft. Fairfield
Charles E. Oak, M. E., Lumberman ... .Caribou
George D. Parks, C. E., Lawyer and Civil Engineer, Fort Payne, Ala.
Hayward Pierce, B. S., West Waldo Granite Works .. Frankfort
Frank R. Reed, C. E., Carpenter ..... Roxbury
Henry J. Reynolds, B. S., Druggist ..... Eastport
Charles W. Rogers, M. E., Mechanical Engineer..... Chicago, Ill.
William L. Stevens, M. E., Commission Merchant, Minneapolis, Minn.
John H. Williams, B. S., Contractor & Surveyor, Elk River, Minn.

CLASS OF 1877.

Alvah D. Blackington, C. E., Chief Engineer, Erie & Wyoming R'y, Dunmore, Pa.
Robert B. Burns, C. E., Resident Engineer, A. & P. R. R., Williams, Arizona

*Deceased.

Name and Occupation. *Residence.*

Eugene H. Dakin, B. S., Sec'y and Treas., Industrial Journal, Bangor
Edward F. Danforth, B. S., Lawyer..... Skowhegan
Augustus J. Elkins, B. M. E., Ass't Manager Flour Mill, Fergus Falls, Minn.
Alicia T. Emery, B. S ..... Orono
Samuel W. Gould, B. S., Lawyer..... Skowhegan
*Joseph C. Lunt, B. C. E., Civil Engineer, Mex. C. R. R., El Paso, Texas
Fred F. Phillips, B. S., Ins. Agent ..... Portland
*Samuel Shaw, B. M. E., Architectural Draughtsman, Boston, Mass.
Frank P. Stone, B. S., Farmer ..... Livermore Falls
Thomas J. Stevens, B. M. E., Druggist ..... Portland
George E. Sturgis, B. C. E., Druggist..... Portland, Oregon
Charles E Town, B. C. E., U. S. Surveyor..... Helena, Montana
James W. Weeks, B. M. E., Architect .... No. Des Moines, Iowa
Nellie E. Weeks, B. S., (Mrs. Llewellyn Spenser) ..... Orono
Ivan E. Webster, B. S ..... Orono

CLASS OF 1878.

Emma Brown, B. S., Teacher (Mrs. Charles Gilman) ..... Enfield
Andrew J. Caldwell, B. M. E., Mech. Engineer, New York City, N. Y.
Cecil C. Chamberlain, B. S., Merchant ..... Anoka, Minn
George E. Fernald, B C. E., Salesman ..... Waterloo, Iowa
James Heald, B. S., City Engineer ..... Seattle, Wash.
John Locke, B. S..... With Maine Central R. R , Portland
Frank J. Oakes, B. C. E., Draughtsman..... Brooklyn, N. Y.
John C. Patterson, B. C. E., Ass't Engineer, N. P. R. R., Butte City, Mon.
Winfield E. Tripp, B. C. E., L.L. B., Lawyer ..... Ashland, Wis.
Edward C. Walker, B. S., Lawyer ..... Lovell
Otis C Webster, B. S., Druggist ..... Augusta

CLASS OF 1879.

Harry B. Bean, C. E., Chief Engineer, G. &. U. Railway, Grafton, Mass.

---

*Deceased.

Name and Occupation. *Residence.*

Edward J. Blake, C. E., Chief Engineer, C. B. & Q. R. R., Chicago, Ill.
Simon P. Crosby, B. S., Lawyer..... St. Paul, Minn.
John D. Cutter, B. S., M. D., Physician..... Chicago, Ill.
Wilbur F. Decker, M. E., Mech. Engineer .. Minneapolis, Minn.
David A. Decrow, B. C. E., Ass't Sup't and Ass't Engineer, Holly M'f'g Company, Lockport, New York
Willis E. Ferguson, B. S., Farming and Real Estate, Alhambra, California
Charles W. Gibbs, C. E., Chief Engineer, Silverton R. R., Silverton, Col.
Annie M. Gould, B. S., (Mrs. Loomis F. Goodale), St. Joseph, Mo.
*Nellie M. Holt, B. S., Teacher..... Orono
Frank E. Kidder, C. E., Architect..... Denver, Colorado
Mark D. Libby, B. C. E., Lawyer..... Kingman, Kan.
*Charles S. Loring, B. M. E., Machinist..... Lewiston
George P. Merrill, M. S., Ph. D., Curator, Nat. Museum, Washington, D. C.
John W. Meserve, B. M. E., Chief Draughtsman, Yale & Towne M'f'g Co., Stanford, Conn.
Arthur L. Moore, B. S., Farmer..... Waterville
Charles A. Morse, C. E , Div. Engineer, A. T. & S. F. R. R., Topeka, Kansas
Fred D. Potter, B. M. E , Engineer and Contractor, New York City
Alton J. Shaw, B. M. E., Draughtsman, E. P. Allis & Co., Milwaukee, Wis.
Percia A. Vinal, M. S., (Mrs. Albert White)..... Orono
George O. Warren, B. S., Farmer..... Fryeburg
Herbert Webster, B. S., Nursery Business..... Alhambra, Cal.

CLASS OF 1880.

Horace W. Atwood, B. S , D. V. S., Veterinary Surgeon, Brockton, Mass.
James M. Bartlett, M. S., Analytical Chemist, Agricultural Experiment Station, Orono
Albert H. Brown, B. S., Banker..... Oldtown

*Deceased.

Name and Occupation. *Residence.*

Marcie Davis, B. S , (Mrs. Joseph D. Stevens)..... Denver, Col.
Fred B. Elliot, B. S., Farmer.. .. .. Bowdoinham
Sarah P. Farrington, B. S., (Mrs. George P. Merrill),
Washington, D. C.
Charles W. Fernald, B. S., Merchant and Postmaster, So. Levant
Fred W. Fickett, M. S., Farmer and Lawyer ... Galveston, Texas
George W. Lufkin, B. C. E., Ass't Engineer W. &. N. R. R.,
Wilmington, Del.
Frank A. Mansfield, M. S., Clergyman..... Boston, Mass.
Annie A. Matthews, B. S., Teacher .... Stillwater
Henry W. Murray, B. C. E., Farmer and Teacher, Napa City, Cal.
Franklin R. Patten, C. E., Supt. Iron Works, Barnston,
Chester County, Pa.
Charles T. Pease, B. S., Division Engineer C. K. & N. R. R.,
Denver, Colorado
James F. Purington, B. S., Clerk, R. P. O.. ..... Bowdoin

CLASS OF 1881.

Henry H. Andrews, M. E , Bank Cashier..... Callaway, Neb.
Henry W. Brown, M. S., Instructor Metaphysics, Literary
Institute, New Hampton, N. H.
Clara L Buck, B. S., (Mrs. Thomas W. Hine), Phœnix, Arizona
Fannie E. Colburn, B. S., (Mrs. Arthur L. Fernald),
Omaha, Nebraska
Edward H. Farrington, M. S., Agricultural Chemist,
Champaign, Ill.
Oliver C. Farrington, M. S., Post Graduate, Yale College,
New Haven, Conn.
Charles H. Fogg, B. C. E., Civil Engineer and Lumber Merchant,
Greensburg, Pa.
Aldana T. Ingalls, B. C. E..... So. Bridgton
Robert J. Johnson, B. C. E., City Engineer Dep't..St. Paul, Minn.
Clara A Libby, B. S., Millinery and Fancy Goods..... Augusta
Horace F. McIntire, B. M. E., Millwright..... Waldoborough
Charles L. Moor, B. C E., Civil Engineer..... Hartland
*Benjamin F. Murray, B. C. E..... Stillwater

*Deceased.

Name and Occupation. *Residence.*

Edwin W. Osborn, B. C. E , N. Pacific R. R .. Brainard, Minn.
Oscar L. Pease, B. S. Station Agent So. Pac. R. R.,
Gila Bend, Arizona
Harold M. Plaisted, B. M. E. (M. E., Stevens Institute)
With H. A. Toutwin, Patent Expert, Springfield, Ohio
Alice I. Ring, B. S. .. ..Orono
Mary L. Ring, B. S., Teacher..... ..Orono
*Roscoe L. Smith, B. S., Farmer..... .....Lewiston
George W. Sturtevant, B. C. E., Civil Engineer and
Contractor, Minneapolis, Minn.
Frank S. Wade, B. S., M D., Physician....New Richmond, Wis.
Walter A. White, B. C. E., L. L. B., Lawyer..... .. Newport
*John B. Wilson, B. S., Medical Student..... ..... Orono
Levi A. Wyman, B. C. E., Lawyer and Civil Engineer...Ellsworth

CLASS OF 1882.

Charles S. Bickford, B. S., Editor Aroostook Herald, Presque Isle
Jacob L. Boynton, B. S. .. .. Marlboro, Mass.
Charles W. Brown, B. M. E., Draughtsman, Patent Office,
Washington, D. C.
Stephen J. Buzzell, B C. E., Civil Engineer .....Argyle
Oscar H. Dunton, B. M. E., Draughtsman,
With Harris Corliss Engine Co., Providence, R. I.
Walter Flint, M. E., Professor Mech. Engineering, M. S. C., Orono
George R. Fuller, B. S., Lawyer..... .....Tremont
Charles C. Garland, B. S., Banker and Dealer in Pine Land,
Minneapolis, Minn.
Joseph F. Gould, B. S., Lawyer.....Oldtown
Thomas W. Hine, B. S., Lawyer and Banker ...Phœnix, Arizona
Will R. Howard, B. S., Headmaster Northwestern
Military Academy, Highland Park, Ill.
Alonzo L. Hurd, B. S., Hampden Watch Co.... ...Canton, Ohio
Alfred J. Keith, B. C. E., Civil Engineer... ..... Oldtown
Frank I. Kimball, C. E , Mining Engineer.... .. Greensburg, Pa.
James H. Patten, B. S., M. D. Physician.....Ellsworth
Frederic M. Reed, B. M. E., Draughtsman,
B. &. S. M'f'g Co., Providence, R. I.
Gleason C. Snow, B. S., Farmer.....North Orrington

*Deceased.

Name and Occupation. *Residence.*

Avery P. Starrett, B. S., Farmer.....Warren
Frank H. Todd, B. C. E., City Engineer .....St. Cloud, Minn.
Eben C. Webster, B. S., Lumber Manufacturer.....Orono
Willard A. Wight, B. C. E., Supt. Gas Works.....Trinidad, Col.
Daniel C. Woodward, B. M. E., Draughtsman.....Madison, Wis.

CLASS OF 1883.

James H. Cain, B. S., Time Keeper.....Montague
Jonathan V. Cilley, B. C. E., Government Engineer,
Buenos Ayres, Arg. Rep., S. A.
Frank E. Emery, B. S., Superintendent Farm,
N. Y. Agricultural Expt. Station, Geneva, N. Y.
Arthur L. Fernald, B. S., Salesman..... Omaha, Nebraska
Bartholomew P. Kelleher, B. S , M. D , Physician. .....Orono
Lucius H. Merrill, B. S., Analytical Chemist,
Agricultural Experiment Station, Orono
Jennie C. Michaels, B. S , Teacher ..... Stillwater
Charles W. Mullen, B. C. E., Civil Engineer.....Oldtown
Truman M. Patten, B. C. E., Civil Engineer..... Bruce, Wis.
Harry W. Powers, B. S., Manufacturer.....Orono
Charles E. Putnam, B. C. E., Civil Engineer,
Franklin Park, Boston, Mass.
Lewis Robinson, Jr., B. M. E., M. D., Farmer.....North Bangor
George A. Sutton, B. C. E., Merchant.....Abbot
Levi W. Taylor, M. S., Principal Com. Dep't,
M. C. Institute, Pittsfield

CLASS OF 1884.

George H. Allan, B. S., Lawyer.....Portland
*Will H. Burleigh, B. C. E.....Vassalboro'
Mary F. Conroy, B. S., Teacher.....Brewer
Leslie W. Cutter, B. C. E., Contractor and Builder.....Bangor
Harriet C. Fernald, M. S., Library State College, Centre Co., Pa.
Elmer E. Hatch, B. S., Farmer.....Roseland, Mon.
John E. Hill, B. C. E., Civil Engineer.....Lander, Wyo.
Joseph G. Kelley, C. E., Civil Engineer.....Bar Harbor
Edwin F. Ladd, B. S., Chemist, Experiment Station,
Geneva, N. Y.

*Deceased.

Name and Occupation. *Residence.*

Clarence S. Lunt, B. C. E , City Editor Commercial.....Bangor
Fred L. Stevens, B. S., Medical Student.....Temple
William Webber, M. E., Draughtsman, McCormick H. M. Works, Chicago, Ill.

CLASS OF 1885.

George W. Chamberlain, B. S., Principal Grammar School, Farmington, N. H.
Asher Dole, B. C. E., Civil Engineer.....Superior, Wis.
Frank O. Dutton, B. S., Clerk.....Bar Harbor
Henry T. Fernald, M. S., Post Graduate in Biology, Johns Hopkins University, Baltimore, Md.
Elmer O. Goodrich, M. E., Engineer Ag. and Mech. Institute, Hampton, Va.
George L. Hanscom, B. S., Clergyman.....Bliss, N. Y.
James N. Hart, B. C. E., Instructor, Maine State College, Orono
Frank E. Hull, B. C. E., Civil Engineer.....Warren
Austin H. Keyes, B. C. E., Principal High School, Stonington, Conn.
William Morey, Jr., B. C. E., Draughtsman, U. S. Signal Office, Washington, D. C.
Joseph P. Moulton, B S., Farmer.....Springvale
Leonard G. Paine, M. E., Draughtsman, Pratt & Whitney Co., Hartford, Conn.
Elmer E. Pennell, B. M. E., Machinist, Locomotive Works, Providence, R. I.
Louis W. Riggs, B. M. E., Instructor Chemistry and Physics, Mt. Hermon, Mass.
Fremont L. Russell, B. S., D. V. S., Veterinarian to Agricultural Experiment Station, Orono

CLASS OF 1886.

Bert J. Allen, B. C. E., Principal High School.....Warren, Mass.
Josiah M. Ayer, B. C. E., Engineering Dep't B. & M. R. R , Boston, Mass.
George G. Barker, B. M. E., Draughtsman, McCormick H. M. Co., Chicago, Ill.
George F. Black, C. E., Asst. Engineer, M. C R. R.....Portland

Name and Occupation. *Residence.*

John D. Blagden, B. C. E., U. S. Signal Service,
Knott's Island, N. C.
Heywood S. French, C. E., Civil Engineer.....Boston, Mass.
Edwin D. Graves, C. E., Chief Engineer, Somerset R. R.,
No. Anson
Ralph K. Jones, B. S., With Kellogg, M'f'g Co.....Findlay, Ohio
Elmer Lenfest, B. C. E , Civil Engineer.....Snohomish, Wash.
James F. Lockwood, M. E., Draughtsman.....New York City
George F. Lull, B. S., Chemist, Penobscot Chem. Fibre Co.,
West Great Works
Willis H. Merrian, B. C. E., Lawyer.....Spokane Falls, Wash.
Elmer E. Merritt, M. E., Draughtsman, McCormick H. M. Co.,
Chicago, Ill.
Arthur D. Page, B. C. E , Civil Engineer.....St. Cloud, Minn.
Irving B. Ray, B. C. E .....Harrington
Sidney S. Twombly, B. S., Student Vet. Medicine, McGill
University, Montreal, Canada

CLASS OF 1887.

John H. Burleigh, B. C. E., Civil Engineer, N. M. R. R.,
Vassalboro'
Luis V. P. Cilley, B. C. E., Government Engineer,
Buenos Ayres, Argentine Republic, S. A.
Bert E. Clark, B. S., Law Student.....Bar Harbor
Daniel W. Colby, B. S., Ass't Chemist and Dairy Supt.,
Agr. Exp't. Station, Burlington, Vt.
Edwin V. Coffin, B. C. E., Clerk.....Harrington
Alice A. Hicks, B. S., (Mrs. Geo. F. Black).....Portland
James D. Lazell, B. M. E., Draughtsman.....Philadelphia, Pa.
Charles A. Mason, B. C. E., Civil Engineer.....Fresco, Cal.
Henry A. McNally, B. C. E., U. S. Signal Service,
Milwaukee, Wis.
Fenton Merrill, B. C. E., Civil Engineer, N. M. R. R.....Orono
Addison R. Saunders, B. M. E., Draughtsman....Tacoma, Wash.
Cassius A. Sears, B. C. E.....Fort Kent
Charles H. Stevens, B. M. E., Manufacturer....Grand Falls, N. B.
Charles F. Sturtevant, B. C. E., Civil and Hyd. Engineer,
Minneapolis, Minn.
Frank E. Trask, B. C. E., Civil and Hyd. Engineer, Ontario, Cal.

Name and Occupation. *Residence.*

Charles T. Vose, B. C. E., Ass't Engineer,
W. & N. R. R., Wilmington, Del.
Howard S. Webb, B. M. E., Instructor in Shop Work,
Maine State College, Orono
John S. Williams, B. S., Principal High School.....Guilford

CLASS OF 1888.

Hiram B. Andrews, B. C. E., Civil Engineer.....Boston, Mass.
*George S. Batchelder, B. M. E., Draughtsman.....Bangor
Charles D. W. Blanchard, B. C. E., Civil Engineer.....Old Town
John R. Boardman, B. S., City Editor,
Kennebec Journal, Augusta
Francis S. Brick, B. S., Principal High School....Berlin Falls, N. H.
Harry Butler, B. S., Instructor Academy.....Hampden
Dudley E. Campbell, B. C. E., Civil Engineer.....Brunswick
Fred L. Eastman, B. M. E., Rapid Transit R. R.,
Topeka, Kan.
Edward H. Ellwell, Jr., B. S., with Transcript.....Portland
William J. Hancock, B. S., Post Graduate,
Cornell University, Ithica, N. Y.
John W. Hatch, B. S., Principal High School .....St. Albans
Claude L. Howes, B. M. E., with Thompson Houston
Electric Co., Lynn, Mass.
Harry F. Lincoln, B. S., with Thompson Houston Electric Co.,
Cardenas, Cuba
Thomas G. Lord, B. S., Farmer .....Skowhegan
Ralph H. Marsh, B. S., Principal High School.....Searsport
Seymore F. Miller, B. C. E., Draughtsman.....Chelsea, Mass.
William Philbrook, B. C. E., Washburn Shop,
Polytechnic Institute, Worcester, Mass.
Seymour E. Rogers, B. M. E., Draugtsman.....St. John, N. B.
George E. Seabury, B. M. E., Draughtsman,
M. C. R. R., Waterville
Frank L. Small, B. M. E., Draughtsman.....Freeport
Frank A. Smith, B. C. E., Civil Engineer.....St. Cloud, Minn.
Nathaniel E. Wilson, B. S., Post Graduate,
Cornell University, Ithica, N. Y.

*Deceased.

CLASS OF 1889.

Name and Occupation.	*Residence.*
Fred P. Briggs, B. S., Assistant in Natural History,	Maine State College, Orono
Charles G. Cushman, B. M. E., Draughtsman,	Trenton Iron Co. Trenton, N. J.
Joseph W. Edgerly, Jr., B. C. E.	Princeton
Jere S. Ferguson, B. S. Teacher	Searsport
George G. Freemen, B. S., Law Student	Cherryfield
George M. Gay, B. S., Clerk	Damariscotta
Eben R. Haggett, B. S	Newcastle
Nellie L. Leavitt, B. S	Norridgewock
John Reed, B. C. E., Civil Engineer	So. Gardiner
Nellie W. Reed, B. S.	Stillwater
*Fred Stevens, B. M. E	Winter Harbor
Gilbert S. Vickery, B. C. E.	Bangor
Mark E. White, B. C. E., Surveyor and Overseer	Fort Kent
Mortimer F. Wilson, B. S., Clerk	Orono

*Deceased.

NON-GRADUATES.

Average period of attendance, one and a half years.

Present residence not being known, the former residence is given.

Special students are marked in the classes with which they principally recited.

[Corrections for a revised list are solicited.]

CLASS OF 1872.

Name and Occupation.	*Residence.*
John T. Bowler, Register of Deeds	Bangor
William H. Cary, Jr	St. Paul, Minn.
Edward F. Fisher	San Diego, Cal.
William H. George, Clergyman	Topeka, Kansas
William L. Harlow, Farmer	Buckfield
George L. Macomber	Durham
Charles C. Norton	Buffalo Meadows, Nevada
William B. Oleson, Clergyman	Honolulu, Sandwich Islands
Frank W. Rollins, Teacher	Stillwater, Minn.
Oren S. Sargent, M. D., Physician	Lawrence, Mass.
*Marcus P. Shorey	Oldtown
Benjamin F. Watson, Farmer	Levant

CLASS OF 1873.

William H. Claflin, Merchant	Boston
Joseph E. P. Clark, Book Business	Minneapolis, Minn.
*John Jackson	Alfred
Samuel Lane, Insurance Agent	Houlton
Wilbur F. Lovejoy, Book-Keeper	Winn

*Deceased.

Name and Occupation.	*Residence.*
Thomas P. Pease	Bridgton
Clarence Pullen, on Editorial Staff, Harper's Weekly,	New York City, N. Y.
Frederic A. Ransom	Augusta

CLASS OF 1874.

Frank P. Burleigh	Springfield
*Mark E. Burnham	Garland
Louville Curtis	Bowdoinham
Roland Curtis, M. D., Physician	Bowdoinham
*Samuel C. Moore	Cherryfield
Charles F. Osgood, Farmer	Garland
*William H. Reed	Springfield
George I. Trickey, Lawyer	Caribou
Manley H. Whitehouse	Orrington
Edward R. Wingate, Lumber Business	Cherryfield
William I. Wood, Lawyer	Corinna

CLASS OF 1875.

Gustavus Bellows, Farmer; Specialty, Fruit	Freedom
Leander H. Blossom, Farmer	Turner
John H. Carver, Clerk	Boston, Mass.
William B. Dole, Mechanic	Bangor
George N. Gage, Physician	E. Washington, N. H.
Benson H. Ham, Merchant	Charleston
Alton A. Jackson, M. D., Physician	E. Jefferson
Manley Jackson, Organ and Sewing Machine Business	Jefferson
Freeland Jones, Merchant and Surveyor	Caribou
Ora Oak	Caribou
Sidney S. Soule, Farmer	Freeport
Louis C. Southard, Lawyer, Boston	Residence, North Easton, Mass.
*George W. Spratt, Merchant	Bangor
Charles H. Spring, Wool Grower, Buenos Ayres, Arg. Rep., S. A.	

*Deceased

CLASS OF 1876.

Name and Occupation	*Residence.*
Francis H. Bacon, Architect	Boston, Mass.
Russell A. Carver	Dixfield
Frank P. Gurney, Farmer	Dover, Dakota
*Frank A. Hazeltine, Farmer	Dexter
Eugene L. Hopkins	Oldtown
James W. Linnell, Farmer	Exeter
George J. Moody, Lawyer	Montesano, Wash. Ter.
Webster Mudgett	Albion
Edward B. Pillsbury, Manager Postal Tel. Co.	Boston, Mass
Randall H. Rines, Merchant, (Rines Brothers)	Portland
Walter F. Robinson, Signal Service	Washington, D. C.
Edward C. Shaw, with American Watch Co.	Waltham, Mass.
Frank E. Southard, Lawyer	Augusta
Frank P. Whitaker, Physician	Hermon

CLASS OF 1887.

Charles F. Andrews	Biddeford
Fred S. Bunker, (A. B., Harvard)	City Hospital, Boston, Mass.
*Edson C. Chase	Stillwater
William W. Dow, Printer	Rehoboth, Mass.
James T. Emery	Stillwater
Charles M. Freeman	Portland
*Frank H. Goud, Clerk	Fort Fairfield
Austin I. Harvey, M. D., Physician	Carmel
Menzies F. Herring, Editor and Publisher	Dexter
Ardean Lovejoy	Orono
Fred B. Mallett, Lumbering Business	Minneapolis, Minn.
Fred L. Partridge	Stockton
Fred H. Pullen	Foxcroft
*Frank E. Reed	Springfield
Woodbury D. Roberts, Merchant	Cheney, Wyoming
Thomas B. Seavy, Clerk	Chicago, Ill.
Henry C. Townsend, Farmer	Fort Fairfield
Clara E. Webb, Teacher	Unity
Fred S. Wiggin, Farmer	Presque Isle
William B. Whitney	Iowa

*Deceased.

CLASS of 1878.

Name and Occupation.	*Residence.*
Charles H. Benjamin, M. E., Professor Mech. Engineering, Case School of Applied Science,	Cleveland, Ohio
Eugene M. Berry	Sumner
*Nathaniel A. Crocker	W. Enfield
Charles C. Elwell, Ass't Engineer, W. & N. R. R.,	Wilmington, Del.
Howard H. Hartwell	Vinalhaven
John E. Haynes, Jeweller	Oldtown
Fred H. Hinckley, Clerk in U. S. Land Office	Eureka, Nev.
Richard S. Howe	Fryeburg
Samuel C. Jameson, Merchant	Providence, R. I.
William S. Jameson, Dealer in Sugar Machinery,	Guadalajara, Mex.
Edgar H. Lancaster, Mechanic in R. R. Shop	Oldtown
*Alvra W. Leathers	Dover
James Lunt	Bangor
Herbert A. Mallett, Lumberman	Stillwater, Minn.
Silas H. Miller, Prospecting for Gold and Silver,	Fairplay, Colorado
Frank J. Perkins, Merchant	Oldtown
Charles F. Plumbley, Merchant	Lincoln
John O. Richardson, Merchant	Oldtown
A. Judson Small	No. Lubec
Albert H. Stewart, Piano Regulator	Boston, Mass.
Edson Warriner, Watchmaker and Jeweller	Fryeburg
Erastus G. Weeks, Merchant	Jefferson

CLASS OF 1879.

Daniel Allison	Linneus
Arthur P. Brown, Principal High School	Bradley
Benjamin V. Carver, Machinist	Hartford, Conn.
Frank Clergue, Lawyer	Bangor
Byron H. Cochrane	Woonsocket, R. I.
Fred A. Colburn, Clerk and Scaler	Stillwater, Minn.
James W. Cousens, Merchant and Postmaster	Stillwater
John A. Curtis, Civil Engineer	Delta, Col.
George A. Dustin, Machinist and Trader	Dexter

*Deceased.

Name and Occupation. *Residence.*

Loomis F. Goodale, Civil Engineer St. J. & C. B. R. R., St. Joseph, Mo.
Edwin A. Hawes, Mechanic.....Ontario, Cal.
*Edwin C. Johnson.....Gorham
John N. Knapp.....Bradley
Oliver S. Jones, Farmer.....Corinna
Albert Y. Merrill, Lawyer, Judge of Probate.....Aitkin, Minn.
Asa C. Morton, Clerk.....Bangor
Harry W. Peakes, Merchant.....Charleston
David S. Plummer, Book-Keeper.....Boston, Mass.
*Eugene G. Smith.....Richmond
William N. Titus, Lawyer, Boston.....Residence, Woburn, Mass.
Howard E. Webster, Lumberman.....Orono
Arthur L. Wellington, Shipping Agent.....Detroit, Mich.
Charles M. Wilson.....San Francisco, Cal.

CLASS OF 1880.

Charles M. Allen, Teacher Pratt Institute.....Brooklyn, N. Y.
Edward N. Atwood.....Portland
Granville Austin, Salesman.....Boston, Mass.
Sylvester A Brown, Clerk.....Boston, Mass.
*Ada M. L. Buswell, Teacher.....Minneapolis, Minn.
Charles E. Cheney, Farmer.....W. Scarboro'
Woodbury F. Cleveland, M. D, Physician.....Eastport
Samuel H. Dyer.....Yarmouth
Osgood E. Fuller, Druggist.....Albany, N. Y.
Harry H. Goodwin, Editor.....Denison, Tex.
John B. Horton, Book-Keeper.....Sandusky, Ohio
Daniel S. Jones, Watchmaker and Jeweller.....Kansas
*Charles W. Nash.....Addison
Willis L. Oak, Clerk.....Presque Isle
Fred W. Powers, Farmer and Teacher.....Fryeburg
Emily I. Ramsdell, Teacher.....Atkinson
*Mortier C. Randall.....Stillwater
William J. Rich, Chemist, Cambria Iron Co.....Johnstown, Pa.
Charles S. Simpson, Civil Engineer and County Surveyor, Florence, Wis.

*Deceased.

Name and Occupation.	*Residence.*
Frank A. Spratt, A. B., Principal Academy	Hampden
Daniel Webster, Express Agent	Augusta
Arthur Wentworth	Orrington

CLASS OF 1881.

Henry W. Adams, Lumberman	Wisconsin
*Lorin T. Boynton	Ashland
Charles P. Chandler, Machinist	New Gloucester
Elmer C. Chaplin, Salesman	Bangor
*Frank P. Fessenden	South Bridgton
Archy S. Gee, Clerk	Minneapolis, Minn.
George W. Holmes, Merchant	Norway
John F. Horne, Shoe Manufacturer	Auburn
Benjamin L. Johnson	Portland
Edward C. Luques, Broker	Biddeford
Charles S. Macomber, Lawyer	Carrollton, Iowa
Charles S. D. Nichols, Farmer	Hollis
James M. Nowland, Farmer	Ashland
Charles C. Ross, Commercial Salesman	St. Stephen, N. B.
Clara Southard, (Mrs. Hammond)	Lincoln Center
*Charles P. Tidd, Tel. Operator	Forest Green, Missouri
Harry P. Tidd, Teacher	Higginsville, Missouri
William R. Tilden, Workman in Shoe Factory	Campello, Mass.
William A. Vinal, Scaler	Orono
William G. Wales	Monticello, Iowa
Frank B. Weeks, Government Quartermaster's Office,	San Francisco, Cal.
Flora Welch, Nurse	Boston, Mass.
George H. Wilson, Clerk, Gov. Storehouse	Maricopa, Arizona

CLASS OF 1882.

Joseph B. Bartlett, Farmer	Ashland
Charles E. Chapin, Salesman	Boston, Mass.
Charles C. Dunn, Farmer	Ashland
Charles W. Fenlason	Bridgewater
*John J. Greenlaw, Merchant	No. Fryeburg
William H. Hatch, Grocer	Lisbon
Wesley J. Jameson, Clerk	St. Paul, Minn.

*Deceased.

Name and Occupation.	*Residence.*
Frederick A. Kenniston, Salesman	Brockton, Mass.
Frederick O. Kent	Bremen
Walter H. Nason, M. D., Physician	Hampden
Atta L. Nutter, Teacher	Wilmington, N. C.
Parker J. Page	Orono
Harry K. Poole	Bremen
Louis K. Tilley, Farmer	Castle Hill

CLASS OF 1883.

George R. Currier, Teacher	E. Wilton
Arthur T. Drummond, Farmer	Sidney
William E Emery, M. D., Physician	Surry
Norman F. Kelsea, Clerk	Brockton, Mass.
Edwin P. Kendall, Farmer and Miller	Bowdoinham
*Henry W. Longfellow, Clerk	Machias
Charles S. Murray	Stillwater
George A. Rich, A. B., On Editorial Staff Journal	Boston, Mass.
Everett F. Rich, Clerk, Bangor Savings Bank	Bangor
Ralph Starbird, Lumber Dealer	San Francisco, Cal.
Ralph R. Ulmer, Lawyer and Clerk of Court	Rockland
Frank C. Webster, Clerk, American Express Co	Bangor
Frank G. Webster, Clerk	Orono
Lewis H. White, M. D., Physician	Lincoln Center

CLASS OF 1884.

Edward S. Abbott, M. D., Physician	Bridgton
Edward M. Bailey, Merchant	Bangor
Joseph B. Bartlett	Nottingham, N. H.
William A. Berry	Hampden
James A. Dunning	Virginia City, Nev.
Freeland Ellis, Clerk	Guilford
Eugene L. Folsom, Machinist	Stillwater
Evie M. Hamblen	Stillwater
Robert S. Leighton	Steuben
*Gilbert Longfellow, Jr	Machias
Cephas R. Moore, Merchant and Postmaster	Anson

*Deceased.

Name and Occupation.	*Residence.*
William R. Pattangall	Petersboro, N. H.
Robert C. Patterson, Stenographer	St. Paul, Minn.
Charles S. Pendleton, Farmer	Philbrook, Montana
Herbert L. Rich, Ins. Nat. Sci. Laselle Acad'y,	Auburndale, Mass.
Flora M. Ricker (Mrs. P. J. Page)	Orono
Warren J. Ridley, Conductor, Street R. R	South Boston, Mass.
Elmer A. Savage	Minneapolis, Minn.
Mertie Sawyer	Hampden
Charles F. Smith, Prin. High School	Lenox, Mass.
*Horace G. Trueworthy	Orono
Jotham Whipple, Jr.	Solon

CLASS OF 1885.

James W. Bishop, Farmer	Milo
Frederick H. Butler, Division Engineer, T. St. L. & K. C. R. R.,	Charleston, Ill.
Harry W. Davis, Banker	Church's Ferry, No. Dakota
Fred W. Dickerson	Belfast
Samuel W. Hill	Machias
Willard A. Libby	Denver, Col.
Charles L. Libby, Supt. Tool Works	Bridgeport, Conn.
*Frank E. Manter	Milo
Dennis D. Merrill, Steam Laundry	Auburn
Dudley W. Moor, Jr., Real Estate	Toledo, Ohio
Carl H. Prince, Farmer	Turner
Elisha C. Vose, U. S. Signal Service and Journalist	Chicago, Ill.

CLASS OF 1886.

Eugene C. Bartlett, Medical Student	Orono
John I. Chase, Clerk	Los Angeles, Cal.
Charles H. Merriam	Fort Laramie, Wyoming Ter.
Harry E. Powers, Mechanic, Iron Works	Bath
Harold E. Trueworthy, Farmer	Houlton

*Deceased.

CLASS OF 1887.

Name and Occupation.	*Residence.*
Alton D. Adams, with Mather Electric Co	St. Paul, Minn.
John W. Allen	Presque Isle
Alice Benjamin	Oakland
Irving M. Clark, Civil Engineer	Seattle, Wash.
Jennie L. Dority	Wells
Wm. J. Harris	Groton, Mass.
Austin D. Houghton, Instructor Clark Institute	Atlanta, Ga.
James S. Kennedy	Ludlow
William L. Perham	Paris
Wm. P. Sherburn	Dover
Frank L. Tucker	Norway
Charles W. Wentworth, Lawyer	No. Windham
Rodney A. B. Young, Medical Student	Baltimore, Md.
Alfred S. Ruth, Resident Engineer, P. S. & G. H. R. R.,	Summit, Wash.

CLASS OF 1888.

Charles W. Breed, Clerk	Philadelphia, Pa.
Albion H. Baker	Boston, Mass.
James K. Chamberlain, Plumber and Sanitary Engineer	Bangor
*Frank P. Collins	Ft. Fairfield
Fred T. Drew	Orono
George K. Hagerthy	So. Hancock
Fred H. Kirkpatrick, Engineer Md. Cen. R. R.	Baltimore, Md.
Hannah E. Leavitt (Mrs. Walter Flint)	Orono
Edwin B. Lord	Stillwater
Alphonso F. Marsh, Clerk	Oldtown
Frank J. Page	Orono
Henry F. Perkins, Mechanic	Oakland
Nathan A. Ring	Orono
Charles C. Rolfe, Teacher	Presque Isle
Abram W. Sargent	Seattle, Wash.
Joseph S. True, Farmer	New Gloucester
Ernest H. Turnbull	St. John, N. B.

*Deceased.

CLASS OF 1889.

Name and Occupation.	*Residence.*
Benjamin R. Clark	No. Lubec
George G. Fernald	Wilton
Arthur M. Folsom	Oldtown
Charles B. Gould	Orono
Elmer E. Greenwood, M. C. R. R.	Twin Mountain, N. H.
Temple Grosvenor	Canterbury, N. B.
Lewis F. Johnson	LaGrange
Cora A. Leavitt (Mrs. Frank L. Parker)	Norridgewock
John E. Littlefield	Brewer
Albert L. Lyford, Prin. Com. Dept., Maine Wesleyan Seminary,	Kent's Hill
*Maude A. Matthews	Stillwater, Me.
Clara Rogers	Hampden
William H. Sargent	Brewer Village
Frederick L. Thompson, Medical Student	Augusta
Norman Tripp	Unity
Fred H. Webb, Mechanical Engineer	Skowhegan
Ambrose H. White, Trenton Iron Company	Trenton, N. J.

CLASS OF 1890.

Charles A. Dillingham	Oldtown
George W. Hodgdon	Rumford
John W. Lewis	Milton Mills, N. H.
Herbert B. Rowell	Solon

CLASS OF 1891.

Arthur W. Andrews	Biddeford
Leslie A. Boadway	Orono
Robert W. Fuller	Newtonville, Mass.
William A. Harlow	Milford
Edwin W. Hodgdon	Brewer
Byron C. Hodgkins	Stillwater
Joseph M. Jackson	Boothbay
Charles H. Maling	Brewer
Jay P. Norton	York Corner
Arthur M. Otis	Grafton
Robert M. Packard	Rockland
Clifford I. Pillsbury	Rockland

CLASS OF 1892.

Name and Occupation.	*Residence.*
George A. Bailey	Dexter
Edwin T. Clifford	Leeds
George C. Hamilton	Dexter
Harry S. Thompson	Dexter

CALENDAR.

1889—Feb. 4,	Tuesday, Second Term commences.
June 19, 20,	Thursday and Friday, Examinations.
" 21,	Saturday, Prize Declamations by Sophomores.
" 22,	Sunday, Baccalaureate Address.
" 23,	Monday, Prize Essays by Juniors.
" 25,	Wednesday, Commencment.
" 27,	Friday, Examination of Canditates for Admission.
	Vacation of five weeks.
Aug. 5,	Tuesday, Examination of Candidates for Admission.
	First Term commences.
Nov. 24, 25,	Monday and Tuesday, Examinations.
	Vacation of eleven weeks.
1890—Feb. 3,	Tuesday, Second term commences.