

(March 92)

NHDHR Determination of Eligibility (DOE)

Date received: August 31, 1992 Inventory #: *DUR0009*
 September 23, 1992 --
 Date of group review: October 21, 1992 Area: --
 DHR Staff: Linda Wilson Town/City: Durham (D14)
 Property name: Morrill Hall County: Strafford (09C)
 Address: University of NH
 Durham NH

Reviewed for: R&C-USDOE energy grants PTI NR SR Survey

Individual Properties	Districts
NR SR	NR SR
<input checked="" type="checkbox"/> <input type="checkbox"/> Eligible	<input type="checkbox"/> <input type="checkbox"/> Eligible
<input type="checkbox"/> <input type="checkbox"/> Eligible, also in district	<input type="checkbox"/> <input type="checkbox"/> Not eligible
<input type="checkbox"/> <input type="checkbox"/> Eligible, only in district	<input type="checkbox"/> <input type="checkbox"/> More info. needed
<input type="checkbox"/> <input type="checkbox"/> Not eligible	<input checked="" type="checkbox"/> <input type="checkbox"/> Area not evaluated as a district
<input type="checkbox"/> <input type="checkbox"/> More information needed	
<input type="checkbox"/> <input type="checkbox"/> Not evaluated for individual eligibility	

Integrity: Location Design Setting Materials
 Workmanship Feeling Association

Criteria: A. Event B. Person C. Architecture
 D. Archaeology E. Exception

Level: Local State National

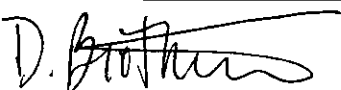
Period of significance: 1903

Statement of significance: Morrill Hall is significant under National Register criterion A as the first building built as an "agricultural hall" at the Durham campus of New Hampshire's land-grant college, precisely because the college's agricultural offerings had been so successful. The connection is emphasized by its name, which honors Justin Morrill of Vermont, the US Senator who originated the land-grant college legislation.

Although the interior of Morrill Hall has been altered several times, the exterior retains visual integrity virtually identical to its historic appearance in photographs of c. 1906 (Sackett, 46 and 52) and c. 1941 (University of New Hampshire, n.p.). It continues to strongly convey its historic significance as one of the first academic buildings on the Durham campus.

Follow-up: Notify UNH.

Final DOE approved by:



date:

10/27/92

NHDHR Inventory # DUR0009

CODE

NEW HAMPSHIRE DIVISION OF HISTORICAL RESOURCES
***** INDIVIDUAL RESOURCE INVENTORY FORM *****

Included in Area _____

County STRAFFORD

Town/City DURHAM

Address COLLEGE & MAIN

Current owner UNIV. OF NH

Property Name MORRILL HALL

Acreage _____

Tax map/parcel# SP: 1179736 233122

UTM ref. _____

USGS Quadrangle _____ scale _____

Use: present CLASSROOM/OFFICES

original SAME

Exterior building materials:

Roof: SLATE Walls: RED BRICK

Foundation: CONCRETE Chimney: _____

of stories: 3 + BASEMENT Roof shape: _____

Chimney location: _____ Entry location: _____

Sash type: DH-SG Plan configuration: _____

Major alterations (with dates): 1930, 1960,
1970, 1973, 1987

Condition: GOOD Outbuildings: _____

Setting: COLLEGE CAMPUS

Architect/Builder: _____

source: _____

Original construction date: 1914 1903

source: _____
multiple building campaigns (see back)

Style: _____

Moved: _____ date: _____

Surveyor: _____

Recorded by: _____

Date of field survey: _____



photographer facing: _____
photograph date: _____
roll# _____ frame# _____
negative stored at: _____

Location map indicate North with arrow

Property map indicate North with arrow

AUG 31 1992

Project ID# _____
NHDHR Inventory # _____

ARCHITECTURAL DESCRIPTION AND COMPARATIVE EVALUATION:

)
) SEE ATTACHED 2 PAGE BUILDING DESCRIPTION

HISTORICAL BACKGROUND and role in Town's/City's development:

) NATIONAL REGISTER CRITERIA STATEMENT OF SIGNIFICANCE:
)

PERIOD OF SIGNIFICANCE:

STATEMENT OF INTEGRITY:

BIBLIOGRAPHY and/or REFERENCES:

APPLICABLE HISTORIC CONTEXT(S) with code:

Surveyor's Evaluation:

NR listed:	individual	_____	NR Criteria:	A	_____	NR eligible:	
	within district	_____		B	_____	individual	_____
				C	_____	within district	_____
Integrity	yes	_____		D	_____	not eligible	_____
	no	_____				more info. needed	_____

DUR0009

NHDHR Inventory # -- [Morrill Hall]
NHDHR Area Letter --
Town/City Durham
Sheet 1 of 3

March
1990

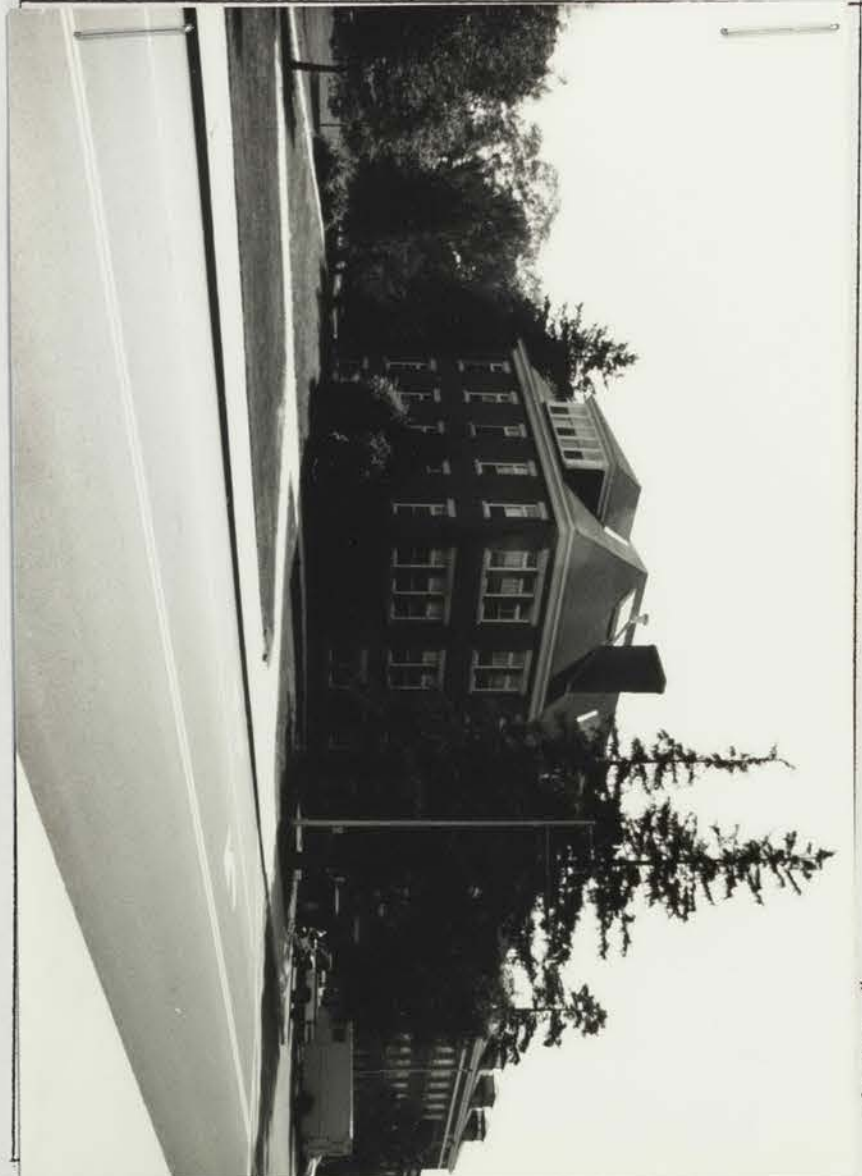


photo #



photo #



photo #

Description of photographs:

Photo # 1 Elevation 1/2

Photo # 2 Elevation 2/3

Photo # 3 Elevation 3

DJR0009

NEW HAMPSHIRE DIVISION OF HISTORICAL RESOURCES - CONTINUATION SHEET - PHOTOS

NHDHR Inventory # -- [Morrill Hall]
NHDHR Area Letter --
Town/City Durham
Sheet 2 of 3

March 1990



photo #



photo #



photo #

Description of photographs:

Photo # 4 Elevation 3/4

Photo # 5 Elevation 3/4

Photo # 6 Elevation 4

DUR0009

NHDHR Inventory # -- [Morrill Hall]
NHDHR Area Letter --
Town/City Durham
Sheet 3 of 3

March
1990

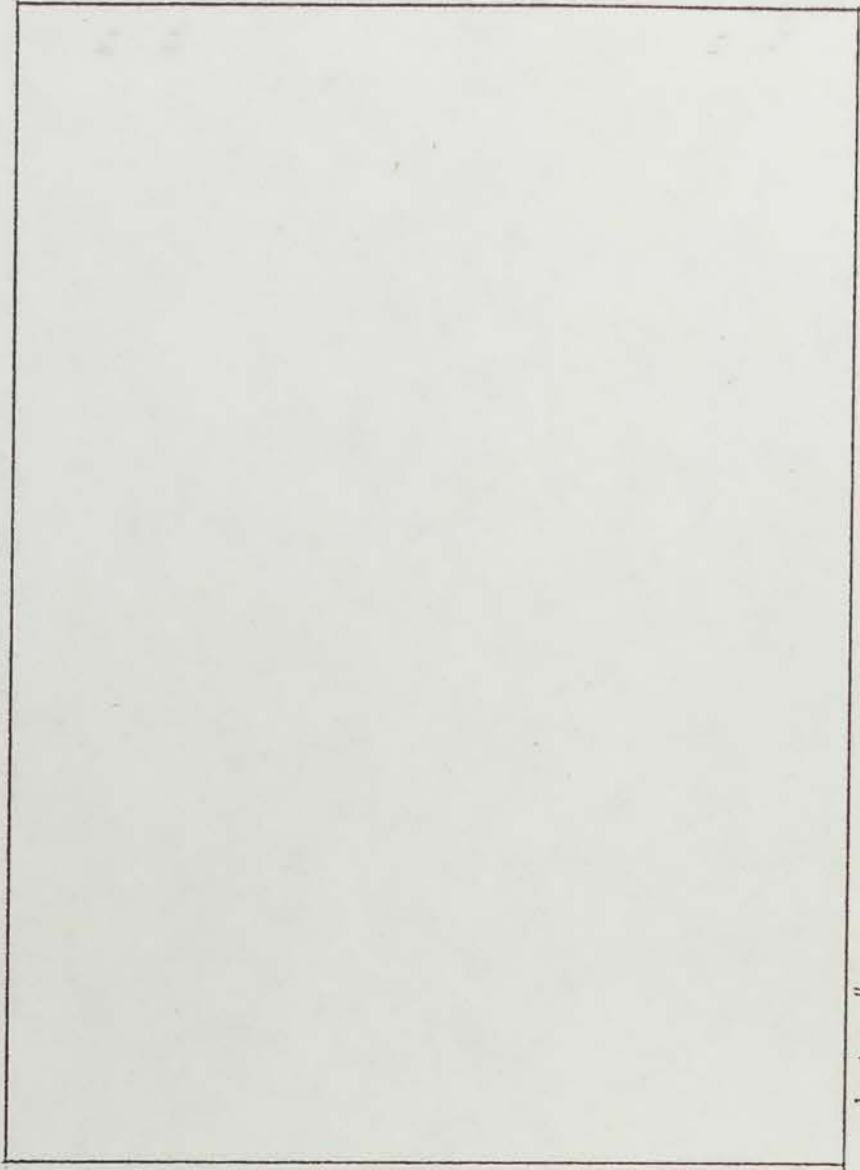


photo #

photo #

Description of photographs:

Photo # 7 Elevation 4/1

Photo #

Photo #

photo #

HISTORY OF UNIVERSITY OF NEW HAMPSHIRE

The third large request was for a creamery building, which was estimated to cost \$20,000. This report was the one which asked for the money for a school of mines. Altogether the report indicated needs totaling about \$120,000 for new buildings and equipment. Although one or two of the requests might have been considered unwise, none of them was immediately granted.

The problem of current expenses, about which President Murkland had complained during the hearings on the Leach bill, arose repeatedly. The federal funds were used entirely for the costs of instruction and equipment. All the income of the Conant fund was given out in scholarships, two-thirds of the value of which was paid back to the school for tuition and library fees. In 1896, the trustees' report said that, "Not one student pays the tuition fee of \$60 without first receiving it in the form of a scholarship." There was no income to take care of operating expenses and incidentals.

"For all these [the report said] the state must provide, or surrender its claim to the generous sums granted by the general government . . . Not simply the welfare of this institution, but the essential honor of the state is at stake."

Beginning in 1900, the state appropriated \$7,500 a year for current expenses. But the college was already so far behind in this respect that a debt of \$17,000 still remained when President Gibbs took office.⁴

On three different occasions, the trustees protested against the policy of the state treasurer in selling off the assets of the Thompson estate and using the income for current state expenses. Although they granted that this had a very satisfactory effect on the state tax rate, they held that it would lead to difficulty in the future when the state would be forced to pay the stipulated interest, amounting to nearly \$36,000, out of current income. The state was required to put aside annually \$14,552.93 to meet the conditions of the will, but since the Thompson estate had been bringing in more than the four percent fixed by the will, the trustees suggested that, "All income in excess of this amount should be computed at the same rate of interest and the amount

⁴At one time, after stating the need for an agricultural building in strongest terms, the trustees added that even if it were built, the college could not maintain it from current income.

Fron Jim

THE ADMINISTRATION OF PRESIDENT MURKLAND

credited to the college." If this had been done, the total additional income due the college would have amounted to nearly \$18,000, which would have almost equalled the cost of the annual appropriations of \$3,000 required by the Thompson will. Therefore, the cost to the state could have been kept down to practically nothing. The trustees felt it was hardly fair to refuse the college needed improvements while failing to give it the full benefit of its endowment.

The trustees were also indignant over the fact that the \$15,000 paid the college by the state to compensate it for Culver hall was listed as an appropriation for the state college. Actually, it should have been considered a gift to Dartmouth, since the latter college was relieved of paying the sum which it properly owed. This was not a point of great importance, but it helped make a stronger argument for greater generosity to the state college.

The greatest need, and the first to be met, was that for an agricultural building. The growth of the agricultural courses, particularly after the starting of the two-year courses, crowded the classrooms and made it difficult to maintain a proper standard of work. Not until 1901 was a bill finally introduced in the legislature asking for \$60,000 for an "agricultural hall." Committees of the legislature made three visits to Durham to examine the situation. After considerable debate, including violent opposition by several leading newspapers, the sum of \$30,000 was finally granted for the purpose. This was, of course, something but not enough to construct the building properly. The next fall, work had not yet been begun, due to the uncertainty of the college authorities as to the legislature's intentions. The building committee met, finally, in March, 1902, at Durham, and decided to award the contract for as much of the building as they had money for, to Walter H. Sargent, a Concord contractor. They decided that the third floor should be left unfinished until enough money could be secured to complete the building.⁵

The next legislature relented to the extent of giving \$15,000 more for the building which enabled the college authorities to have it completed very nearly in accordance with their original plans by practicing rigorous economy. Some of the lumber for

⁵The *College Monthly* suggested that the third floor might be used as a baseball cage. The suggestion was not greeted with enthusiasm.

DUR 0009

HISTORY OF UNIVERSITY OF NEW HAMPSHIRE

the building was cut from the college forest lands, a fact which was repeatedly pointed out with great pride.

According to the *College Monthly*, the new building included—in the basement: a photography room, a lecture room, an exhibit of agricultural implements, and a workshop; on the first floor: two classrooms, a soil physics laboratory, a reading room, and five offices; on the second floor: a horticultural laboratory and refrigerator, a forestry laboratory, a lecture room, a library, a herbarium room, and five offices. The third floor was to include an agricultural society room equipped with a stage and an architectural drawing room but was not entirely completed until 1914. The building was finally completed and accepted by the trustees in June, 1903. It was dedicated and given the name of Morrill hall, in honor of Senator Justin Morrill, at the inauguration of President Gibbs, the following October.

The first greenhouse, 25 by 45 feet, was built in 1895. A second unit, 41 by 100 feet, with a potting house and photographers' room attached, was constructed in 1897. Both were on the site of the barn which had been burned. The smaller of the two greenhouses was used chiefly to grow specimens for horticultural work. By 1903, still further expansion was needed, and a new greenhouse, costing \$7,000, was built during the summer.

A small creamery had been built near the original barn in 1894. The college authorities made repeated requests for sufficient money to build a larger and better planned building. In 1898, the trustees reported that the creamery was doing a business of \$1,000 a month and was practically self-supporting. A short while before this, it had been announced that a new creamery was to be built between the barn and the shops, and the existing building would be divided into rooms for the use of the college employees. This plan had to be delayed for lack of funds.

On two occasions the college found itself compelled to destroy part of its herd of cows because of tuberculosis. About half the herd had been sold in 1895 because it was not considered representative of good New Hampshire herds. At that time, tuberculosis was discovered, and about a third of the herd had to be killed, resulting in a loss to the school of over \$1,000. President Murkland wrote a bulletin for the Experiment station about this experience. In 1901, there was another outbreak of tuberculosis, and 22 cows had to be killed. In spite of these troubles, the dairy work of the school increased steadily in importance.

THE ADMINISTRATION OF PRESIDENT MURKLAND

The model barn, which had so upset the thrifty souls of some of the visitors of the college when the barn was first constructed, was burned to the ground on November 3, 1894. Students and townspeople worked furiously but in vain to save the building. The *College Monthly* praised the efficiency of the students, which it ascribed to military drill. The new college fire apparatus was used to save Nesmith hall and the creamery by playing water on them from four hoses attached to a nearby hydrant. Including the loss of tools, hay, and other contents of the barn, the loss amounted to over \$13,000 of which only \$10,000 was covered by insurance. The fire started in the hay stored on the third floor. The stock, after the fire, was housed in the old Thompson barn north of the present Memorial field or in the barns of Albert DeMeritt and Deacon Meserve. The model barn was replaced by one, designed by James Randlett, which was somewhat less expensive than its predecessor had been and lacked some of its conveniences.

Housing difficulties continued to perplex both students and faculty. Albert DeMeritt built a four-story wooden building on Garrison avenue, in 1894, to be used as a dormitory and boarding house for students. This building was bought by the college in 1915 and renamed Ballard hall. It housed about thirty men in "very comfortable and pleasant suites." A unique feature of this building was a brass rod, like those traditionally associated with firehouses, running from the roof to the first floor, by which students in a hurry might descend instead of using the stairs.

The bachelor members of the faculty leased DeMeritt hall, later Ballard hall, in 1899, and called it the Durham club. The club was abandoned after a few years, and in 1903, the Zeta Epsilon Zeta fraternity leased the building as a chapter house.

The Q. T. V. fraternity, which was established in Hanover and was thus the first on the campus in Durham, had a large fraternity house built for them by George Whitcher in the summer of 1895. It is now owned and operated by the Lambda Chi Alpha fraternity. The house contained ten suites of rooms which would accommodate 20 men. A "boarding establishment" was to be operated in the building and the third floor was devoted to a lodge room. A suite included "a well-lighted study, sleeping room, and a large closet," all of which was to be "heated by steam, but provision will also be made for a stove in each suite."

HISTORY OF UNIVERSITY OF NEW HAMPSHIRE

The inauguration of the new president, October 28, 1903, was combined with the ceremony of dedicating the new agricultural building. This was named Morrill hall in honor of Senator Justin Morrill of Vermont, the author of the land grant act of 1862. Governor Nahum J. Bachelder made the opening speech and formally presented the new head of the college to the state and to the campus. President Gibbs chose as the subject of his inaugural address, *The Mission of the Land Grant Colleges*. He discussed with great keenness and objectivity the problem of democratic education confronting those publicly supported colleges which are charged with the duty of technical and agricultural education. He could do little more than sketch an outline of his ideas and opinions in the short space of this speech but his description of the proper function of a land grant college followed closely that given by his predecessor ten years before. Both President Murkland and President Gibbs, the one a clergyman and the other an agricultural scientist, found essentially the same problems facing them, and they turned to essentially the same solutions and policies. If anything, President Gibbs was more vigorous than President Murkland in his advocacy of a college which would meet the full needs of New Hampshire in higher education and in his assertion that nothing in the law or in the conditions laid down by the benefactors of the college precluded such a development. He stood firmly on that platform throughout his presidency.

The speech of President Gibbs was followed by the address of Harvey L. Boutwell, '82, who welcomed the new president on behalf of the alumni. A. C. True, director of the office of the Experiment stations in the United States department of agriculture, gave the dedicatory address for the new building, speaking on the subject, *The New Agricultural Education*. The final speaker was Joseph B. Walker of Concord, one of the original trustees, who read an historical sketch of the college.

The addition of this large building to the campus added much general enjoyment to the inauguration ceremonies. Previously, both President Gibbs and the college had suffered a considerable loss. The new president had planned to move into the presidential residence on September 21 after the completion of various repairs on the house. All the family's furniture and other personal belongings had been moved in, preparatory to occupancy. About 2:45 a. m. on Sunday, the twentieth, fire was discovered in the house. Before it could be controlled, the house and all its

THE ADMINISTRATION OF PRESIDENT GIBBS

contents were totally destroyed. President and Mrs. Gibbs arrived on the scene to find both their new home and all their personal property destroyed.

Even more important than the loss of the house or its furnishings was the loss of all President Gibbs' manuscript lectures and notes and similar possessions which were irreplaceable. The college had insured the house to the amount of about two-thirds of its value. When the question of building a presidential residence arose, the trustees found that they did not have enough money on hand to go ahead without assistance. To solve this problem, they accepted an offer from Walter M. Parker of Manchester to build such a house as the trustees might direct, at his own expense, providing that the college should have the right to buy this building at actual cost plus interest on the investment at four percent. Pending purchase, the college would also pay for insurance and repairs. Having accepted this proposal, both parties proceeded as agreed, and in 1905, the college paid Mr. Parker the price of \$5,500 out of a special appropriation.

The board of trustees underwent a number of important changes during or just after the administration of President Gibbs. During this period, Warren Brown of Hampton Falls completed 24 years of service on the board, from 1887 to 1913, with the exception of a two-year interval from 1893 to 1895. Mr. Brown had been president of the board during his last four years of service. Lucien Thompson of Durham also retired in 1913 after serving 21 years, during 17 of which he had been secretary. He and his family, the only remaining close relatives of Benjamin Thompson in Durham, moved to Colorado where he found the climate better for his health.

Charles W. Stone of East Andover had been for 22 years, from 1887 to 1909, an important and active member of the board. He was its president from 1905 to 1909. Only two years less was the term of office of John G. Tallant of Concord who served as a trustee from 1892 to 1912. Richard M. Scammon of Stratham served from 1899 to 1911. The death of George A. Wason of New Boston in 1904 brought to an end his 21 years of active leadership on the board of trustees, during nine years of which he had served as acting president or as president. Another valuable member lost to the board during the administration of President Gibbs was George B. Williams of Walpole who served from 1895 to 1906.

Du R 0009



Top Left: CHARLES JAMES HALL
Lower Left: PETER HALL

Top Right: MORRILL HALL
Lower Right: CHARLES HARVEY HURD HOUSE

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HISTORY OF UNIVERSITY OF NEW HAMPSHIRE

How great a part Dean Pettee played in the history of this institution can be seen, in some degree at least, by the purely mechanical process of looking back through this book and noting how often his name appears, in fact must appear, because he was so actively a part of all the university affairs. Even more important, however, is the record he left in the lives of thousands of students, a record of hard-headed Yankee benevolence. He was an incurable individualist, with stern ideas of right and wrong, yet capable of so much understanding and liking for young people, that every generation from the first to the last that knew him felt the same reserved half-shy affection for him which is youth's rarest tribute.

Aside from those buildings mentioned above, most of the recent construction on the campus has taken the form of additions and alterations to existing buildings. Two wings have been added to Congreve hall, the west wing in 1938 and the north wing in 1940. A two-story wing was built in the rear of the Commons to provide more space for larger crowds, both in the cafeteria and in the freshman dining hall. Nesmith hall, remodeled in 1932 and shorn of its tower, acquired two wings in 1939 which quadrupled its size and transformed one of the oldest buildings on the campus into an impressive and modern home for the animal and plant sciences. The departments of agronomy, animal husbandry, botany, bacteriology, entomology, forestry, horticulture, poultry husbandry, and zoology have been brought together in this building under the name of the Biological institute, which is directed by Professor C. Floyd Jackson. Upon the transfer of these departments, Morrill hall was taken over by the social science departments and Murkland hall was assigned to the use of the departments of English, languages, and education. The Extension service was moved to the second floor of Thompson hall, while the third floor was completely renovated to provide rooms for the musical organizations and a radio studio.

To list all the changes and improvements in the university plant would be tedious; it has been only possible to mention the more important of them. Yet these indicate how rapidly the university is still changing and how much growth and improvement is still going on.

The increase in the size and the functions of the university has resulted in the development of a more adequate business organization than was necessary in the earlier years. The business

THE PRESENT UNIVERSITY

functions of the university are now centralized in a business office where a variety of activities are concerned with accounting, purchasing supplies, managing endowments, planning budgets, supervising student housing and the dining halls, and the many other matters involved in the program of a university. The business office is under the able direction of Raymond C. Magrath who became business secretary in 1923, treasurer and business secretary in 1927, and treasurer in 1938.

The Extension service has not lagged in its work of carrying the educational work of the university into the daily lives of the people of the state. Since the beginning of the depression, it has cooperated with the relief agencies in a large number of special projects, including, among others, such things as emergency gardens, rural housing surveys, rural rehabilitation, canning projects, rural electrification, and group leadership developments. The largest of these projects has been the work in rural organization and recreation, which has been conducted through workers in the various counties supplied through the relief agencies and directed by a specialist employed by the university. Assistance has been secured from several of the counties which seems to indicate a tendency toward making this a permanent extension activity. In all such cooperative enterprises, the University Extension service provides leadership and some materials, and the relief agencies provide workers.

The usual work of the Extension service has gradually expanded as both the available means and the demands have grown. Agents in all the counties, under the direction of state leaders in Durham, carry to the rural people information on the best practices in all phases of rural life. Agricultural demonstrations, lectures, and experimental projects bring the farmers the latest and best scientific information in the field of agriculture. Home demonstration agents advise and assist housewives in all the complex arts of homemaking. Rural boys and girls are prepared for better living in the country by participation in the numerous projects of the 4-H clubs. In Durham, specialists in farm management, agricultural engineering, horticultural improvement, poultry improvement, forestry, dairying, crop improvement, home management, and marketing supply the agents with new information, and work directly with the groups whose special interests lie in those fields. All these workers draw on the information prepared by the Experiment station in New Hampshire and in other states,

HISTORY
of the
University of New Hampshire

1866-1941

DURHAM, NEW HAMPSHIRE

1941

DUR 0009

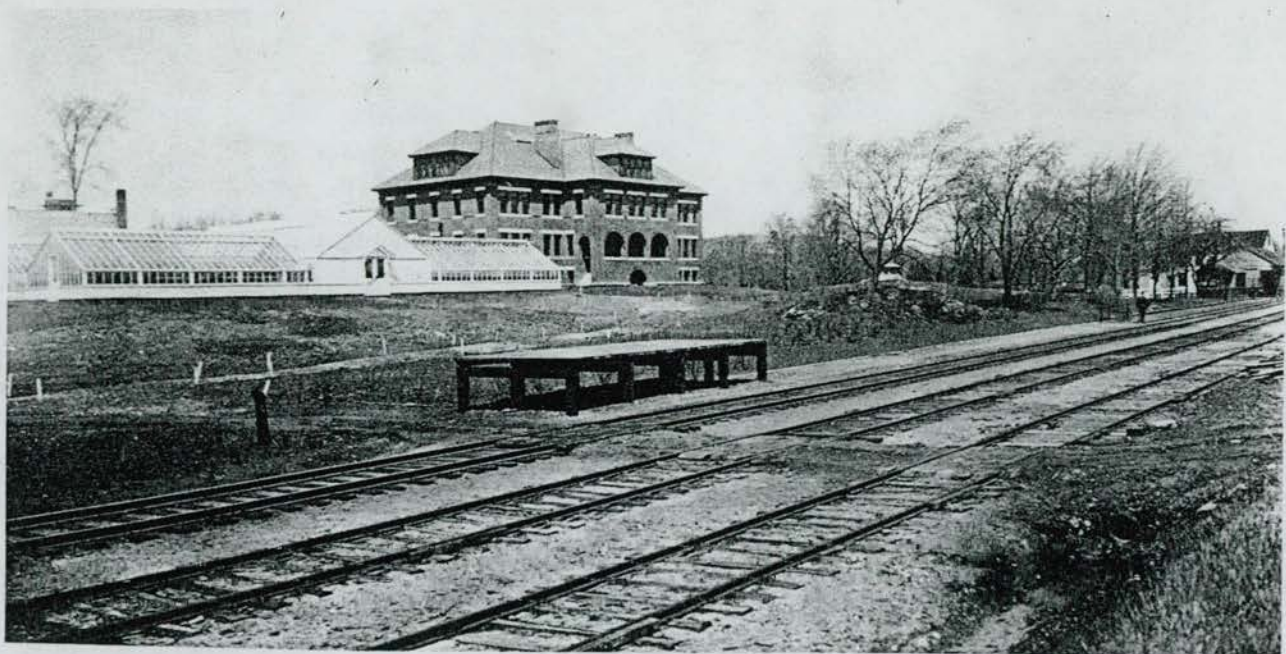
into offices and a classroom. Left without indoor athletic facilities, the students started a movement to raise money for a gymnasium. By June 1903 students and faculty had pledged \$1,400. In the meantime, the unfinished top floor of Morrill Hall was made available for sports, and showers were installed in the basement. In spite of the uncertain facilities, a basketball team had been organized, the first game being played in Portsmouth on February 16, 1901.

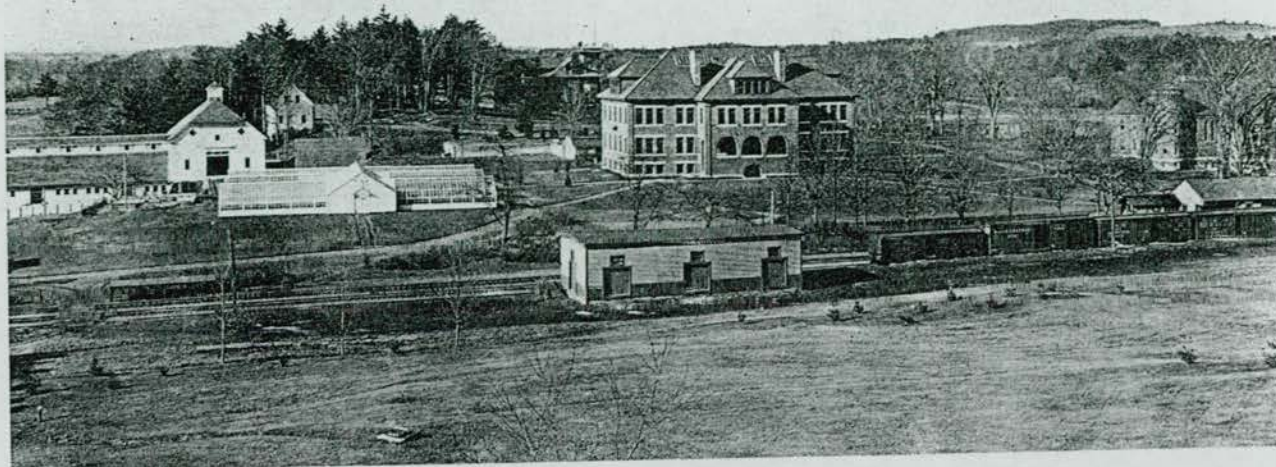
Of the few student clubs active in Hanover, the two most vigorous, the Culver Literary Society and the Q.T.V. Club, transferred their activities to Durham. The Culver Literary Society donated its library of 366 volumes to the college library. One hundred and forty are still on the shelves. In June 1893 it started publication of a monthly journal at first called the *Enaichsee* (NHC). Beginning with the second volume, the title was changed to the *New Hampshire College*

Monthly, under which title it continued until replaced by the *New Hampshire* in 1911. The journal contained essays, news of faculty, students, and alumni, and a list of campus organizations with time and place of meetings. The June issue was usually devoted to graduation activities.

The Culver society announced in November 1893 the establishment of a lecture series. In 1895 the society merged with a new student-faculty organization, the New Hampshire College Club, with Murkland as president. Dues were fifty cents a year. This organization did everything from supplying pictures and statuary for the college buildings and flowers for the chapel to securing lecturers and entertainments and sponsoring social events. One of its less noteworthy projects was procuring a stuffed elk for the lobby of Thompson Hall. The animal became a convenient coat rack.

Morrill Hall and the College greenhouses, 1900. (1903?06?)





The campus in 1906 (from Thompson Hall) showing the dairy barn, greenhouses, and Morrill Hall across the railroad tracks.

the building opened in September 1908. Women students who did not live at home were required to live in Smith Hall, where rents ranged from \$1.25 to \$2.00 a week. Board was \$3.75 a week at first but in 1910 went up to \$4.00.

The boys were still on the town. In 1908 a committee of trustees considered ways of paying for a men's dormitory, and in 1909 Gibbs was instructed to secure cost estimates. Use of the Conant fund to meet the cost was considered but this plan was abandoned, apparently on the basis of an unfavorable opinion from the attorney general. The 1910 trustee report said: "The housing of students has grown to be a serious problem. Several houses in Durham have recently become available as student quarters but many of the rooms are not altogether desirable. While there are many objections to the dormitory system, it will become necessary in a very short time if the numbers of students increase."

The 1909 legislature was asked for \$136,000 in plant funds, including \$4,000 for a new dynamo. The existing power plant had a capacity of 500 lights, but there were 1,200 in the college buildings. The legislature scaled the request down to \$21,890, of which the trustees allocated \$12,000

for a new dairy building. (The initial estimate for this building was unusually far out of line, for by the time the building was done in 1911 the cost was \$20,789.) Rather than install a new dynamo, it was decided to buy electricity from the Rockingham Power and Light Company at two cents a kilowatt. In 1910, \$8,982 was spent for the necessary lines and related electrical equipment. The same year, \$1,625 went into the water system and \$8,346 was expended on the sewer system.

The physical sciences and engineering had no more space in 1909 than in 1893, yet the number of students had increased by 250 percent. Laboratories, classrooms, offices, and shops were overcrowded. The chemistry department was unable to give more than half of the instruction desired. Many students were refused admission to the chemical engineering program, and those in the general course and in agriculture could not take advanced work in chemistry.

An engineering building to cost \$80,000 was the largest item in the 1911 request to the legislature. It was eliminated from the college appropriation bill, but Albert DeMeritt (the Durham representative in the legislature, a trustee, and a farmer) introduced and secured passage of a joint resolu-



Dairy science class in Morrill Hall, 1907.

from the Benjamin Thompson Trust Fund. (The twenty-year period during which this fund was to accumulate had ended on January 30, 1910.) Thompson's will had specified that the trust fund be credited with the value of his estate, excluding the Warner farm in Durham, plus interest at the rate of four percent compounded annually. The value of the assets turned over to the state was \$363,823. Over the twenty-year period the interest amounted to \$433,358—a total of \$797,181. This was the declared value of the fund at its maturity, and it was on this amount that the state began to pay the college a four percent return. This was the bookkeeping aspect of the matter. What had happened in hard cash?

The state treasurer had received securities with a market value in 1890 of \$363,823. Some of these

had matured, some had been sold; in 1910 they were carried on the books at a value of \$290,551. But the actual market value of the remaining securities was \$433,942. During the twenty years, the state treasurer had received \$456,942 in cash, from the income from the securities and from those sold or matured. Thus the real value of the trust fund in 1910 was \$890,885. Subtracting from this the value of the fund as credited to the college, the state had a profit of \$93,704.

Thompson's will had also stipulated that the state set up a second trust fund, into which the state was to put \$3,000 a year with four percent compound interest. This account at the end of the twenty-year period showed an accumulation of \$92,907. The trustees in 1910 released the state from any obligations on the Benjamin Thompson

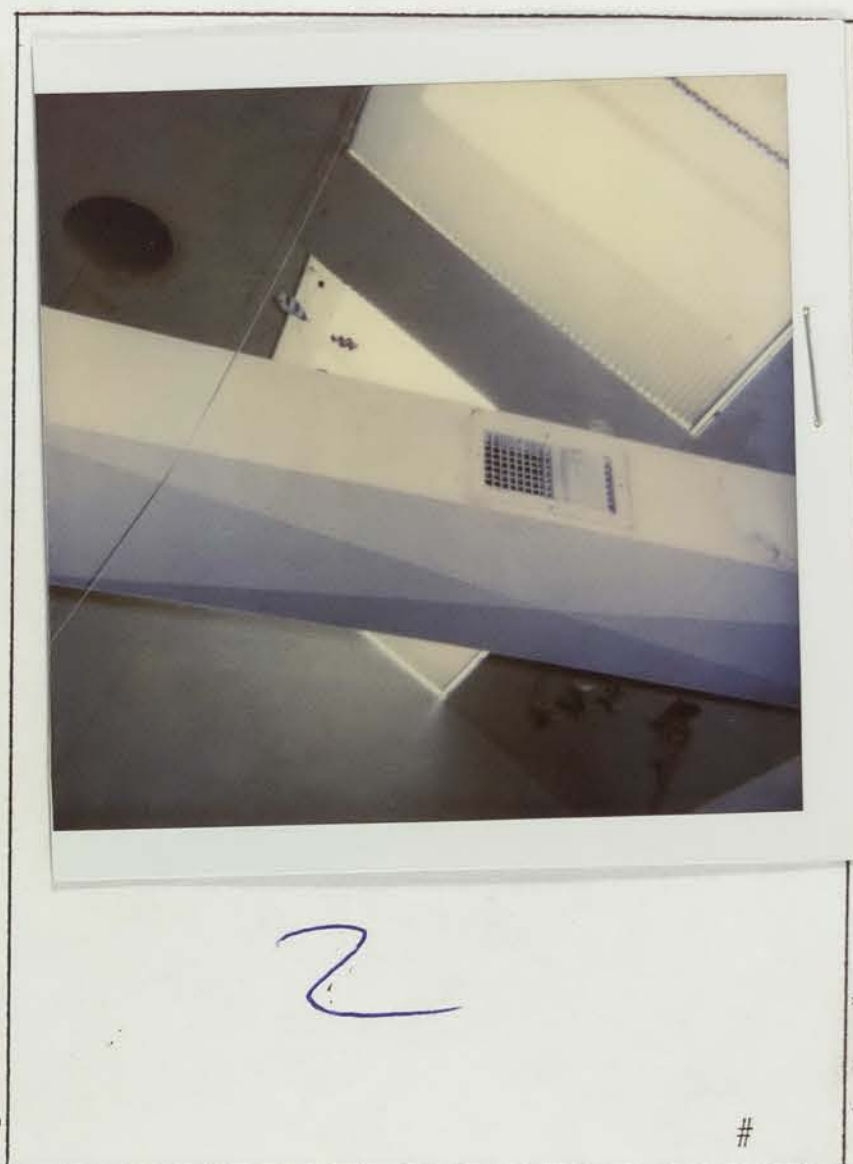
NEW
HAMPSHIRE'S
UNIVERSITY

Everett B. Sackett

*New Hampshire Publishing Company, Somersworth,
University of New Hampshire, Durham,*

March
1990

AUG 31 1992



Description of photographs:

Photo # 1 TOP FLOOR
CORRIDOR W/ RENOVATED CEILING

Photo # 2 SKYLIGHTS WITH
RENOVATED CEILING AND
VENTILATION DUCTWORK

Photo # 3 MAIN FLOOR
CORRIDOR W/ RENOVATED
CEILING

AUG 31 1992

BUILDING DESCRIPTION

General

Morrill Hall is located of the University of New Hampshire campus in Durham, NH. It is the UNH Department of Education office and class building.

Its appearance is maintained for historical integrity. The expected life of the building exceeds 50 years.

Heating and hot water

Morrill Hall receives heating hot water from the central heating plant on campus which generates the hot water using No. 6 oil, and purchased steam from an incinerator. The building was converted from steam to hot water heating in the 1960's. University personnel estimate heating system efficiency to be 50%.

The building is heated by cast iron radiators piped in a direct return parallel arrangement with no individual control. A three horse power pump circulates heating hot water 24 hours per day during the heating season. A three way mixing valve modulates the circulating water temperature according to outside temperature. The primary method of building temperature control is by this modulation which offers very poor control and overheating which results in people opening windows frequently throughout the heating season.

Domestic Hot Water (DHW) is produced using a 30 gallon electric water heater. The DHW temperature is set at 130F. The DHW circulation pump (1/4 hp) runs constantly. Hot water and service hot water pipes are uninsulated. Two custodial staff occupy the building at night and building occupancy averages about 150 people (students and staff) between 8 a.m. and 10 p.m. five days a week, year around.

Electrical

The electrical load is dominated by lighting. Most lighting is fluorescent, using twin 4 foot 40 watt tubes and standard ballasts. Occupanyts are conscientious regarding minimazing light and other electrical use.

Other loads include , the water heater, personal computers and other office equipment.

Architectural

The building was built circa 1914. It is a three floor(plus basement) , 98 foot by 56 foot rectangle structure. Its walls are 27 inch wide, uninsulated, red brick with plaster finish on the inside giving an R value of 4.2 .

The roof is a timber truss frame sloped roof structure. The cathedral ceiling of the top floor is the underside of the roof. A suspended ceiling had been installed but portions have since been removed. There are four 32 sqft skylights. However three of these are not visible due to the suspended ceiling.

The windows are very loose fitting double hung units, with no storms, offering an R value of approximately 1.0. Although attempts have been made to caulk these windows, their looseness results in an instable setting for caulking and therefore much caulking installed has fallen out.

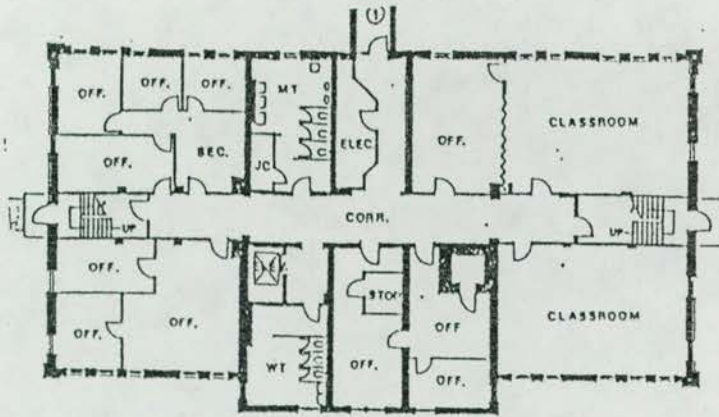
The four exterior doors are double doors of 1-1/2" pine with 50% single pane glass offering an R value of approximately 1.1. These need new weather stripping. There are no vestibules.

Ventilation

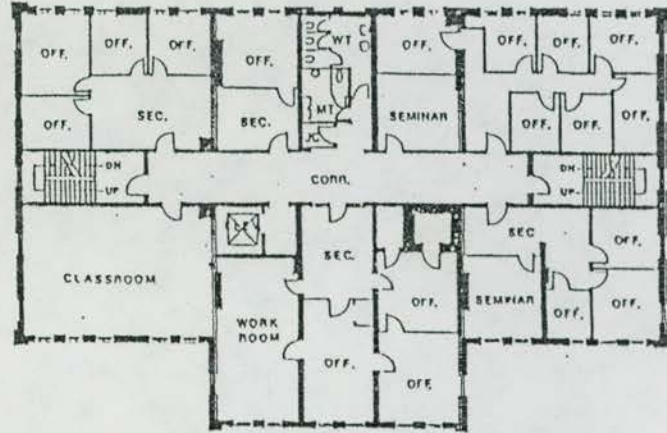
Mechanical ventilation for the first three floors consists of twelve, fractional horsepower, inline, exhaust exhaust fans. These are activated by occupant operated wall switches.

The top floor has a central air handling unit that provides heating and ventilation. This AHU works together with a central exhaust fan. Modulating dampers in the common ductwork vary the amount of exhaust air versus return from the system depending on return air temperature.

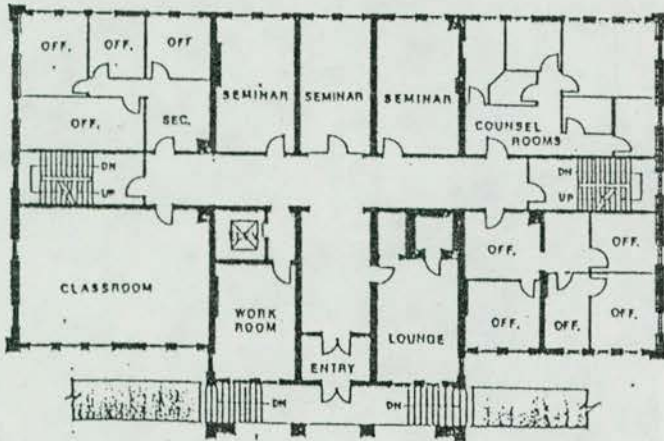
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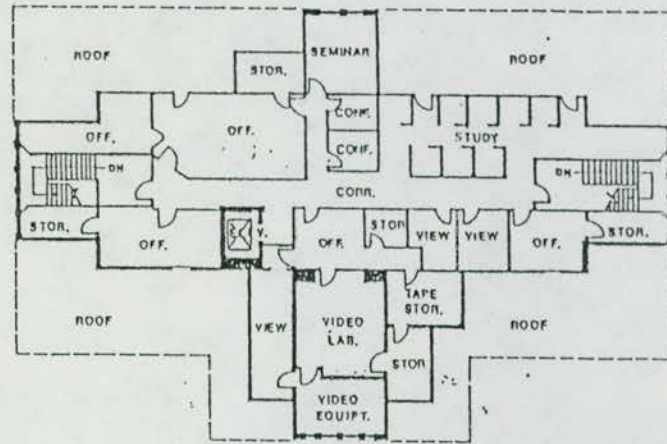
GROUND LEVEL PLAN



SECOND LEVEL PLAN



FIRST LEVEL PLAN



THIRD LEVEL PLAN

MORRILL FLOOR PLANS

OPERATION & MAINTENANCE DESCRIPTION

UNCOVER RADIATORS.

The cast iron radiators in second floor offices 224, 229, and 230 have radiators that have been encased in book shelves. Subsequently the rooms are not warm enough and as a result people have brought in and use electric space heaters. This recommendation is to remove the bookshelves to allow for the much less expensive hot water heat to warm the rooms rather than the electric heaters.

Cost		Savings			
Design	\$0	Oil (Gal)	-106	(\$78)	Payback 1.6
Acquisition	\$60	Steam (kLb)	-6	(\$33)	Life 15
Installation	\$90	Elec. (kWh)	2822	\$203	
Total	\$150	Total		\$92	

WEATHERSTRIP & CAULK

All doors in the building have significant spaces between doors and their jams and between double doors. Cracks in the sub-basement wall need to be caulked to reduce infiltration.

Cost		Savings			
Design	\$0	Oil (Gal)	595	\$442	Payback 1.1
Acquisition	\$330	Steam (kLb)	36	\$184	Life 15
Installation	\$360	Elec. (kWh)	0	\$0	
Total	\$690	Total		\$625	

THIS PACKET DESCRIBES THE PROJECTS WE PLAN TO IMPLEMENT

ENERGY CONSERVATION MEASURES DESCRIPTION

ECM #1 THIRD FLOOR CEILING

The cathedral ceiling of the top floor is the underside of the roof. The roof/ceiling construction basically consists of the asphalt shingles, 1" of pine slab boards truss framing and plaster on lathe with a painted interior finish.

A suspended ceiling had been installed but portions have since been removed. Because portions have been removed the insulating effect of what is left is non effectual.

It is recommended to remove the suspended ceiling and the plaster on lathe system. Install fiberglass insulation between the truss framing and install 2" of polyisocyanurate (Thermax or R-max brands) over the framing. The final finish would be taped and painted gypsum.

Also, replace the existing , looses fitting single pane skylights with thermal pane skylights.

Savings from insulating the roof/ceiling and replacing the skylights will be quite significant due the tremendous decrease in the conductance f (U) and infiltration factors. These changes are especially significant in a four floor building such as this. This is because the height of the structure creates a powerful chimney effect which results in excessive infiltration in the lower floors and exfiltration through the roof.

Also adding to the savings will be the reduction in fluorescent lighting due to the exposure of the skylights and daylight.

Cost		Savings			
Design	\$1000	Oil (Gal)	3405	\$2,527	Payback 8.5
Acquisition	\$20,754	Steam (kLb)	204	\$1,052	Life 15
Installation	\$10,857	Elec. (kWh)	2189	\$158	
Total	\$31,612	Total		\$3,737	

ECM #2 STORM WINDOWS

The existing windows are single pane and loose fitting. This recommendation is to install Low e storm windows over all single pane windows. Savings will be realized from both the reduction in heat loss by conduction and infiltration.

Cost		Savings				
Design	\$0	Oil (Gal)	4031	\$2,992	Payback	8.0
Acquisition	\$24,827	Steam (kLb)	241	\$1,246	Life	15
Installation	\$9,273	Elec. (kWh)	0	\$0		
Total	\$34,100	Total		\$4,237		

See Table 5 for window size information.

ECM #3. RENOVATE HEATING / AC CONTROLS

A major controls renovation is recommended for Morrill Hall including adding this building to the campus energy management system and installing an extensive pneumatic control system.

Through the energy management system (EMS), from a central location, all major energy-consuming equipment can be turned on and off or modulated, based on both time-of-day and actual conditions at the facility. Thus, equipment can be turned on or off as required by: 1) the inside or outside temperature; 2) the building use and time of day, week, or year; 3) a certain number of minutes per hour; and 4) possible interactions between parameters (e.g., day of week, time of day and outside temperature). Changes to temperatures or schedules can be easily made.

While many of these control functions can be achieved in other ways: by hand, by thermostats, by time clocks, and by more sophisticated individual controls. These other methods, however, have certain shortcomings. Maintenance personnel are not always in the building to respond to occupant requests for adjustment and students cannot be relied upon to leave systems in the unoccupied mode.

Additionally, some efficient operation methods for HVAC equipment are too labor-intensive. In addition to providing optimized equipment operation, an EMS provides management benefits which cannot be quantified. Equipment failure can be detected quickly. Printed records of temperatures and equipment on-times are generated. Changes for non-regularly scheduled uses such as weekend activities can be easily made. Operational changes can be made from a single location.

In the savings estimate, only the quantifiable energy savings are considered, since determining dollar savings for management-related benefits is very difficult. The cost is based on contracted installation.

The specific control functions recommended for Morrill Hall are as follows:

Perimeter Radiation

Install a complete new pneumatic control system including air compressor, controller, piping, thermostats etc. throughout the building. The system should be installed so that there are two zones: The top two floors and the lower two floors.

Install 50 pneumatic day/night thermostats and 64 control valves in all perimeter rooms so that individual room temperature is controlled.

Hot Water Temperature

Control the main hot water diverting valves to modulate circulating water temperature according to the outside air temperature, and, in combination with the pneumatic system, provide an optimized night setback to 50F.

Heating Hot Water Pump

Operate the heating circulating pumps only as required during occupied hours and when outside temperatures are below 30F during unoccupied hours. Limit the domestic hot water circulator operation to occupied hours.

Third Floor Ventilation Systems:

In cold weather control the outside air dampers to provide no more than adequate ventilation for the average number of occupants.

During unoccupied times the outside air dampers should be closed and the exhaust fan off. The supply fan, which is also the main source of heat for the floor, should be allowed to run only when there is a call for heat

Exhaust Fans

Although most of the small in line exhaust fans are currently not used frequently it is recommended to add these fans to the EMS in order to have them operatable only during occupied times.

Meters

Install flow and temperature sensors as required to monitor this building's load on the campus heating system.

See Table 4 for the EMS point summary. See Table 7 for pneumatic valve locations.

	<u>Cost</u>		<u>Savings</u>			
Design	\$8,000	Oil (Gal)	5937	\$4,407	Payback	9.6
Acquisition	\$27,050	Steam (kLb)	355	\$1,835	Life	15
Installation	\$28,580	Elec. (kWh)	5799	\$418		
Total	\$63,630	Total		\$6,659		

UNIVERSITY OF NEW HAMPSHIRE

DUR0009

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SEP 23 1992

September 21, 1992

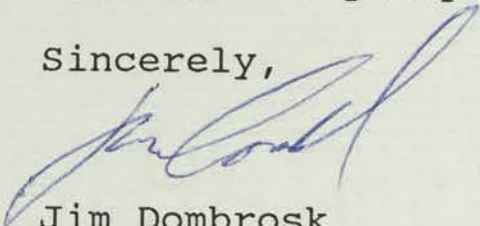
Linda Ray Wilson
N. H. Division of Historical Resources
Box 2043
Concord, N. H. 03302-2043

Dear Linda:

Enclosed are the black and white photos of Morrill Hall per your review requirements.

We are beginning to write renovation specifications and would appreciate a prompt response as to your involvement in the project.

Sincerely,



Jim Dombrosk
Campus Energy Manager
Engineering Services

JD:H
Enc.

