

NATIONAL HISTORIC LANDMARK NOMINATION

NPS Form 10-900

USDI/NPS NRHP Registration Form (Rev. 8-86)

OMB No. 1024-0018

UNIVERSITY OF WISCONSIN SCIENCE HALL

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United States Department of the Interior, National Park Service

National Register of Historic Places Registration Form

1. NAME OF PROPERTY

Historic Name: UNIVERSITY OF WISCONSIN SCIENCE HALL

Other Name/Site Number:

2. LOCATION

Street & Number: 550 North Park Street Not for publication:___

City/Town: Madison Vicinity:___

State: WI County: Dane Code: 025 Zip Code: 53706

3. CLASSIFICATION

Ownership of Property
Private:___
Public-Local:___
Public-State: X
Public-Federal:___

Category of Property
Building(s): X
District:___
Site:___
Structure:___
Object:___

Number of Resources within Property
Contributing
1
1

Noncontributing
buildings
sites
structures
objects
0 Total

Number of Contributing Resources Previously Listed in the National Register: 1

Name of Related Multiple Property Listing:

4. STATE/FEDERAL AGENCY CERTIFICATION

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this _____ nomination _____ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property _____ meets _____ does not meet the National Register Criteria.

Signature of Certifying Official

Date

State or Federal Agency and Bureau

In my opinion, the property _____ meets _____ does not meet the National Register criteria.

Signature of Commenting or Other Official

Date

State or Federal Agency and Bureau

5. NATIONAL PARK SERVICE CERTIFICATION

I hereby certify that this property is:

_____ Entered in the National Register _____

_____ Determined eligible for the _____
National Register

_____ Determined not eligible for the _____
National Register

_____ Removed from the National Register _____

_____ Other (explain): _____

Signature of Keeper

Date of Action

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6. FUNCTION OR USE

Historic: Education

Sub: College and Research Facility

Current: Education

Sub: College and Research Facility

7. DESCRIPTION

ARCHITECTURAL CLASSIFICATION: Romanesque Revival

MATERIALS:

Foundation: Stone (Rhyolite)
Walls: Brick
Roof: Asphalt
Other: Terra-cotta (detailing)

Describe Present and Historic Physical Appearance.**INTRODUCTION**

The University of Wisconsin Science Hall is located on the southwest corner of Park Street and Observatory Drive at the foot of Langdon Street. It sits at the bottom of Bascom Hill on the eastern end of the campus. Science Hall was begun in 1885 and completed in 1887. It is a three-story, U-shaped, Romanesque Revival structure with a gable roof. Science Hall was designed by Milwaukee architect Henry C. Koch and altered by Allan D. Conover, Professor of Civil Engineering, while under construction. Science Hall features a rock-faced coursed rhyolite ashlar, raised basement and walls of red pressed brick in common bond. In the central part of the structure, the walls are reinforced with iron columns and steel beams and girders. In the wings, the walls are load-bearing. The building is enriched with ornamental brickwork and belt courses of rhyolite and of glazed red terra-cotta. Distinguishing features include gabled dormers, hip roofed rectangular towers and turrets, round towers with conical roofs, and, on the east facade, a broad arched entryway with piston columns and an immense, multipaned, leaded-glass transom. On the interior, the floor plan generally consists of a central dog-leg stair and a series of classrooms and offices opening off a central corridor. Science Hall is in good condition and retains a high degree of integrity. Alterations have been minimal and mostly consist of subdividing original spaces with plastered stud and wallboard partitions, creating both extra rooms and mezzanines.

DESCRIPTION

Science Hall's main (east) facade overlooks Park Street and measures 205 feet. The wings extend 126 feet to the west. Between the wings is a courtyard, paved with asphalt and used for parking. The main facade is dominated by a central five story

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hip roofed tower. There are four, three-story, square, hip roofed towers, one on each corner of Science Hall. There is a slim, three-story round tower with a conical roof attached to the courtyard side of each west tower. All the sloped roofs are clad with asphalt shingles and decorative red terra-cotta hip roll and flashing ridge tiles. There are also simple gable finials, and hip finials of molded terra-cotta in the shape of a wave. The original slate roof was removed in 1992. The flat roofs, on the rear facade, are built-up. At sill level on the first floor, there is a belt course of molded red terra-cotta blocks with a stylized floral pattern. At the springing of the arches over both the first and third floor windows, there is a molded terra-cotta band, ornamented with leaves, surmounted by a course of projecting bricks. There is a rock-faced, rhyolite string course at the level of the second floor sills. Just below the roof, terra-cotta brackets support an arcaded cornice of brick. On each tower, between the second and third floors, there is a short, brick, corbel table surmounted by a pair of recessed panels enriched with a checkerboard pattern. Science Hall has sixteen brick chimneys (vent stacks), each corbelled at the top. The fenestration pattern is regular. Generally, there are segmental arched openings with stone voussoirs in the raised basement. At the first and third floors, there are round arched openings with gauged brick arches. A course of projecting headers outlines the arches, forming an extrados archivolt molding. There are flat arched openings at the second floor and between the towers at the third floor. The sills are of stone at the basement, and glazed, red, terra-cotta tile everywhere else. The flat arched openings have steel or iron lintels, bolted into the building's iron and steel frame with rosette-shaped nuts. The segmental and round arched openings hold either wooden awning windows, or one-over-one, double-hung sash, both surmounted by fixed, semi-circular transoms. The flat arched windows have either paired or single, one-over-one, double-hung sash surmounted by fixed transoms. There are three skylights, one on the northeast tower and two on the north facade of the south wing. Originally, Science Hall had no skylights. The number and placement of skylights changed as the uses in the attics changed. For example, a 1908 photograph shows a pair of skylights on either side of the central tower on the east facade, and another pair between the towers on the south facade. These have since been removed. The east towers have one gabled dormer on the east roof slope, and another on the outside roof slope. Each west tower has a gabled dormer on the west roof slope. Each dormer features a round arched window opening, a brick barge course enriched with leaves, and a shouldered parapet with volutes. There is a pair of paneled wood doors at the main entrance, and single, paneled wood doors on the north end of the east facade, and in the west entrance porch. There is a pair of paneled, metal doors opening into the courtyard in each of the north and south wings.

The north and south facades conform to the general description. The focus of the east (main) facade is the central five-story tower. The tower features a gabled wall dormer flanked with square hip roofed turrets. The turrets are enriched with brick

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corbelling and diamondwork. Round arched openings appear at the fourth and fifth floors; there is a pair of flat arched openings in the attic. The main entrance is through the base of the central tower. A double flight of stone steps frames a large ventilation tunnel secured with a wrought iron grille. Another flight rises to the round arched portal. The heavy, rock-faced rhyolite arch is set on polished rhyolite piston columns. Deeply recessed within the portal, the doors are flanked by sidelights and surmounted by a large, multipaned, leaded glass transom. There is a single wood door in the north tower; it is not original.

In the center of the west (rear courtyard) facade there is a four-story polygonal bay which contains the main stair. The bay narrows at the top. At its base is an enclosed, hip roofed entrance porch with a brick corbel table. The iron or steel lintel above the single door has rosette-shaped nuts. On either side of the bay, at the narrow fourth floor, there is a small, flat-roofed room; these are the only exterior additions that have been made to Science Hall. The west facade has little ornamental brick or terra-cotta.

On the interior, the plan consists of a series of classrooms and offices opening off a central corridor (see sketch). Inside the main entrance, a straight stair rises to the first floor. Across the hall is the main stair. Many of the original spaces in the wings have been partitioned, some vertically as well as horizontally; there is a mezzanine between the second and third floors in the central section (pre-1929), and between the third and fourth floors in both wings (part pre-1929, most 1970-72). The 15 foot high ceiling made the mezzanines possible. Science Hall has a variety of interior finishes. The walls inside the entrance are finished with blocks of cream, unglazed, terra-cotta in alternating geometric and organic patterns. Throughout the building, the walls below the window sills are finished with reddish-brown, hollow clay tile. Above, the tile walls are cream. The walls surrounding the main stair are pressed brick in the same color scheme. The attics and partitions are plastered wallboard. Original flooring includes ceramic tile, terrazzo, and concrete in the central corridors, and narrow wood boards on a base of poured concrete in the classrooms and wings. The mezzanine floors are asphalt tile. Most of the ceilings are exposed, revealing shallow barrel vaults of cream, hollow clay tile. Drop ceilings with acoustical tile have been installed in some parts of the building. The main stair is dog-leg, of cast iron, with slate treads and terrazzo landings. The rail is iron, cast in an interlacing geometric pattern, and the hand rail is wood. The stair wraps around an elevator in a lattice iron cage. There is a concrete and steel stair, dating from the early 1980s, in each of the round towers. The lighting is fluorescent; suspended globes in the central corridor, standard suspended tubes elsewhere.

Science Hall retains a high degree of integrity. Exterior alterations are minimal. In a few places, aluminum storm windows have been added. The skylights and the door in the northeast

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tower are the only openings that appear to have been added or modified. The interior alterations involved fitting partitions and mezzanines into Science Hall's heavy metal and masonry structure, and did not alter the original fabric of the building.

Science Hall is located at the base of Bascom Hill. Wide sidewalks run along the north, south and east sides of the building. West of the building, beyond the paved courtyard, is Radio Hall, built in 1888. Science Hall is surrounded by other university buildings and spaces, which comprise the original grounds of the University of Wisconsin. This original campus was listed on the National Register of Historic Places in 1974 as the Bascom Hill Historic District (District).

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8. STATEMENT OF SIGNIFICANCE

Certifying official has considered the significance of this property in relation to other properties: Nationally: X Statewide: Locally:

Applicable National Register Criteria: A X B X C D

Criteria Considerations (Exceptions): A B C D E F G

NHL Criteria: 1, 2

NHL Theme(s): XIII. Science
 B. Earth Science
 2. Geology

Areas of Significance: Science; Communications

Period(s) of Significance: 1888-1940

Significant Dates: 1888, 1903, 1910, 1913, 1917

Significant Person(s): Charles R. Van Hise

Cultural Affiliation: N/A

Architect/Builder: Henry C. Koch & Allan Conover, architects

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State Significance of Property, and Justify Criteria, Criteria Considerations, and Areas and Periods of Significance Noted Above.**SUMMARY**

Science Hall is significant at the national level under National Historic Landmark criteria 1 and 2.

Science Hall is significant for its association with Charles R. Van Hise (1857-1918), nationally prominent geologist. With his mentor, Roland Irving, Van Hise became the first in the nation to apply microscopic lithology to an extensive study of crystalline rocks, and to use those results in the formulation of geologic principles. His emphasis on the quantitative application of physical and chemical laws to geological problems was one of his greatest contributions to the science of geology. Van Hise's influential 1904 monograph, *A Treatise on Metamorphism*, moved geology out of the science of classification and into formulating principles. Van Hise taught the first course in the nation in structural and metamorphic geology in 1903. Van Hise also championed the conservation of natural resources. In 1909, he taught a course in conservation in Science Hall, modifying his lectures in 1910 to form the first textbook in the field, *The Conservation of Natural Resources in the United States*. As a teacher, Van Hise earned a reputation for training geologists who matched his own high standards in scientific research.

Many of the current science programs at Wisconsin began in Science Hall, one of three instructional facilities on campus before 1890: Geology, Geography, Physics, Zoology, Limnology, Botany, Anatomy, Bacteriology, and the Medical School. Many contributions to these sciences were made by scholars and educators working in Science Hall. The University of Wisconsin played a leading role in introducing four major themes to American geology: Pre-Cambrian, structural geology, sedimentation, and mineral resources for human use. By the early part of the twentieth century, Wisconsin was one of the leading institutions in the U.S. for the advanced study of geology. The first courses in sedimentation (1912-13), oceanography (1912-13) and engineering geology (1917) in the U.S. were all taught in Science Hall. Nationally prominent geologists associated with Wisconsin included Roland Irving, Charles R. Van Hise, Charles K. Leith, Eliot Blackwelder, Warren J. Mead, and William Twenhofel. The Geography Department, which separated from Geology in 1928, is also eminent, and was associated with nationally prominent geographers Lawrence Martin, Armin K. Lobeck, and Vernor C. Finch. Nationally prominent physicists who worked in Science Hall included Benjamin W. Snow, Robert W. Wood, Augustus Trowbridge, Charles E. Mendenhall, Earle M. Terry, and Edward Bennett. Bennett was also a leading educator in electrical engineering. In the biological sciences, Edwin A. Birge pioneered the science of limnology and helped found the Medical School. Other prominent scholars and educators associated with the Medical School in Science Hall included William Snow Miller (Anatomy) and Charles R. Bardeen (Embryology). In addition,

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leading agricultural bacteriologist H.L. Russell carried out research in Science Hall which led to the elimination of tuberculosis in dairy cattle across the nation.

HISTORICAL CONTEXT

The University of Wisconsin was established by the state legislature in 1848. The legislature directed that the University be governed by a board of regents and administered by a chancellor. The original bill establishing the University of Wisconsin provided for four departments: Science, Literature and the Arts; Law; Medicine; and Elementary Education. There were six professorships in the Department of Science, Literature and the Arts. One of these was the Chair of Chemistry and Natural History. The professor holding that chair was to be responsible for providing instruction in chemistry, mineralogy, geology, the natural history of plants and animals, and human physiology. The first appointee to that Chair was Stephen P. Lathrop who arrived in 1854. Unfortunately, he died in December of that year.¹

In January 1856, Ezra S. Carr replaced Lathrop. Later that year, Chemistry and Natural History gained departmental status; however, Carr remained the only instructor. Carr taught geology and mineralogy in the fall, chemistry in the winter, botany and zoology in the spring, and agricultural chemistry in the summer. Carr had great influence on naturalist John Muir, both as a teacher and a father figure. Muir's letters describing nature in the western states, later widely published, were originally written to Mrs. Carr, who encouraged Muir to publish them.²

When Paul Chadbourne was appointed President of the University in 1867, he dismissed several professors, including Carr. John E. Davies succeeded Carr as Professor of Chemistry and Natural History in 1868. In 1869, Chadbourne reduced Davies' responsibilities by creating a Professorship of Geology, Mining and Metallurgy. Roland D. Irving (1847-1888) was appointed to that post in 1870.³

Irving, a graduate of Columbia University, laid the foundation for teaching and research in geology at Wisconsin. In 1871, the Board of Regents created a separate Department of Mining and Metallurgy under Irving. In 1873, he accepted a concurrent appointment as Assistant Geologist on the Wisconsin Geological

¹ *Regents Annual Report, 1850, page 8; Arthur Hove, The University of Wisconsin: A Pictorial History, (Madison: The University of Wisconsin Press, 1991), p. 7; and Sturgis W. Bailey, ed., History of Geology and Geophysics at the University of Wisconsin-Madison, 1848-1980, (Madison: Department of Geology and Geophysics, 1981), pp. 1-2.*

² Bailey, pp. 3-7; and *University Catalogue, 1856-57, p. 53.*

³ Bailey, pp. 10-11.

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Survey (WGS), beginning a tradition of close association between the University and the WGS which continues today. In 1878, Irving's department was renamed Mineralogy and Geology, and moved into the newly completed (Old) Science Hall. A separate department of Mining and Metallurgy was created at the same time; Irving's student Charles R. Van Hise was hired to teach courses under Irving's direction in this department. In 1882, Irving was put in charge of the United States Geological Survey (USGS) investigations into the geology of the Lake Superior region. Irving's work with the USGS brought him, and the University, national attention. Since that time, geological investigations of Lake Superior have all built upon Irving's original work. Irving was also the first to accurately map the iron range, and carried out the first systematic study of the great copper bearing formations in the Lake Superior region, initiating a major theme in geology research at Wisconsin: mineral resources for human use. Irving and Van Hise became the first in the nation to apply microscopic lithology, using thin sections of rock, to an extensive study of crystalline rocks, and to use those results in the formulation of geologic principles.⁴

On December 1, 1884, Old Science Hall was destroyed by fire. Completed in 1877 and located on the site of present Science Hall, Old Science Hall was a frame building with a sandstone veneer. When it burned, the University lost its mineralogical and geological museum and library, much geological equipment, the original notes for Irving's and Thomas C. Chamberlin's pioneering research with the WGS and USGS, as well as its art collection. Nearly everything was irreplaceable.⁵

In the spring of 1885, the Board of Regents sent Regent George H. Paul and Professor Allan D. Conover to visit eastern colleges to view science buildings. That summer, Henry C. Koch (1841-1910), a German-born Milwaukee architect, furnished detailed plans for the new Science Hall. The building was designed to be Romanesque Revival in style and substantially fireproof. Romanesque Revival, then popular for public and institutional buildings, was characterized by massive masonry construction with towers and turrets, round arched doorways and windows, and decorative brickwork. The state legislature would grant only \$150,000 to replace the building. Because the building was to be fireproof, these funds, even with \$41,000 provided by fire insurance, could not cover contractor bids. The Regents were determined that Science Hall be fireproof, and so decided to proceed without a contractor. Allan D. Conover (1854-1919), then Professor of

⁴ Bailey, pp. 12-16; and *Wisconsin Academy Review*, 1970, vol. 17, no. 1, p. 16.

⁵ Bailey, pp. 17-18.

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Civil Engineering, was appointed construction supervisor. He was aided by several part-time student assistants, one of whom was Frank Lloyd Wright.⁶

Construction on Science Hall began in October 1885. After the building was underway, Conover altered the plans to make the building more fireproof, using hollow clay tile, additional iron columns, and steel. Cutting the steel was difficult, as steel saws and acetylene torches did not yet exist. This problem was solved by drilling many small holes in each beam, and then bending each until it broke. The resultant jagged edges can still be seen in some of the beams in the attic.⁷

Conover's alterations increased the expense of the building. In April 1887, by which time Science Hall and three auxiliary buildings were to have been completed, all the money allocated by the legislature had been spent, the Board of Regents had borrowed an additional \$30,000, and yet Science Hall was still unfinished. The legislature was incensed. The Regents asserted that their responsibility was to produce an appropriate building, which the legislature should then pay for. After much discussion, the legislature granted an additional \$175,000 to complete the building and liquidate the Regents' debt. The total cost of Science Hall is estimated to have been \$285,000.⁸

Science Hall was completed in December 1887 and opened in January 1888. Tunnels connected the building to the machine shop and the boiler house (Radio Hall) north and west of Science Hall. In the basement and on the first floor, Engineering (including civil, mining and metallurgical, and mechanical) was given space for lecture rooms, laboratories, a museum and reading room, and an 80-student drafting room on the north side of the building. The Engineering laboratories were fitted with engines for conducting experiments, testing machines, a turbine wheel, lathes, and hydraulic apparatus. Physics had laboratories and lecture rooms on the south side basement and first floor, including a 100-student amphitheater style auditorium with rising tiers of seats. The Department of Mineralogy and Geology was located on the second floor; the biological sciences were on the third floor. Each of these floors was similarly laid out with a museum in the south wing, a main lecture hall for 75 students in the central tower, and a smaller 25-student classroom between the lecture

⁶ *Perspectives of a University*, (Madison: University of Wisconsin Department of Planning and Construction, 1978), p. 77; Bailey, pp. 18-20; and Clarence W. Olmstead, *Science Hall: The First Century*, (Madison: Department of Geography, 1987) p. 2.

⁷ Olmstead, pp. 2-5, and 30; and copies of correspondence of researcher Tom Hines with architectural historian Carl Condit, 1966, University Archives.

⁸ Olmstead, pp. 4-5; State of Wisconsin, *Senate Journal*, April 12, 1887, pp. 717-725; and *Fact Book*, (Madison: University of Wisconsin Department of Planning and Construction, 1978).

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hall and the museum. On both floors, laboratories occupied the north wing. On the second floor, besides a petrographical and a mineralogical laboratory, there was a psychology laboratory with apparatus for the study of sensory and mental operations, color vision, and other optical phenomena. There were laboratories for zoology, botany, anatomy, histology, bacteriology, physiology, and embryology on the third floor. The attics were left unfinished when the building first opened. The fourth floor tower room was plastered, intended for use as an art gallery. The fifth floor tower room was to be used for spectrum analysis. The WGS and USGS both had small offices in the building.⁹

Mineralogy and Geology was the first department to move into Science Hall. Shortly after moving in, Roland Irving died. Charles R. Van Hise (1857-1918) was appointed his successor. Van Hise was appointed Chair while Thomas C. Chamberlin was president of the University. Chamberlin (1843-1928), formerly Chief Geologist with the WGS and the USGS, had mapped the extent of Pleistocene glaciation and developed the theory of multiple glaciations. He produced, with the assistance of Irving and Van Hise, four large volumes on the geology of Wisconsin that surpassed in excellence and scope the publications of all other states to that date. This work brought Chamberlin national attention and recognition as the foremost authority on glacial geology in the nation. In 1887, Chamberlin resigned from the USGS to become president of the University.¹⁰

Chamberlin encouraged the development and specialization of all the sciences at the University during his five years as president. He recruited outstanding established and potential scholars, doubling the number of faculty. Chamberlin also established fellowships for graduate students in return for teaching and laboratory assistance; Wisconsin was the first state university in the country to do so. In this way, the University was able to encourage graduate study, and to attract top scholars. Chamberlin encouraged research to exploit natural resources made valuable by advances in industry and engineering. The changes which took place at Wisconsin under Chamberlin reflected a national trend which took place in the late nineteenth century; the movement away from a classical education for sons of the wealthy and toward a practical technical and scientific education for all. Advances in the natural sciences were instruments of reform in all disciplines. Americans turned to state universities to provide scientific education, especially in agriculture and engineering, for the people at large.

⁹ Bailey, pp. 19-20; *University Catalogue, 1887-1888*, pp. 160-170 and Sidney Dean Townley, *Diary of a Student of the University of Wisconsin*, (mimeograph, Stanford University, Cal) p. 37, February 1888.

¹⁰ Bailey, pp. 221-25.

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Chamberlin left Wisconsin in 1892 to direct the University of Chicago's new Department of Geology. Most of his many contributions to the science of geology were made there.¹¹

As Chair from 1888 until 1903, Van Hise led the Department of Mineralogy and Geology to national prominence. He accomplished this by expanding the department from a single professor teaching many phases of geology to a faculty of several specialists. By the early 1900s, the eminence of the department, as evidenced by the research articles and textbooks produced by the faculty, was attracting increasing numbers of students. As a scholar, Van Hise earned a national reputation. Born in Wisconsin, Van Hise was the first to receive a B.S. in Geology (1880), the first to receive an M.S. in Geology (1882), and the first to receive a non-honorary Ph.D. from Wisconsin in 1892 (Geology). In his influential monograph, *A Treatise on Metamorphism* (for the USGS, 1904), Van Hise moved geology out of the science of classification and into formulating principles. Van Hise taught the first course in the nation in structural and metamorphic geology in 1903. From 1900 until 1908, concurrent with his University appointment, he was in charge of the USGS Division of Pre-Cambrian and Metamorphic Geology, fields in which he was recognized as a leading authority. During this time, Wisconsin became the premier institution for advanced students of Pre-Cambrian and metamorphic geology. As a teacher, Van Hise earned a reputation for training geologists who matched his own high standards for research, beginning with thorough observation and then developing principles through careful, independent analysis.¹²

Van Hise served as President of the University from 1903 until his death in 1918. Building upon the work of Presidents Chamberlin and Adams, he brought the University of Wisconsin to national prominence as a teaching and research institution. He believed that to be great a university must not only teach well, but encourage research that pushed back the frontiers of knowledge. His views attracted research-minded people to the university, and the tradition of creative scholarship that had been growing for two decades flourished. Van Hise also championed the conservation of natural resources. He served on the Wisconsin and National Conservation Commissions from 1908 until 1918. In 1909, he taught a course in conservation in

¹¹ Curti and Carstensen, vol. I, p. 440; and Frederick Rudolph, *The American College and University: A History*, (NY: Alfred A. Knopf, 1962), pp. 244-286; Bailey, pp. 23-27; and Merle Curti and Vernon Carstensen, *The University of Wisconsin: A History*, (Madison: University of Wisconsin Press, 1949), vol. I, pp. 449 and 501-545.

¹² Olmstead, p. 12; Bailey, pp. 20-36, and 127; Curti and Carstensen, vol. II, p. 354-55; Maurice M. Vance, *Charles R. Van Hise, Scientist Progressive*, (Madison: State Historical Society of Wisconsin, 1960), pp. 5 and 40; and *Perspectives of a University*, pp. 95 and 113.

Science Hall, modifying his lectures in 1910 to form the first textbook in the field, *The Conservation of Natural Resources in the United States*.¹³

Meanwhile, the Department of Mineralogy and Geology went on to numerous achievements. The department maintained an association with the Lake Superior Division USGS, and published many noteworthy monographs through that agency. Charles K. Leith (1875-1956) was Chair of the department from 1903 until 1934. By 1910, the Department of Geology became a national leader in graduate geological education and research. In 1911, Mineralogy and Geology separated. In 1913, Leith authored *Structural Geology*, the first textbook on the subject in the United States. During World Wars I and II, Leith advised the U.S. government on mineral resources. Among other activities, he helped procure uranium and thorium for the Manhattan Project.¹⁴

Eliot Blackwelder (1880-1969), a professor in the department from 1905 until 1916, taught the first course in sedimentation in the U.S. in 1912-13. He went on to head the Department of Geology at Stanford University. Warren J. Mead, a graduate of Wisconsin, taught at the University from 1908 until 1934. He became a national figure in engineering geology, a field particularly useful in the selection of sites for dams, bridges, and roads. His course for civil engineers, first offered in 1917, was one of the first in the nation. Mead became chair of the Department of Geology at M.I.T. in 1934. William Twenhofel, a professor at Wisconsin from 1916-1945, created a vigorous program in sedimentation, stratigraphy, and paleontology at the University. By 1926, he was a nationally recognized expert in sedimentation. He served as Chair of the department from 1940 until 1945. From 1920 to 1966, the University of Wisconsin ranked fourth in the nation in number of earth science Ph.D.s granted.¹⁵

Rollin D. Salisbury offered the first professionally taught geography course at Wisconsin in 1891. Salisbury followed Chamberlin to the University of Chicago in 1893. Thereafter, Nevin Fenneman taught geography at the University, first as a visiting professor, and then, from 1903 until 1907, as a full professor. In 1907, Fenneman went to the University of Cincinnati where he founded their Department of Geology and Geography. Both Salisbury and Fenneman became geographers of national stature. Lawrence Martin (1880-?), a professor in the Department of Mineralogy and Geology from 1906 until 1917, specialized in glaciers and their modifying effect on terrain. He stimulated the study of geography at Wisconsin. While at Wisconsin, he came to be recognized as one of the country's outstanding physical geographers. In 1912-13, he taught the

¹³ Bailey, pp.37-39; Rudolph, pp. 362-364; and Vance, pp. 60-64 and 134-146.

¹⁴ Bailey, pp. 40-44, 69 and 74.

¹⁵ *Ibid.*, pp. 40-54.

first course in oceanography in the United States. After World War I, he served as Chief of the Map Division in the Library of Congress for 22 years. Armin K. Lobeck was a professor in Geology from 1919 until 1929, when he went to Columbia University. Lobeck was best known for his outstanding physiographic diagrams and accompanying texts. The department name was changed to Geology and Geography in 1920, reflecting the rising importance of geography in the curriculum. In 1928, Geography became a separate department. Vernor C. Finch, a national leader in economic geography and the first to receive a Ph.D in geography from Wisconsin (1916), served as the first chair of the new department. Today, Geography is the only department remaining in Science Hall; the Cartography and Historical Geography programs are of particular note. The influence of the teaching, research, and publications in geography and cartography which have emanated from Science Hall is immeasurable. As of 1987, Wisconsin had awarded more than 200 Ph.D and 500 Masters in geography and cartography. Few institutions in the world teaching these subjects have not been influenced by the University of Wisconsin.¹⁶

Courses in atmospheric science were first taught in the Department of Mineralogy and Geology in 1904-05. In 1948, the Department of Meteorology was formed. Meteorology moved to its own building in 1968.¹⁷

The Department of Physics was located in Science Hall from 1888 until 1917. Although the study of modern physics at Wisconsin began with the appointment of John E. Davies in 1868, it was not until about 1900 that Wisconsin established a reputation as a center for applied and theoretical physics research. This was due to research and training carried out by Benjamin W. Snow, Chair of the Physics Department from 1893 until 1925, and his colleagues Robert W. Wood (investigations in light), Augustus Trowbridge (electrical and mathematical physics), and Charles E. Mendenhall (gravity measurements, galvanometer design, melting point determination, radiation and pyrometry). During World War I, Snow's group developed a submarine detector which played a major role in the battle against submarines. In addition, Edward Bennett (1876-1951) pioneered the teaching of electrical engineering using theoretical physics and applied calculus. His laboratory courses using this method, and electrodynamics, were widely imitated. Research done in Science Hall by Bennett and another physics professor, Earle M. Terry, with students Albert Taylor, C.M. Jansky, Jr., C.R. Greenslade, and Malcolm Hanson contributed to the development of radio from wireless telegraphy. Before World War I, wireless stations sent messages by dot-and-dash telegraphic signals. Around 1915, the possibility of a new

¹⁶ *Ibid.*, pp. 44-44; Olmstead, pp. 17-18; Glenn T. Trewartha, *Geography at the University of Wisconsin-Madison*, (Madison: Department of Geography, 1978), pp. 3-33; and Curti and Carstensen, vol. II, p. 354.

¹⁷ Trewartha, p. 13; *Perspectives of a University*, p. 116.

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system of telephonic broadcasting was proposed. This system would send voice and music over the air and was called the "triode tube." In the basement of Science Hall, Terry and his physics students had been operating a dot-and-dash telegraphic station, 9XM. The station had been designated "9" for the region, "X" for experimental, and "M" for Madison. The group decided to build a telephonic broadcasting system. Triode tubes were not yet available, so the experimenters built their own triode tubes and converted 9XM into a telephonic system, beginning voice and music broadcasts in 1917 with 500 watts of power. Later that year, the station moved to Sterling Hall. In January 1919, 9XM became the first station in the nation to offer a scheduled broadcast service of weather and market forecasts. In 1922, it was renamed WHA. Although there were other experimental stations operating earlier than WHA, WHA is the oldest continuously operating station in the nation.¹⁸

Wisconsin's Medical School, and several science programs in the College of Letters and Science and in the College of Agricultural and Life Sciences, sprang from the biological sciences which originally occupied the third floor in Science Hall--anatomy, physiology, bacteriology, zoology, and botany. Professor Edwin A. Birge (1851-1950) initiated many of these programs. Birge, who began at Wisconsin as an instructor in 1875, taught the first course in the medical field offered at the University in 1881: zoology with an emphasis on histology and embryology. The precursor to the Medical School was a two-year, pre-medical program begun in 1887. Birge taught zoology, vertebrate anatomy, histology, physiology, embryology, and bacteriology. Birge also developed the concept of the lake as an environmental unit of life, pioneering with Chauncey Juday the science of limnology. In 1910, Botany and Zoology moved to Biology (now Birge) Hall.¹⁹

By 1904, Anatomy was its own department with quarters in the attic and the fifth floor of the tower. William Snow Miller (1858-1939) came to teach anatomy at Wisconsin in 1895. A Yale graduate, Miller developed an international reputation for his studies of the microscopic structure of the lung in men and animals. His seminar in the history of medicine, in 1909, pioneered that field in the U.S. and led to the creation, at Wisconsin, of the second Chair of Medical History in 1946.²⁰

¹⁸ Bailey, p. 70; Curti and Carstensen, vol. I, p. 355 and vol. II, pp. 346-47 and 470; Harold A. Engel, "WHA, The Oldest Station in the Nation?", *Wisconsin Alumnus*, October 1950, pp. 12-13; and "40th Birthday for the Oldest Station," *Wisconsin Alumnus*, June 1959, p. 24.

¹⁹ Olmstead, p. 13; Hove, p. 82; and Curti and Carstensen, vol. II, pp. 356 and 481.

²⁰ Curti and Carstensen, vol. II, p. 482.

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The Medical School was established in 1913 as a two-year program. Charles R. Bardeen (1871-1935) was made the first dean of the school. A graduate of both Harvard and Johns Hopkins, Bardeen came to Wisconsin in 1904. His contributions to descriptive embryology, experimental embryology, and anthropometry were considerable. He was the first to show that x-rays affect the cell nucleus. His studies on the development of the skeleton and musculature have appeared in every textbook of anatomy and embryology published since Bardeen completed the studies. In 1925, Wisconsin instituted a four-year course, and began to award the M.D. degree. Specialized medical programs that developed in Science Hall include Physiology, Pathology, Pharmacology, and Medical Microbiology. All the departments associated with the Medical School, except for Anatomy, moved out of Science Hall in 1928. In 1957, Anatomy moved to the new Bardeen Memorial Laboratories.²¹

Bacteriology research, conducted in Science Hall beginning in 1888, brought developments in the agricultural, as well as the medical, sciences before the agricultural sciences moved to Agriculture Hall in 1903. In Science Hall, in 1894, H.L. Russell initiated the program of testing for cattle tuberculosis that led to the eradication of that disease in dairy cattle across the nation.²²

Several changes have been made to Science Hall over the years. These came about as various departments moved out to their own buildings, and space in Science Hall was reallocated. Because of the masonry and metal construction of the building, few structural changes were made. The only exterior additions are the small offices on either side of the central stair tower on the fourth floor, rear facade. Discernible by their flat roofs, they were both in use by 1924. On the interior, wood stud and wallboard partition walls, finished with plaster, were fit inside the original structure. The north wing of the attic was partitioned into windowless rooms, each for one anatomy student and one cadaver, circa 1903. Around 1905, the fifth floor tower was made into a dissection room, and the third floor south wing was converted into a greenhouse for botany and zoology under skylights. After botany and zoology moved out in 1912, the south wing was converted to laboratories for bacteriology and anatomy students. In 1903, the geology seminar room in the northeast corner on the second floor was remodeled to serve as the Geology Library. By 1929, the library had been moved to second floor tower room. A mezzanine for the stacks was built above the library. This mezzanine was eventually extended over the corridor. The elevator, placed in a lattice iron cage, was added in 1924-25. Originally a Kieckhoefer elevator needing an operator, it was automated in 1974. Between 1970 and 1972, the south wing mezzanine between the third and fourth floors was constructed for the cartography lab, and the one that had existed

²¹ *Ibid.*, vol. II, pp. 482-84.

²² Olmstead, p. 13.

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before 1929 along the north side of the south wing on the third floor near the corner tower, was expanded. The Map Library on the third floor was also enlarged at this time. In the early 1980s, the Geography Library took over the space of the former Geological Museum and the Map Library grew to incorporate the entire north wing on the third floor. Around the same time, new concrete and steel staircases were built into the rear round towers, replacing a spiral tunnel slide fire escape (south) and a rope and pulley lift that had been used to transport cadavers to the Anatomy Department.²³ Geophysics was incorporated into Geology at the end of World War II, and the department name changed to Geology and Geophysics in 1967. Geology and Geophysics left Science Hall in 1970.²⁴ The Geological Museum followed in 1980.

²³ *Ibid.*, pp. 17-18 and 23-27; Bailey, pp. 71; and plans on file in the University of Wisconsin Department of Planning and Construction dated January, 1929.

²⁴ Bailey, pp. 121 and 127

9. MAJOR BIBLIOGRAPHICAL REFERENCES

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Previous documentation on file (NPS):

- Preliminary Determination of Individual Listing (36 CFR 67) has been requested.
- Previously Listed in the National Register: part of **Bascom Hill Historic District**
- Previously Determined Eligible by the National Register.
- Designated a National Historic Landmark.
- Recorded by Historic American Buildings Survey: # _____
- Recorded by Historic American Engineering Record: # _____

Primary Location of Additional Data:

- State Historic Preservation Office
- Other State Agency
- Federal Agency
- Local Government
- University: **University Library Archives**
- Other (Specify Repository):

10. GEOGRAPHICAL DATA

Acreage of Property: Less than one (1) acre

UTM References: Zone Northing Easting

A 16 4771820 304540

Verbal Boundary Description:

The boundary of Science Hall is shown as the dotted line on the accompanying map entitled "University of Wisconsin Science Hall."

Boundary Justification:

This property includes the entire parcel that is historically associated with the University of Wisconsin Science Hall.

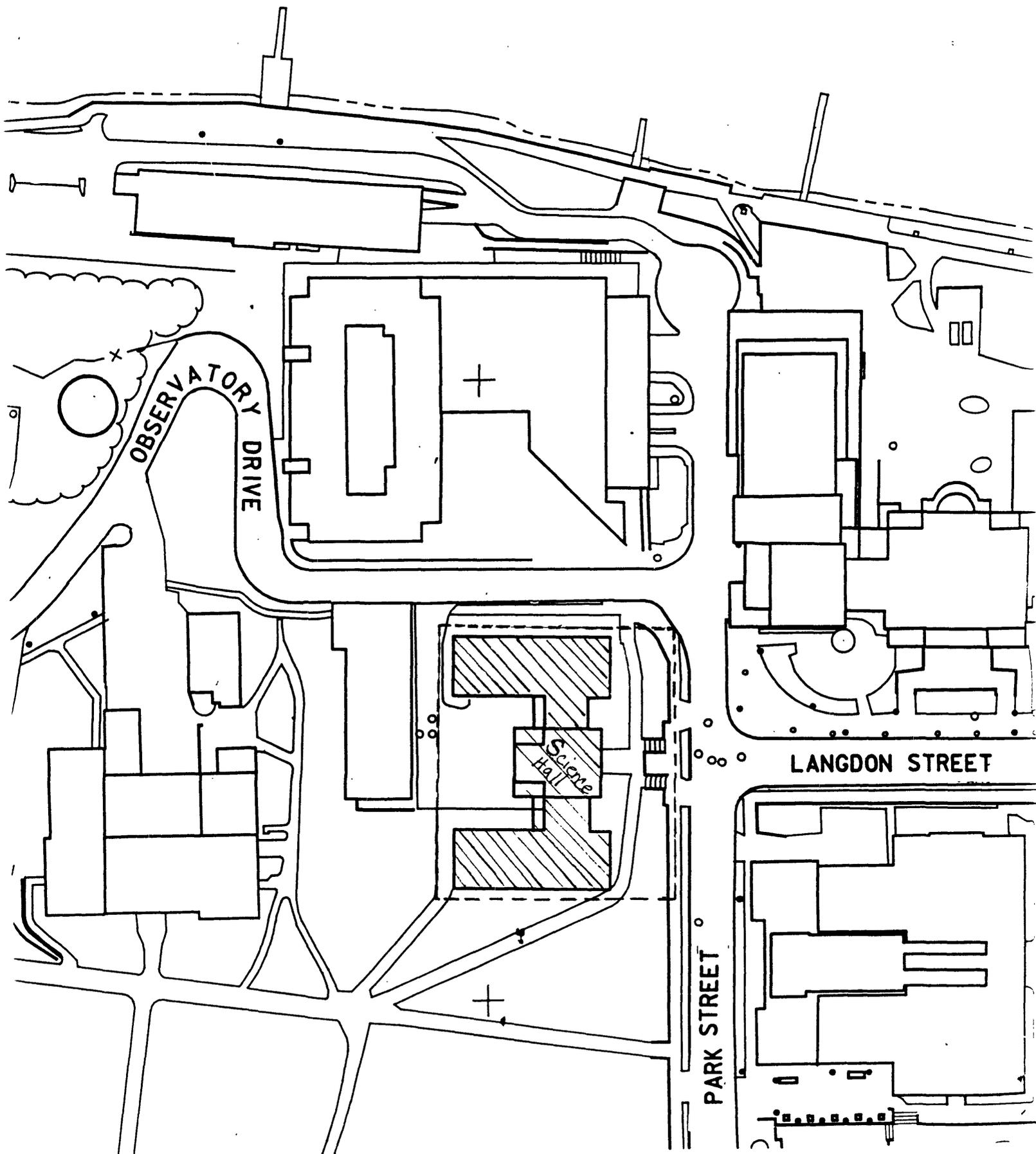
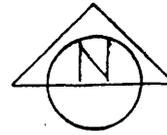
11. FORM PREPARED BY

Name/Title: Ms. Elizabeth L. Miller, Consultant
Department of Planning and Construction
9th Floor WARF, 610 Walnut Street
Madison, Wisconsin 53706

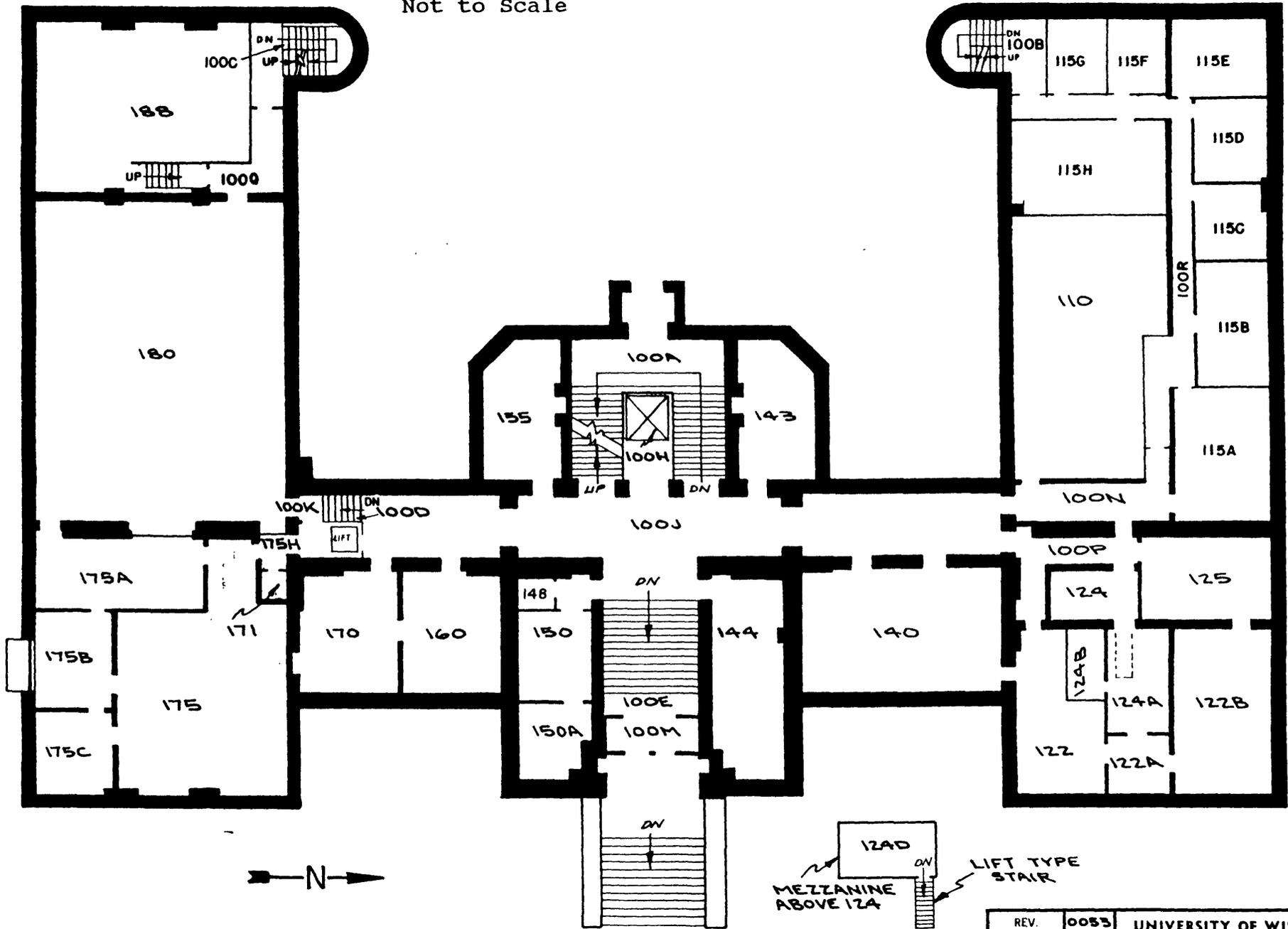
Telephone: 608/233-5942

Date: September 30, 1992

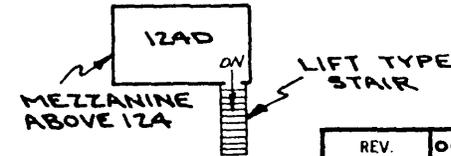
University of Wisconsin Science Hall
Madison, Dane County, WI
Scale: 1"=100'



University of Wisconsin Science Hall
 Madison, Dane County, WI
 Sample Floor Plan
 Not to Scale



FIRST FLOOR



REV.	0053	UNIVERSITY OF WISCONSIN
10-75	3-68	SCIENCE HALL
4-77	E.S.	MADISON CAMPUS
9-77	SPACE MANAGEMENT	
9-78		

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PHOTOS:

Photo 1 of 16

University of Wisconsin Science Hall, Madison, Dane County, WI
Photo by Elizabeth L. Miller, September 1991
Negatives on file State Historical Society of Wisconsin
East facade

Photo 2 of 16

University of Wisconsin Science Hall, Madison, Dane County, WI
Photo by Elizabeth L. Miller, September 1991
Negatives on file State Historical Society of Wisconsin
East and south facades

Photo 3 of 16

University of Wisconsin Science Hall, Madison, Dane County, WI
Photo by Elizabeth L. Miller, September 1991
Negatives on file State Historical Society of Wisconsin
South facade

Photo 4 of 16

University of Wisconsin Science Hall, Madison, Dane County, WI
Photo by Elizabeth L. Miller, September 1991
Negatives on file State Historical Society of Wisconsin
South and west facades

Photo 5 of 16

University of Wisconsin Science Hall, Madison, Dane County, WI
Photo by Elizabeth L. Miller, September 1991
Negatives on file State Historical Society of Wisconsin
West facade

Photo 6 of 16

University of Wisconsin Science Hall, Madison, Dane County, WI
Photo by Elizabeth L. Miller, September 1991
Negatives on file State Historical Society of Wisconsin
North and east facades

Photo 7 of 16

University of Wisconsin Science Hall, Madison, Dane County, WI
Photo by Elizabeth L. Miller, September 1991
Negatives on file State Historical Society of Wisconsin
Entrance stairhall, looking toward main entrance

Photo 8 of 16

University of Wisconsin Science Hall, Madison, Dane County, WI
Photo by Elizabeth L. Miller, September 1991
Negatives on file State Historical Society of Wisconsin
First floor corridor, looking west

Photo 9 of 16

University of Wisconsin Science Hall, Madison, Dane County, WI
Photo by Elizabeth L. Miller, September 1991
Negatives on file State Historical Society of Wisconsin
First floor classroom, now office space

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University of Wisconsin Science Hall, Madison, Dane County, WI

Photo by Elizabeth L. Miller, September 1991

Negatives on file State Historical Society of Wisconsin

Main stair, showing second floor and mezzanine

Photo 11 of 16

University of Wisconsin Science Hall, Madison, Dane County, WI

Photo by Elizabeth L. Miller, September 1991

Negatives on file State Historical Society of Wisconsin

Geography library (old Geological Museum), second floor, south wing

Photo 12 of 16

University of Wisconsin Science Hall, Madison, Dane County, WI

Photo by Elizabeth L. Miller, September 1991

Negatives on file State Historical Society of Wisconsin

Typical view of attic spaces

Photo 13 of 16

University of Wisconsin Science Hall, Madison, Dane County, WI

Photo by Elizabeth L. Miller, September 1991

Negatives on file State Historical Society of Wisconsin

View of central section showing roof construction

Photo 14 of 16

University of Wisconsin Science Hall, Madison, Dane County, WI

Photo by Elizabeth L. Miller, September 1991

Negatives on file State Historical Society of Wisconsin

Typical view of basement spaces

Photo 15 of 16

University of Wisconsin Science Hall, Madison, Dane County, WI

Photo by Elizabeth L. Miller, September 1991

Negatives on file State Historical Society of Wisconsin

Room 180, auditorium style lecture hall

Photo 16 of 16

University of Wisconsin Science Hall, Madison, Dane County, WI

Photo by Elizabeth L. Miller, September 1991

Negatives on file State Historical Society of Wisconsin

Main stair showing iron stair with slate treads, iron rail and lattice elevator cage.