NPS Form 10-900
(Oct. 1990)

OMB No. 10024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name BAILEY HALL

other names/site number CHEMISTRY BUILDING

2. Location

street & number JAYHAWK DRIVE AND SUNFLOWER ROAD ☐ not for publication

city or town LAWRENCE ☐ vicinity

state KANSAS code KS county DOUGLAS code 045 zip code 66046

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, 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. I recommend that this property be considered significant ☐ nationally ☐ statewide ☒ locally. (☐ See continuation sheet for additional comments.)

Richard D Pankratz 8/28/01

Signature of certifying official/Title Date

State of Federal agency and bureau

In my opinion, the property ☐ meets ☐ does not meet the National Register criteria. (☐ See continuation sheet for additional comments.)

Signature of commenting official/Title Date

State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that the property is:

☐ entered in the National Register.
☐ See continuation sheet.

☐ determined eligible for the National Register
☐ See continuation sheet.

☐ determined not eligible for the National Register.

☐ removed from the National Register.

☐ other, (explain:)

Signature of the Keeper Date of Action

BAILEY HALL
Name of Property

DOUGLA COUNTY, KANSAS
County and State

5. Classification

Ownership of Property
(Check as many boxes as apply)

- ☐ private
- ☐ public-local
- ☒ public-State
- ☐ public-Federal

Category of Property
(Check only one box)

- ☒ building(s)
- ☐ district
- ☐ site
- ☐ structure
- ☐ object

Number of Resources within Property
(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
1		buildings
		sites
		structures
		objects
1		Total

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing.)

N/A

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions
(Enter categories from instructions)

EDUCATION: RESEARCH FACILITY; COLLEGE

Current Functions
(Enter categories from instructions)

EDUCATION: COLLEGE

7. Description

Architectural Classification
(Enter categories from instructions)

LATE VICTORIAN: ROMANESQUE

Materials
(Enter categories from instructions)

foundation STONE: LIMESTONE
walls STONE: LIMESTONE
roof CONCRETE
other

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- [x] **A** Property is associated with events that have made a significant contribution to the broad patterns of our history.
- [x] **B** Property is associated with the lives of persons significant in our past.
- [ ] **C** Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- [ ] **D** Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply.)

Property is:

- [ ] **A** owned by a religious institution or used for religious purposes.
- [ ] **B** removed from its original location.
- [ ] **C** a birthplace or grave.
- [ ] **D** a cemetery.
- [ ] **E** a reconstructed building, object, or structure.
- [ ] **F** a commemorative property.
- [ ] **G** less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance
(Enter categories from instructions)

SCIENCE

EDUCATION

Period of Significance

1900 - 1920

Significant Dates

1905

Significant Person
(Complete if Criterion B is marked above)

BAILEY, EDGAR HENRY SUMMERFIELD

Cultural Affiliation

N/A

Architect/Builder

HASKELL, JOHN G. - ARCHITECT

STUBBS, W.R. - BUILDER

Narrative Statement of Significance
(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

Bibliography
(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

- [ ] preliminary determination of individual listing (36 CFR 67) has been requested
- [ ] previously listed in the National Register
- [ ] 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:

- [x] State Historic Preservation Office
- [ ] Other State agency
- [ ] Federal agency
- [ ] Local government
- [x] University
- [ ] Other

Name of repository:

UNIVERSITY OF KANSAS - SPENCER RESEARCH LIBRA

BAILEY HALL
Name of Property

DOUGLAS COUNTY, KANSAS
County and State

10. Geographical Data

Acreage of Property LESS THAN ONE ACRE

UTM References
(Place additional UTM references on a continuation sheet.)

	Zone	Easting	Northing
1	15	305380	4314280
2			
3			
4			

☐ See continuation sheet

Verbal Boundary Description
(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title CAROLYN BAILEY BERNEKING / PAMELA D. KINGSBURY

organization _____ date JUNE 10, 2000 / MAY 10, 2001

street & number 2517 W. 24TH TERR. / 224 N. CRESTWAY telephone 785-749-3520

city or town LAWRENCE / WICHITA state KS zip code 66047-2818 / 67208-3840

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional items
(Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of SHPO or FPO.)

name CHANCELLOR HEMENWAY - UNIVERSITY OF KANSAS

street & number 250 STRONG HALL telephone _____

city or town LAWRENCE state KS zip code 66045

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 *et seq.*).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Projects (1024-0018), Washington, DC 20503.

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Architectural Description of Bailey Hall

The Bailey Hall (Chemistry Building) at the University of Kansas is located on the northwest corner of Jayhawk Drive and Sunflower, with its front elevation facing south onto Jayhawk Drive. Erected between 1899 and 1900, the new chemistry building replaced an older, much smaller chemistry building erected in 1883 and situated in close proximity to the site of the new building. The location on Mt. Oread was ideal because its limestone base provided a strong fountain for the new chemistry building and it was near local limestone quarries.

The new chemistry building joined other school buildings on the ridge that forms the summit of Mt. Oread on the original forty acre university campus: Spooner Library (1893-1894); the University Building (1870-1872), renamed Fraser Hall in 1897; Blake Hall for physics, completed in 1894; Snow Hall (1885-86) for natural history to the west of the chemistry building, and Fowler Shops (1898-1899) for engineering (now the William Allen White School of Journalism) situated on the south side of Jayhawk Drive facing the chemistry building. In 1938, the chemistry building was named in honor of Edgar H. S. Bailey, who became Director of the Chemical Laboratory in 1883 and was head of the chemistry department from 1900 to 1920.

The building was designed by Bailey and his colleagues in collaboration with John G. Haskell (1832-1907)[1] a trained architect, who settled in Lawrence in 1857 and practiced predominately there and in Topeka, where he was state architect from 1866-1874, designing such buildings as the east wing of the State Capital (1866), the Douglas County Courthouse with Frederick C. Gunn (1903-194), and Lawrence's Plymouth Congregational Church (1870). Having visited some of the largest and best equipped chemistry laboratories in the country, Bailey knew the kind of chemistry building he wanted. He boasted that although the new chemistry building had little adornment, no expense had been spared to secure the "best practical conditions for chemical and pharmaceutical work, according to modern methods."[2] Despite Haskell's presence as architect, the building

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1 Clifford S. Griffin, *The University of Kansas: A History*. The University Press of Kansas, Lawrence, Kansas, p.193.

2 Ibid.

Bailey helped design was more in keeping with Kansas's vernacular building tradition than a grand architectural statement. It is pragmatic and economical in its construction, with the interiors of far greater importance than the exteriors that bear a modicum of architectural detailing to associate the building with the Romanesque Revival.

Bailey Hall is a massive, load-baring masonry building, a modified H-shape in plan, consisting of four stories, including a basement, and measures 187 feet in length and 70 feet in width at its broadest point. All four elevations consist of boldly rusticated irregular limestone blocks of varying dimensions, quarried locally, with deep joints laid in random courses to simulate the natural state of the limestone.

Except for a few changes, Bailey stands today much as it did when it was completed in 1900. Situated on the slightly sloping northern edge of the Mt. Oread ridge, the front elevation of Bailey Hall, as seen in a 1902 photograph, is eleven bays with the projecting end pavilions consisting of four basement windows, with projecting rusticated limestone sills and lintels. A slightly projecting string course, which the continues around the building. separates the basement from the upper floors. Above the basement two bays of three windows define the first, second and third floors. Each pavilion has its own hipped roof and dormers containing three windows are situated on the roof of the west pavilion and on the roof flanking the central bay of the building. On the pavilion's inner wall are two basement windows with coupled windows defining the three upper floors. All Bailey Hall's fenestration is wood framed sash windows that presumably is of the same type and material as the original windows.

The seven-bay central section has a series of three basement windows flanking the entrance and above a single window alternates with a coupled window on the three upper stories. The slightly projecting entrance bay is the most elaborate section of Bailey Hall. The entrance, which has been seriously compromised by an aluminum and glass canopy, consists of a broad round arch opening composed of rusticated voussoirs springing from an impost decorated with a modified egg and dart motif. Beginning at the second floor the central bay is flanked by chimneys that originally continued beyond the roof line. The second floor has a blind balustrade followed by a coupled window and above is a series of smooth limestone blocks carved with the date 1900, the completion date of Bailey Hall. On the third floor is a coupled window with a fanlight enclosed in a rusticated arch with a slightly elongated keystone. At the roof line is a series of three large, smooth-faced limestone blocks with Bailey Hall carved in gold lettering. The chimneys continue above the pitched metal roof and originally flanked a three-window dormer. Bailey was particularly proud of the series of fans, flues and chimneys that

dotted the original pitched metal roof and served to eliminate noxious fumes and introduce fresh air.[3] When the chemistry department moved out of Bailey Hall and was replaced by the School of Education in 1954, the chimneys and flues were eliminated.

The only architectural playfulness enlivening this very somber, functional elevation is a series of different window lintels. They vary from the thick slightly projecting monolithic rusticated lintels of the basement windows, the arched rusticated lintels of the first floor to the slender monolithic rusticated lintels of the second story and the flat arch rusticated lintels of the third floor. These lintels and the arched entrance portal are the only overt references associating Bailey Hall with the Romanesque Revival.

The east and west side elevations are not identical. The three-bay east elevation is defined by a boldly projecting central section that houses the stair well. The end bays have a full basement window followed by pairs of single windows on the first and second floors and no window on the third floor. The central section has four windows on each side and a round-arch entrance with rusticated voussoirs followed by arched windows with rusticated voussoirs on the three upper stories and a hipped roof. The west elevation consists of four floors with seven bays and a hipped roof. Unfortunately, a fire escape that winds its way up the face of the elevation has compromised the character of the west elevation. The eleven-bay rear elevation facing north has four floors and is the most severely altered of all Bailey Hall's elevations. A five-story tower clad with smooth-faced limestone blocks set in irregular courses with a fifth story of wood was superimposed onto the central section and partially obliterates the fenestration of each of the elevation's four floors.

Entry to the first floor is through the Romanesque entryway and up a flight of 10 steps to the first floor. This stairway continues to the three upper floors. From the entryway a flight of 10 steps leads to the basement. Below the basement floor was a plenum four feet deep and as the building is on the side of the hill, three sides of the basement are above the ground. The interior of the building is devoted to offices, classrooms, and lecture rooms. On the third floor of the east wing is the large lecture room, much the same as it was in 1900. Each of the three stories are 12 feet in height and a large attic is well lighted. It was in the central portion of the building in room 113 that the work on liquid ammonia advanced; that helium was discovered in natural gas; and that the government project

[3] Ibid.

of World War I was carried out.[4]

Mill construction was used throughout the building, the joists and ceilings finished with shellac and hard oil. The double floors which were made of 1 1/4" hard pine were separated by 1/2" air space and tarred paper. The corridors are twelve feet wide and the walls, instead of being built of stone, are of wood, with the spaces between the studs "nogged" with brick. The building is plastered with cement plaster.

On the east end of the building are four steps down to the entrance door which leads to the basement floor. Inside on the left are 12 stairs leading to a half landing with another 12 up to the first floor. This stairway also leads to the upper stories in this manner. On the first floor in the northeast corner was the Drug Section of the State Food and Drug Laboratories. The State Food Laboratory was located on the third floor of the west wing.[5]

There is no deterioration in the building today, it is still solid and serviceable after a century of use. It has practical serviceability and has been constantly occupied from the date of its completion for the purpose for which it was built - that of education of students. Its original appearance inside has been altered as required to enhance the efficiency in changes of methods of its interior environment. Today this venerable building stands as the physical emblem of education at the university.

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[4]Robert Taft, *Fifty Years in Bailey Chemical Laboratory at the University of Kansas*. Department of Chemistry, University of Kansas, April 28, 1950. photo, p.8; Floor plans, Chemistry. Campus Buildings. University Archives, Spencer Research Library, University of Kansas, Lawrence, Kansas. The original floor plans of Bailey Hall have never been found. According to the *Kansas Alumni Magazine*, June/July 1995, K.U. Professor Edward C. Franklin took Bailey Hall's blueprints with him when he left for Sanford University, Stanford, California where a 1906 Chemistry Building looks very much like Bailey Hall.

[5]Lucius E. Sayre."The Food and Drug Laboratories at the State University. Pamphlet, University Archives, Kenneth Spencer Research Libraries, University of Kansas.

8. Statement of Significance

The Bailey Hall (Chemistry Building) was built in 1899/1900 on the University of Kansas campus, Lawrence, Kansas, Douglas County. It is significant under Criterion A for its historical association with chemical education, research, and service conducted at the University of Kansas from 1900 to 1920. E.H.S. Bailey led the Department of Chemistry during these twenty years, with a remarkable faculty, who educated an unusually talented group of students (called "Bailey's Boys"), many of whom went on to outstanding careers in science, medicine and industry. A program of industrial research fellowships was developed which led to the establishment of industrial research laboratories. That helium, an inert gaseous element occurring in natural gas, was first isolated in its laboratories is the single most important scientific discovery made in the Chemistry Building. [6]

The building is also significant under Criterion B for its association with E.H.S. Bailey who was responsible for persuading the state legislature to fund the building, for the design and interior plans of the building to support chemical research and education, and for gathering an exemplary combination of faculty and students whose synergy led to a remarkable number of scientific discoveries pertinent to today's world.

Bailey and Lucius E. Sayre, head of the Pharmacy Department, had been petitioning the Board of Regents since 1891 for desperately needed space. Finally in the Tenth Biennial Report of 1898/99, Bailey said "either adequate room needed providing or chemistry and pharmacy would have to be dropped from the curriculum". On March 11, 1899 the legislature signed a bill appropriating only $55,000 of the $80,000 asked for by the Regents for the new Chemistry Building. As soon as Bailey had word of the appropriation, he and Haskell immediately left for a tour of inspection of other chemical buildings in the country; visiting Yale, Cornell, Pennsylvania, Columbia, Michigan and Wisconsin. Bailey's vision to construct the biggest and best new teaching facility west of Chicago resulted in a building which had an interior that would take years to complete.[7]

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[6]E.H.S.Bailey, H.P. Cady, F.B. Dains. "History of the Chemistry Department of the University of Kansas." *Bulletin of the University of Kansas*, February 15, 1925, v.24, no.4.

[7]Clifford S. Griffin. *The University of Kansas, a History*.University of Kansas Press, Lawrence, Kansas. 1974. p. 193-194; "Record of Proceedings of the Board of Regents", University of Kansas. v.2, March 21, 1899. p. 212, July 1, 1899, p. 232, 234.

Bailey Hall was constructed between the years 1899 and 1900 on the campus of the University of Kansas, Lawrence, Kansas. The University had been founded only 33 years earlier. In 1900 Lawrence had a population of 10,770 and the university student population was 1,200. There were 25,017 people living in Douglas County. From 1900 to 1950 the University student population grew from 1,200 to 10,000. In 1938 the building was officially named Bailey Hall after E.H.S. Bailey, Director of the Chemical Laboratories, though it had been affectionately called "Bailey's Barn" almost from it's beginning. It was located on the western edge of the K.U. campus across from Fowler Shops with Marvin's Grove to the north, and at that time there were no other buildings to the west. Today it stands at the hub of activity on the northwest corner of Jayhawk Drive and Sunflower Road and 75 feet east of Strong Hall, the Administration Building.

The site for this new building was on the edge of North Hollow (Marvin's Grove) and part of the original 40 acres of K.U. with the Murray Quarry and Cockins Quarry nearby. There were three advantages to building at this location 1) a firm foundation would be secured on the limestone bluff 2) the stone quarried on the site for the basement could be used in the walls of the building 3) the basement would have three sides above ground with natural lighting. John G. Haskell was the architect and the W.R.Stubbs Contracting Company were the contractors. Haskell was well-known in Kansas having served as State Architect from 1866-1874 before going into private practice. He did not have to go far to get his building materials. He chose the local bedrock that says so eloquently, "endurance, strength, natural beauty and practicality." [8]

> "The chemists and pharmacists kept their $80,000 edifice in mind, used the $55,000 to secure maximum floor space and relied on future legislatures for money for such things as a complete plumbing and heating system. . . The legislature of 1901 gave $10,000 more for equipment, and over the years the structure came more or less to realize Bailey's original hopes."[9]

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[8]Campus Notes. University of Kansas. Commencement, 1906; *Lawrence World*, September 10, 1900, p. 1; E.H.S. Bailey. "The New Chemical Laboratory of the University of Kansas", *Science*, December 28, 1900, p. 997; John M. Peterson. *John G. Haskell, Pioneer Kansas Architect*. Douglas County Historical Society, Lawrence, Kansas, 1984. p. 209.

[9] Griffin. *The University of Kansas, a History*. p. 193-194; "Building Prospects for Coming Year," *Lawrence Daily Journal*, March 27, 1899. p. 2; April 13, 1899, p. 4.

Excavation was started on May 20th 1899, two months after the appropriation had been made. The Kansas University Weekly reported:

Thirteen teams and a large number of men are working at it. There is from 3 to 5 feet of dirt and 4 to 5 feet of rock to be removed by the 22nd of June, so that the foundation can be commenced by the 1st of July."[10]

During the following weeks and months, the form of the building began to take place becoming a substantial structure, plain in appearance but handsome in its plainness. Haskell had problems with the looks of the roofline because of the necessity of the ventilating flues but in reality the chimneys set it apart from other buildings giving this building an air of importance and alooftness.The Kansas University Weekly reported on May 12, 1900 that the chemistry building was now under one roof and classes would be ready for use by the fall term. W.R. Stubbs Contracting Company was the low bidder for the interior work with Graeber Brothers low bidder for the plumbing. On July 7th the Lawrence Journal reported the chemistry building was accepted by the Board of Regents though it was far from completed as much of the interior remained unfinished. Finally in October the steam heat and ventilation was completed. [11]

Each end of the central portion had a four foot brick wall, which carried the heating flues, and some ventilating flues. This system of heating and ventilation resulted in 9" circular tiles connected with hoods, which were placed between each window, the tiles terminating above the peak of the roof, each hood being ventilated by an independent flue, and those flues were grouped into the brick chimneys.

Bailey said at the time, that the heating and ventilation systems, perhaps the most important points in laboratory construction, seemed to be very effective.[12]

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[10] *Kansas University Weekly*, May 20, 1899.

[11] *Kansas University Weekly*, May 20, 1899; "Chemistry Building Accepted." *Kansas University Weekly*, July 7, 1900. p. 4.

[12] Bailey, "The New Chemical Laboratory of the University of Kansas." p. 998.

When the building opened in the fall of 1900 the Chemistry faculty consisted of Bailey, one professor, one associate professor, two assistant professors, one instructor, one student assistant and one storekeeper. The Pharmacy faculty included Sayre, two assistant professors, and one instructor. All of this group but two were to spend their lives in the service of the University. There was no official dedication for the building until the inauguration of Chancellor Francis Snow as head of the University on October 16, 1902. The student population was about 1,200.[13]

An important event took place in 1902 with the purchase of an air compressor and liquefier. It was through the efforts of Prof. Edward C. Franklin that this equipment was installed without which the discovery of helium in natural gas could not have been realized. It was the first such equipment to be placed in use west of the Mississippi and the second in an educational institution in the United States. Franklin received his undergraduate degree in 1888 and in those early years was Bailey's only assistant. After the installation of the liquid air plant, Franklin and H. P. Cady worked together on liquid ammonia. Franklin's scientific work dealt with the ammonia system of acids. It led not only to the synthesis of a large number of compounds new to science but to new concepts of fundamental importance in regard to structure and relationships of many nitrogenous compounds out of which has grown a new system of compounds in chemistry. It was one of the major contributions to the chemistry of that period.[14]

C.E. McClung, discoverer of the sex chromosome, opened a new field of biochemistry which is still being developed today. He began his college years at K.U. in 1892 under Dean Sayre of the School of Pharmacy. During his study in biological research he discovered a structure in the nuclei of one-half of sperm cells, which he said was a determinant of sex. He said that eggs fertilized by sperms containing this structure produced males only, while sperm without this structure produced females. He called the structure "accessory chromosome." His prediction of chromosomes in taxonomy, phylogeny, mutations, etc. firmly established him among the great pioneers in the field of biology. In 1902 he became acting Dean of the

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[13]Bailey, Cady, Dains. History of the Chemistry Department. p. 53; The Chemistry storeroom keeper, George King, went to work in 1891 in the old Chemistry building and retired in 1941 with 50 years of service to that department. p. 22.

[14] Bailey, Cady, Dains. "History of the Chemistry Department of the University of Kansas. p. 19; *Graduate Magazine*, v.35:9, May 1937, p. 6.

K.U. Medical School, where he stayed for four years before going to the University of Pennsylvania.[15]

Elmer V. McCollum won national and international acclaim for his discoveries of Vitamins A, B, and D and for his discovery of the importance of the trace elements. When he graduated from K.U. in 1904 he was involved in the identification of inorganic elements essential in the diet. Later he became known as the "Father of Nutrition," making vitamins a common household word and "ushering in the era of nutrition that has contributed to the health of all mankind." From K.U. he went to Johns Hopkins University School of Hygiene and Public Health.[16]

The story of the discovery of helium in Kansas is an exciting one. It was found in what was hoped to be a gushing oil well in Dexter, Kansas in 1903. When gas instead of oil came out at a rate of 9 million cubic feet per day the townspeople were just as excited because now they could all heat their homes below cost. To celebrate they planned a hugh bonfire and to ignite the gas they lit a bale of hay and swung it over the gas to watch it burn. To their dismay, the gas put out the fire in the hay bale, it would not burn. Erasmus Haworth, professor of geology at K.U. and the Kansas State Geologist heard about this gas and had a sample sent to the chemistry department at K.U. David McFarland, associate professor of chemistry was the first to analyze the gas and reported it was 71% nitrogen with only 15% methane and an inert residue of 12%. Two years later Hamilton Perkins Cady, professor of chemistry, found the gas to contain 1.84% helium, the first time that helium was discovered other than in trace amounts on earth. Neither professor knew its uses however. The Kansas City Star quoted: "As far as they are able to discover the substance has no practical value, beyond its scientific interest and the quantity that the University of Kansas has on hand would supply the demand of the whole world for some time to come."[17]

The first time the world heard about this gas was when Bailey announced the discovery at the American Chemistry Society meeting in New Orleans, December 1905. Cady and McFarland continued with their

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[15]"C.E. McClung, World Figure in Science," *The Graduate Magazine*, March/April 1946. p. 7.

[16]Roger M. Herriott, ed. *Nutrition and Public Health*. Johns Hopkins School of Hygiene, Baltimore, Md., 1975. p. 8,9.

[17] Clifford W. Seibel. *Helium, Child of the Sun*. University of Kansas Press, 1968. p. 16; "Helium Found in Natural Gas," *Kansas City Star*, November 25, 1906.

research, analyzing some 44 gases from Kansas wells, finding helium in widespread occurrence and collaborating on articles in professional journals. It wasn't until World War I that helium played an important role in non-inflammable dirigibles.

Bailey's expertise had always been in water quality and in food and drug safety so when two State Food Laboratories were opened in 1905, one was housed in the Chemistry Department at K.U., under Bailey's supervision, the other at the Kansas State Agricultural College in Manhattan. Food and drugs from the state were sent to the laboratory for examination. Bailey sent the first food analysis to the State Board of Health in January 1906. It reported that two-thirds of the food analyzed contained preservatives and adulterations. As a result of this report and previous work at the State Food Laboratories, the Kansas Pure Food and Drug Act was passed on February 14, 1907. The State Food Laboratories continued operation in the building until 1955.[18]

Bailey's course in domestic and sanitary chemistry became the first course in the nation to offer practical courses related to everyday life. This led to the establishment of the department of Home Economics at K.U. in 1910 and to Bailey's writing one of the first textbooks in the field: *The Source, Chemistry and Use of Food Products.* Bailey was appointed chief chemist for the Kansas State Board of Health in 1899 and served until his death in 1933. Most of the more than one hundred articles and books that he wrote were of a practical nature, dealing with municipal water supplies, the composition of the state's oil, gas and coal deposits and investigating poisons and their effects.
As chief chemist for the Kansas Geological Survey, he prepared a report on the state's mineral waters which is still used as a reference today. [19]

In 1906 Robert Duncan came to the University as professor of Industrial Chemistry. He was the author of *The Chemistry of Commerce* which explained his plan of having fellowships established in a university by individuals or corporations and having the recipient study the chemical problems of that particular industry. The results of the study were to be the property of the person who endowed the fellowship.

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[18]Bailey, "Analysis of Food Products," *Kansas State Board of Health Bulletin* 2, January 1906; Kansas *General Statutes, Supplement*, 1907.

[19]Griffin. *The University of Kansas, A History*. p. 193-194; Viola J. Anderson. *The Department of Home Economics, The First 50 Years, 1910-1960*. University of Kansas Press, Lawrence, Kansas, 1964.

The first year of its operation at K.U. there were twelve endowed fellowships; researching the chemistry of bread, of laundering, of the treatment of woods, and of the constituents of petroleum. The program became very successful, so much so that when the Mellon Brothers of Pittsburgh, Pennsylvania asked him to start a similar program there, he left K.U. and founded the Mellon Institute of Industrial Research, a viable institution today.[20]

Clifford Seibel, business man of the helium industry, developed the means for producing this product in quantity and started a million dollar industry in Kansas and around the world. While at K.U. in 1910, he assisted Cady in helium research. It was thought at that time there was no practical application for this gas. In April 1917, Seibel read a paper on "The Rare Gases of Natural Gas" to the American Chemical Society's meeting in Kansas City, Mo. By a rare coincidence Dr. Richard Moore, superintendent of a Bureau of Mines station at Boulder, Colorado, was present at that meeting. As soon as Seibel was through reading his paper, Moore read a letter from Sir William Ramsey from England who had been investigating ways to use helium in their airships. That gave Seibel his application for the use of helium and he immediately went to Washington, D.C. where he assisted the government during World War I in solving the problem of using helium to replace hydrogen in dirigibles. Government money began to flow into the Chemistry Laboratories at K.U. and soon there were helium plants in Dexter, Kansas; Thatcher, Colorado; and Ft. Worth and Amarillo, Texas. After the war Seibel became helium engineer for the Bureau of Mines, Washington, D.C.[21]

Today helium uses include: "cooling infrared detectors, space simulations, materials testing, biological and superconductivity research, helium-neon lasers, detecting gas leaks, helium-oxygen mixture for deep sea diving, and high-speed welding of special metals. Helium has also been used for producing extremely high velocities in wind tunnels and in hospitals it serves as a cryogenic liquid for magnetic resonance imaging. It is still considered a strategic reserve material." Who would have thought that for two years, 1905-1907, the world's supply of helium rested in two glass bottles on a shelf in the Chemistry Department at the University of Kansas. Thus from a laboratory curiosity in the Chemistry Department

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[20]Bailey, Cady, Dains. *History of the Chemistry Department*.p.32; Robert Taft. *Fifty Years in Bailey Chemical Laboratory at the University of Kansas*. April 28, 1950. p. 4.

[21] Seibel. *Helium, Child of the Sun*. p. 16; "Kansas Will Realize Millions." *University of Kansas Alumni Magazine*. June, 1959, v. 60:4. p. 8-11; "Helium Found in Natural Gas." *Kansas City Star*, November 25, 1906.

at the University of Kansas developed a new industry to benefit the world. On April 15, 2000, the American Chemical Society designated Bailey Hall as a National Historic Chemical Landmark.[22]

As Bailey Hall moves into its second century, the School of Education will move out, and the building will become the new home of the Department of Communication Studies and the interdisciplinary and international programs of the College of Liberal Arts and Sciences." [23]

[22] "The Discovery of Helium in Natural Gas." American Chemical Society, April 2000. p. 3.

[23] Maria Carlson. "Bailey Hall's First 100 years, the Future". Pamphlet. University Archives, April 2000.

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United States Department of the Interior
National Park Service

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VERBAL BOUNDARY DESCRIPTION

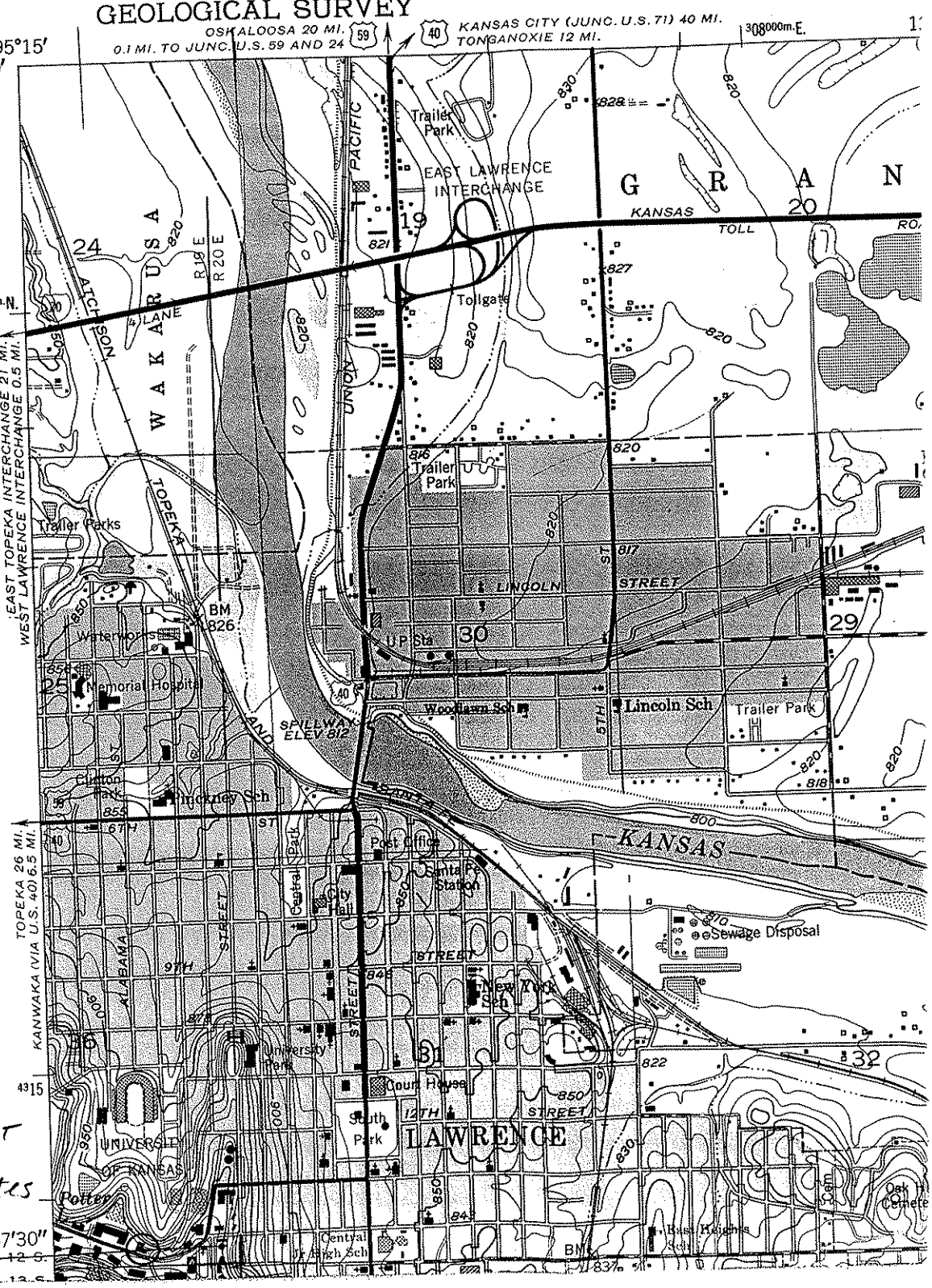
The property stands on the NE4, SE4, SW4, SE4 of Section 36, Township 12 South, Range 20 East. As an integral part of the University of Kansas Lawrence campus, the building stands at the juncture of Jayhawk Boulevard and Mississippi Street. Jayhawk Boulevard bounds the building to the south, Mississippi Street bounds the building to the east, Memorial Drive bounds the building to the north and Strong Hall bounds the building to the west.

BOUNDARY JUSTIFICATION

The nominated property includes all property historically associated with Bailey Hall.

6962 III SE
(WILLIAMSTOWN)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



BAILEY HALL
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