NPS Form 10-900
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United States Department of the Interior
National Park Service

National Register of Historic Places Inventory—Nomination Form

For NPS use only
received MAY 16 1985
date entered JUN 19

See instructions in *How to Complete National Register Forms*
Type all entries—complete applicable sections

1. Name

historic Agricultural Chemistry Building

and/or common Biochemistry Building

2. Location

street & number 420 Henry Mall, University of Wisconsin Campus ___ not for publication

city, town Madison ___ vicinity of

state Wisconsin code 55 county Dane code 025

3. Classification

Category	Ownership	Status	Present Use	
___ district	_X_ public	_X_ occupied	___ agriculture	___ museum
_X_ building(s)	___ private	___ unoccupied	___ commercial	___ park
___ structure	___ both	___ work in progress	_X_ educational	___ private residence
___ site	**Public Acquisition**	**Accessible**	___ entertainment	___ religious
___ object	___ in process	___ yes: restricted	___ government	___ scientific
	___ being considered	_X_ yes: unrestricted	___ industrial	___ transportation
	_X_ N/A	___ no	___ military	___ other:

4. Owner of Property

name University of Wisconsin Board of Regents

street & number 1860 Van Hise Hall

city, town Madison ___ vicinity of state Wisconsin

5. Location of Legal Description

courthouse, registry of deeds, etc. Register of Deeds, Dane county Courthouse

street & number 201 Monona Avenue

city, town Madison state Wisconsin

6. Representation in Existing Surveys

title Madison Campus Architecture, Historical and Archaeological Survey has this property been determined eligible? ___ yes _X_ no

date 1978 ___ federal ___ state ___ county _X_ local

depository for survey records Department of Planning and Construction

city, town University of Wisconsin Madison state Wisconsin

7. Description

Condition		Check one	Check one
_X_ excellent	___ deteriorated	___ unaltered	_X_ original site
___ good	___ ruins	_X_ altered	___ moved date _____
___ fair	___ unexposed		

Describe the present and original (if known) physical appearance

Located at 420 Henry Mall on the University of Wisconsin campus, the Agricultural Chemistry building is a two-story Georgian Revival structure constructed of red brick in Flemish bond with limestone trim. The main facade of the building faces Henry Mall, while University Avenue passes just south and branches into Babcock Drive to the west. The overall plan of the building is L-shaped. The main block consists of the original structure, designed by Laird and Cret and built in 1912,[1] and a noncontributing matching addition, designed by Law, Law, and Potter of Madison and completed in 1941.[2] The main block measures 130 feet on the east and west facades, and 165 feet along the south facade. A three-story noncontributing brick addition completed in 1957 and running eighty feet east-to-west and 145 feet north-to-south lies to the north of the 1941 section,[3] north of which is another noncontributing addition, currently under construction. The symmetrical exterior of the main block features a raised rusticated basement, quoins, a stone water table, a simple stone cornice, a low-pitched hipped red tile roof, and central projecting pedimented entrance pavilions on the east and west facades. On the east (main) facade, the pedimented entrance pavilion is flanked on either side by four bays of multi-paned double-hung sash windows. The pediment has a raking cornice enriched with dentils and modillion blocks, and an oculus is set in the gable end. Below, four colossal stone piers supporting a stone cornice with dentils and medallions frame the entrance portal. The double entrance doors are surmounted by a single-paned transom painted "BIOCHEMISTRY 420 HENRY MALL." Above the entrance stone doric columns support a cornice, incised "AGRICULTURAL CHEMISTRY," and an elliptical arch. At second story level there is a large stone plaque. The projecting pedimented entrance pavilion on the west facade, flanked by four bays of windows, mirroring the east facade, has a raised rusticated stone basement, at which level double entrance doors are located, surmounted by a single-paned transom painted "BIOCHEMISTRY." Above, four colossal stone piers support a cornice enriched with medallions and dentils, and a pediment with a raking cornice ornamented with dentils and modillion blocks, and set with an oculus, identical to the east facade configuration. In the center on the south facade there is a gabled projecting wall dormer, with a broken pediment and quoins framing a multi-paned window. The window overlooks a shallow stone balcony with an iron rail. Above is a second window in a segmental arch. A stone balustrade with turned balusters appears at the edge of the steeply pitched roof of the central section, behind which are two flat-roofed dormers. The majority of the windows on the main block of the Agricultural Chemistry building are multi-paned double-hung sash, with stone sills. Those at the piano nobile are distinguished by a keystone and a brick relieving arch. Four single doors occur on the north facade of the building; one, at second story level, gives access to a fire escape.

The 1957 addition, designed by Foeller, Schober, Bernard, Safford, and Jahn of Green Bay, is modern and streamlined, with columns of double-hung sash windows, and a flat roof. The addition under construction is a product of Bowen, Williamson, and Zimmerman of Madison.

The Department of Biochemistry, formerly the Department of Agricultural Chemistry, has been in residence since 1913.[4] The building underwent remodeling in 1965,[5] at which time dropped acoustical tile ceilings and asphalt tile floors were installed in some areas. The floor plan consists of a central double loaded corridor with a series of classrooms and laboratories opening onto it. In the east facade entry hall the flooring, wainscoting, and short flight of stairs are of gray marble, and, as in the rest of the

building, the walls and ceiling have a plaster finish. Two bronze plaques hang on the wall, one commemorating the career of Edwin Bret Hart, the other the career of Stephen Moulton Babcock. In the 1912 section there is a two-story auditorium which retains its original built-in wooden seats. Shouldered architraves of dark varnished wood frame the windows, and two wooden beams set on foliated consoles ornament the ceiling. On the second floor the offices utilized by Babcock while an emritus professor, between 1913 and 1931, are identified with a plaque. There is a stairhall with an open newel staircase of concrete on the south side of the building. On the west facade the entrance opens into the basement level of a stairhall with dark gray terrazzo flooring, black marble wainscoting and an open newel staircase with an aluminum Art Deco rail. The wainscoting is discontinued at the landing between the first and second floors. At the first floor there is an octagonal vestibule, with murals representing scenes from farm life, and a floor inlaid with a pattern of multi-colored terrazzo. The 1957 section houses a biochemical pilot plant for the manufacture of antibiotics and vitamins, and has metal screen ceilings, asphalt tile flooring, and tile faced walls.

While the Agricultural Chemistry building has undergone alterations, the 1941 addition was designed to match the original building, and the 1957 section, while modern in style, maintains the same scale and materials as the original. Both provide compatible additions.

*see note below

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[1] Gordon D. Orr, ed., "Perspectives of a University," (Madison, WI: University of Wisconsin, 1978), p. 66.

[2] "New Biochemistry Labs to be Viewed," Capital Times (Madison, WI), 5 March 1957, p. 8.

[3] Ibid.

[4] Gordon D. Orr, ed., op.cit., p. 106.

[5] Ibid., p. 66.

* Note: Sited on the Beaux Arts planned Henry Mall, the Agricultural Chemistry building relates handsomely to the nearby Agricultural Journalism and Engineering Buildings in terms of the common use of materials, scale and overall massing, to create a distinctive streetscape of educational facilities at the heart of the University campus.

8. Significance

Period	Areas of Significance—Check and justify below				
___ prehistoric	___ archeology-prehistoric	___ community planning	___ landscape architecture	___ religion	
___ 1400–1499	___ archeology-historic	___ conservation	___ law	X science	
___ 1500–1599	___ agriculture	___ economics	___ literature	___ sculpture	
___ 1600–1699	X architecture	X education	___ military	___ social/ humanitarian	
___ 1700–1799	___ art	___ engineering	___ music		
___ 1800–1899	___ commerce	___ exploration/settlement	___ philosophy	___ theater	
X 1900–	___ communications	___ industry	___ politics/government	___ transportation	
		___ invention		___ other (specify)	

Specific dates 1912[1] **Builder/Architect** Warren Powers Laird and Paul Phillippe Cret[2]

Statement of Significance (in one paragraph)

The University of Wisconsin College of Agriculture was established in 1889,[3] and has earned an international reputation for excellence in many fields. The development of the College of Agriculture can be divided into two periods, the first associated with Dean William Arnon Henry, the second with Dean Harry Luman Russell. Henry was appointed first dean of the College of Agricultrue in 1889.[4] His administration represents the pioneering era in the development of the college. During this era, research and extension were emphasized, and the college gained prominence in dairy science, agricultural physics, and horticulture. Research quickly became the basis of the university's contribution to agricultrue, combining scientific investigations with practical applications in an effort to gain the confidence of the state's farmers. Extension served to disseminate the information gathered, through the Farmers' Institutes, highly popular two-day traveling workshops. Henry also initiated the Short Course in Agriculture (1886) and the Dairy Course (1890), each a twelve-week winter session, held during farming's slowest season to enable farmers to attend the university.[5] Both courses were influential, attracting farm youth from all over the state, and were much imitated throughout the United States and abroad. The success of the courses demonstrated that in order to attract students, agricultural education needed to be practical, and geared toward the interests of farm youth. This experience led Dean Russell to reorganize the four-year Bachelor of Science course, which had suffered from a lack of students during Henry's tenure. Russell was appointed dean in 1907.[6] Under his administration, extension was enlarged, research diversified, and the teaching program grew steadily, with the addition of many new subjects and departments. New ground was broken in such fields as bacteriology, plant pathology, genetics, and the economic and social aspects of farming. Through Russell's efforts, the modern College of Agriculture was established.

Currently only one building associated with the College of Agriculture is listed on the National Register; the Agriculturel Dean's Residence (1897). Eight others are in the process of being nominated; six from Henry's administration, and two from Russell's. These buildings are Hiram Smith Hall (1892), King Hall (1894), the Dairy Barn (1898), the Horse Barn (1899), the Agricultrual Heating Station (1901, also known as the Agricultural Bulletin Building), Agriculture Hall (1903), the Stock Pavilion (1908), and Agricultural Chemistry (1912, also known as Biochemistry).

The Agricultural Chemistry building is of national significance in the fields of science and education. The site of nutrition research on the University of Wisconsin Madison campus, major contributions made by university biochemists include the discovery of vitamins A and B, the development of a process for concentrating vitamin D in food through irradiation, and the isolation of nicotinic acid, and of the anticoagulant blood factor Dicumarol. The Agricultural Chemistry building also has local architectural significance, and was designed by nationally prominent architects Laird and Cret.

9. Major Bibliographical References

Glover, Wilbur H. Farm and College. Madison, WI: University of Wisconsin, 1952.
Curti, Merle and Vernon Carstensen. The University of Wisconsin: The History 1848-1925. Madison, WI: University of Wisconsin Press, 1949.

10. Geographical Data

Acreage of nominated property less than one

Quadrangle name Madison West **Quadrangle scale** 1:24000

UTM References

	Zone	Easting	Northing		Zone	Easting	Northing
A	16	303740	4771620	B			
C				D			
E				F			
G				H			

Verbal boundary description and justification - Part of the SW¼ of section 15, township 7N, Range 9E, City of Madison, Wisconsin. A parcel of land on Henry Mall beginning at the northwest curb at the corner of Henry Mall and University Avenue, then N 208 feet, W 95 feet, N 200 feet, W 180 feet, S 335 feet to Babcock Drive, E 193 feet along Babcock Drive to University Avenue, and 98 feet east along University Avenue to point of origin.

List all states and counties for properties overlapping state or county boundaries

state	code	county	code
state	code	county	code

11. Form Prepared By

name/title E. L. Miller, Research Technician

organization State Historical Society of Wisconsin **date** February 1985

street & number 816 State Street **telephone** 608/262-2971

city or town Madison **state** Wisconsin 53706

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

_X_ national ___ state ___ local

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

State Historic Preservation Officer signature [signature]

title DIRECTOR OF HISTORIC PRESERVATION **date** 6 MAY 1985

For NPS use only

I hereby certify that this property is included in the National Register

[signature] Entered in the National Register **date** 6/19/85

Keeper of the National Register

Attest: **date**

Chief of Registration

GPO 894-785

Science and Education

The Agricultural Chemistry building has been the site of vitamin nutrition research on the University of Wisconsin Madison Campus since its completion in 1912. The contributions made to science and education on the part of the Department of Agricultural Chemistry (now the Department of Biochemistry) and prominent department biochemists such as Edwin Bret Hart, Elmer Verner McCollum, Harry Steenbock, Conrad Arnold Elvehjem, and Karl Paul Link lend the building national significance.

Edwin Bret Hart (1874-1953) served as professor of agricultural chemistry and chairman of the department for thirty-eight years, succeeding internationally reknowned agricultural chemist Stephen Moulton Babcock in 1906. Born in Ohio, Hart graduated from the University of Michigan, subsequently studying briefly with Albert Kossel in Germany. He was employed as a chemist at the New York State Agricultural Experiment Station in Geneva from 1987 until 1906, when he was hired by the University of Wisconsin. Although Hart's name never came to be linked with the discovery of any specific vitamin, he undertook much of the preliminary work that ultimately led to greater knowledge concerning twelve or more vitamins, and he was internationally recognized as a pioneer in the development of the science of nutrition. Hart was the author of General Agricultural Chemistry (1913) and Chemistry and Daily Life (1913), as well as some 400 papers contributed to scientific journals. Hart retired in 1944.[7]

At the instigation of Stephen M. Babcock, a series of single plant feeding experiments were inaugurated in 1907, under the direction of Elmer Verner McCollum, with the assistance of Marguerite Davis and McCollum's student Harry Steenbock. Four groups of four cows each were fed rations carefully balanced chemically from single plants: corn, wheat, oats, and a mixture of the three. The starvation of those cows on rations of oats and wheat pointed to the existence of some unknown factor necessary to growth and life, present in certain foods, and lacking in others which had previously been regarded as satisfactory on the basis of chemical components. McCollum spent four years toiling with chemical studies of the three plants to discover the missing element. In 1913 McCollum's efforts were rewarded with the discovery of a fat soluble element in egg yolk, which he called vitamin A.[8] While the existence of vitamins had been hypothesized previously, this was the first experiment to successfully prove their existence, representing a quantum leap in the field of nutrition. Subsequent nutrition experiments, also carried out in the Agricultural Chemistry building, comparing diets of polished rice and whole rice, led to McCollum's discovery of water soluble vitamin B in 1915. Born in Kansas, McCollum (1879-?) was educated at the University of Kansas and Yale University. McCollum was employed by the University of Wisconsin from 1907 until 1917, when he left to accept a professorship at Johns Hopkins University.[9]

Harry Steenbock (1886-1967), McCollum's former student, was born in Wisconsin and educated at the University of Wisconsin and Yale University. Steenbock was hired as an instructor in agricultural chemistry in 1910, attaining full professorship in 1920. Working from his laboratory in the Agricultural Chemistry building, Steenbock developed a method for recovering vitamin A in its pure form, and determined the use of copper

and iron effective in the treatment of anemia. Steenbock's greatest contributions to the field of nutrition research were his discovery in 1923 of the relationship between vitamin D and the action of ultra-violet rays on bone growth, and the subsequent development of the "Steenbock Process" for concentrating vitamin D in foodstuffs through irradiation. The "Steenbock Process" was adopted on a wide scale, controlled through a patent issued to Steenbock in 1928 and administered by the Wisconsin Alumni Research Fund (WARF), organized for the purpose. Steenbock retired from the university in 1956.[10]

Later contributions of note carried out in the Agricultural Chemistry building were made by Conrad Arnold Elvehjem and Karl Paul Link. Elvehjem (1901-1962), born in Wisconsin and educated at the University of Wisconsin, joined the faculty as a teaching assistant in agricultural chemistry in 1923. A full professor by 1936, in 1944 Elvehjem succeeded Hart to the Chair of the Department of Biochemistry, which had changed its name in 1938. He went on the become Dean of the Graduate School in 1946, and President of the University in 1958, a post in which he served until his death. Elvehjem gained international prominence in 1937 when he isolated nicotinic acid, leading directly to a cure for black tongue in animals and human pellagra.[11] Karl Paul Link (1901-) isolated the anticoagulant blood factor Dicumarol in 1941, which proved to be a medical breakthrough.

Architecture

The Agricultural Chemistry building is an excellent example of the Georgian Revival style, with its use of brick and specific elements such as the pedimented entrance pavilions, quoins, balustrade, and dormers. Details possibly inspired by the Federal style are displayed in the elliptical hood mold over the main entrance, the slightly pitched roof, and the very plain stone cornice. A product of the collaboration of nationally prominent architects Laird and Cret, it is one of seven buildings on the Madison campus designed by them, and the only one in the Georgian Revival style.

Architects Laird and Cret, based at the University of Pennsylvania in Philadelphia, served as consultant to many states, cities and private parties during the early twentieth century.[13] The senior member , Warren Powers Laird (1851-1941), was born in Minnesota and educated at Cornell University. After a period of supplementary training with various firms in Boston and New York, Laird attended an atelier in Paris. In 1891 Laird assumed directorship of the newly established School of Architecture at the University of Pennsylvania, becoming a leading figure in architectural education in the United States.[14] Paul Phillippe Cret (1876-1945), born in Lyons, France, studied architecture at the Ecole des Beaux Arts and accepted a position as assistant professor of design at the University of Pennsylvania in 1903. Cret was promoted to full professor in 1907, at which time he retired from active participation in academia to initiate his architectural career, although he maintained his association with the University of Pennsylvania until 1937.[15] Laird and Cret are associated with a number of buildings on the University of Wisconsin Madison campus, including the Central Heating Station (1908), the Stock Pavilion (1908), Lathrop Hall (1910), the Agricultural Chemistry building (1913), the Home Economics building (1913), Wisconsin High School

(1914), and Sterling Hall (1916.[16] Cret was an internationally prominent architect who won wide recognition during his professional career. His most notable designs include the Pan American Union building (1907-1910), designed in cooperation with Albert Kelsey and located in Washington, D.C.; the Detroit Institue of Fine Arts (1921), a collaboration with Zantziger, Borie and Medary; and the Folger Shakespeare Memorial Library (1932), also located in the nation's capital.[17]

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[1] Gordon D. Orr, ed., "Perspectives of a University," (Madison, WI: University of Wisconsin, 1978), p. 66.

[2] Ibid.

[3] Merle Curti and Vernon Carstensen, The University of Wisconsin: The History 1848-1925, (Madison, WI: University of Wisconsin Press, 1949), II:376.

[4] Ibid.

[5] Ibid., II:375.

[6] Ibid., II:400.

[7] National Cyclopedia of American Biography, (NY: James T. White and Co., 1961), 43:396.

[8] Encyclopedia Americana, (NY: Americana Corp., 1965), 28:181.

[9] Elmer Verner McCollum, From Kansas Farm Boy to Scientist, (Lawrence, KS: University of Kansas Press, 1964), pp. 13-136.

[10] National Cyclopedia of American Biogrpahy, (James T. White and Co., 1942), F:208.

[11] Ibid., (NY: James T. White and Co., 1960), I:121.

[12] Merle Curti and Vernon Carstensen, op.cit., II:415.

[13] Henry Withey and Elsie R. Withey, Biographical Dictionary of American Architects (Deceased), (LA: Hennessy and Ingalls, 1970), p. 360.

[14] Ibid.

[15] Ibid., p. 149.

[16] Alden Aust, "A Tabular History of the Buildings of the University of Wisconsin," (Madison, WI: University of Wisconsin, 1937).

[17] Henry Withey and Elsie R. Withey, op.cit., p. 149.

[18] Other comparable examples of the Georgian Revival style on campus include the Agricultural Engineering Building, Agricultural Journalism, the Agronomy Builfing and the old Forest Products Lab. All are fine examples of the style.

United States Department of the Interior
National Park Service

National Register of Historic Places Inventory—Nomination Form

Agricultural Chemistry Building, 420 Henry Mall, Madison, Dane County,WI

#6. Representation In Existing Surveys

Wisconsin Inventory of Historic Places, Not Determined eligible previously.
Date 1984 State survey
State Historical Society of Wisconsin
Madison, Wisconsin 53706

AGRICULTURAL CHEMISTRY
UNIVERSITY OF WISCONSIN
420 HENRY MALL
MADISON, WISCONSIN
SCALE: 1 INCH = 100 FEET