



PRESERVATION AND CONSERVATION ASSOCIATION

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Focus On: University of Illinois' Round Barns

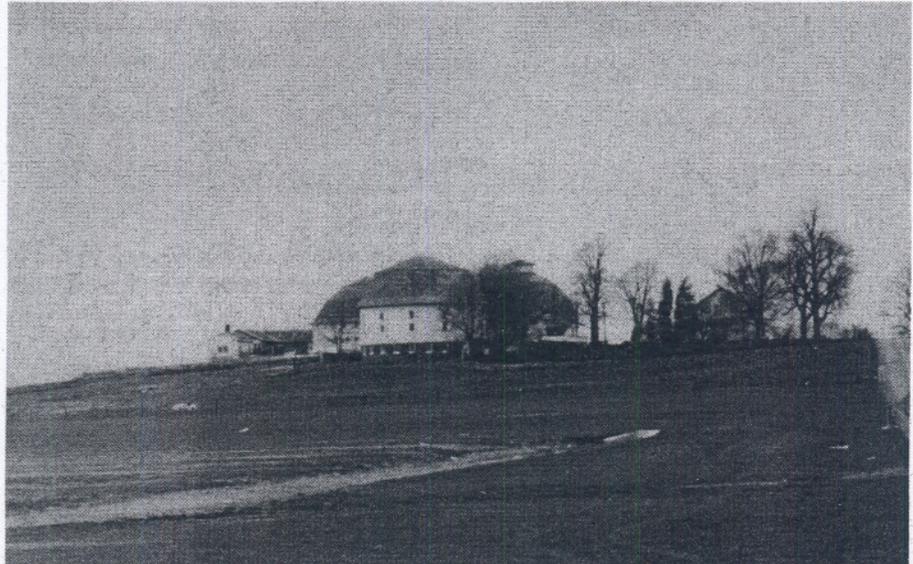
The University of Illinois Experimental Dairy Farm Historic District is eligible for the National Register of Historic Places for Agriculture and Architecture. The agricultural and architectural significance of the historic district is linked because scientific agricultural methods helped shape the design of the round barns.

The period of significance for the historic district, 1908-1943, represents a time when the Experimental Dairy Farm, through the civic-minded College of Agriculture, helped spread scientific principles of agriculture across the state of Illinois. In addition, the three round barns are representative examples of a significant agricultural building type. The round barns, the manager's house, and a historic rectangular storage building are contributing buildings in the historic district. The noncontributing buildings consist of a garage for the manager's house, a brick dairy laboratory, and a rectangular cow shed, all of which are post-1950 construction.

Background

In the 1870s, sixty percent of the population lived on small farms. Farmers were producing enough food to sustain their families but little, if any, in excess. UI President James believed that education and research were necessary tools for an advancing civilization. President James planned a dual role for the College of Agriculture, both as an agent to spread information throughout the state and as a research laboratory for practical science and classroom instruction. In 1872, Dean Davenport organized the College of Agriculture into four departments: agronomy, animal husbandry, dairy husbandry, and horticulture.

The College of Agriculture had a slow beginning. Relief came in 1887 with the Hatch Act, which granted \$5,000 annually to each state for practices in agriculture. This money provided the needed



University of Illinois Experimental Dairy Farm Historic District as seen from the northeast. The three round barns, manager's house, and rectangular storage building are contributing buildings.

funds to research problems associated with scientific agriculture. The Agricultural Experiment Station was formed the next year.

As a part of this new-found growth, the College of Agriculture started constructing buildings to accommodate an influx of students and research faculty. The first round barn and manager's house were built in 1908. In 1910, the College removed much of its funding from the general university accounts to become more self-supporting. It was then responsible for building at least "one permanent building each year till the agricultural interests were fully housed." Around 1910, the Agronomy and Horticulture buildings, Farm Mechanics building, beef cattle barns, and the second and third round dairy barns were built.

In 1888, the College of Agriculture was divided into three active components: classroom instruction, the Agricultural Experiment Station, and a state wide Extension Service. Classroom instruction consisted of classes ranging from home economics, to poultry, to dairy. In 1904, the Agriculture faculty consisted of 27

and increased to 136 by 1914; student enrollment increased from 339 to 1,014 within the same ten years.

The Agricultural Experiment Station was established to administer research activities within the College. It dispersed results and interesting information to thousands of farmers throughout Illinois through *Agricultural Experiment Station Bulletins*. These bulletins and innovative experiments helped farmers in Illinois make efficient and educated choices about farm management. Through *Agricultural Experiment Station Bulletins* #143 and #180, news about the advantages associated with the round barns spread throughout Illinois.

In 1901, the College of Agriculture organized the Extension Service throughout the state. These advisors would use the resources of the University of Illinois and the College of Agriculture to answer farmers' questions and to run small county experiments. In 1902, a youth movement called 4-H began in Winnebago County, Illinois. It started as a scientific agriculture club for children ages 9-18, sponsored by the University of Illinois

through county extension advisors and volunteer leaders. In 1915, the Smith-Lever Act provided federal aid and 4-H flourished.

Significance

The goal of dairy farming was to produce the largest amount of milk per acre of feed at the lowest possible cost, while the mission of the Experimental Dairy Farm was to study the problems of country life and to develop methods for dealing with them. A major problem facing dairy farmers in Illinois was that dairymen were "not getting the profits they should from the money and labor invested in the business of producing milk." Wilber John Fraser, the great promoter of round barns in Illinois, wanted farming in Illinois to be efficient, convenient, and profitable.

Fraser's colleague was H.C. Crouch, who traveled from New England to accept the position of manager at the Experimental Dairy Farm around 1907-1908. At the same time, Fraser spent the summer overseas learning from the farmers of Great Britain, Holland, and Denmark. This trip provided Fraser with the inspiration to improve the efficiency of American dairy farms. Together, Fraser and Crouch led the promotion of round barns in Illinois for they believed that the construction methods used in building round barns incorporated the idea of using scientific principles to help agriculture, while meeting the farmers' goals of low cost and high milk yields through "common sense" design.

Fraser believed that for a dairy farm to be efficient, the cows should be fed with feed raised on the farm; this was a common means of both controlling farm expenses and the diets of the animals. However, it made dairy farming a very labor intensive business, since a dairy farmer was not only a herdsman, but also a planter and harvester. Even milking the cattle was a time consuming, twice-a-day, task. In addition, the cattle had to be moved indoors for milking to insure the sanitary collection and storage of the milk. The use of cow manure for crop land fertilization was another way farmers strove to reduce costs. But the collection and spreading of this manure added another component to the dairy farmer's work day. The round-the-clock labor associated with dairy farming forced the farmer to live on the farm. Thus, for efficiency of travel and convenience, a manager's house was planned as a part of the Experimental Dairy Farm. Crouch, his wife, and two daughters were the first residents of the manager's house.

Uniformly good cattle, economical feeding and health, and sanitary methods are qualities of successful production of milk and other dairy products of high quality. Fraser demonstrated and challenged the norms of dairy farming through various experiments. For example, Fraser felt that the most efficient cows only came with raising crops that contained a maximum amount of digestible nutrients, especially protein which was essential for dairying. In order to compare the digestible nutrients contained in different varieties of hay, Fraser planted timothy hay, the type extensively grown on midwestern dairy farms in the early 1900s, and alfalfa hay. Tests found that the timothy hay contained less than one-tenth as much digestible protein as alfalfa hay. The results of these experiments were published and spread throughout Illinois through the *Agricultural Experiment Station Bulletins*.

Architecture

The architectural and agricultural significance of the buildings within the Experimental Dairy Farm Historic District is intertwined due to the fact that the three round barns were purposely designed to meet and promote the scientific principles of dairy farming. According to the minutes of the September, 1908 meeting of the Board of Trustees, appropriations were given to build a round barn and manager's house on the south farms. Architects Kell & Benard, under the supervision of University Architect James M. White, designed the round barns. The construction of the first of the three round barns took place in late fall of 1908. Board of Trustees Reports of 1908 and 1912 document that barns were built every two years from 1908-1912.

The construction and use of each round barn resulted in improved construction design methods which were incorporated into the next barn. For example, through the use of different construction techniques, Barn #2 was constructed without scaffolding, and Barn #3 incorporated a wing in its original design which allowed for more cattle storage. Fraser thought that dairy barns in the United States were usually "untidy, uninviting, and in many cases absolutely filthy places." In the round barn design, animals, equipment, hay, and all barn tools had a designated place.

A typical round barn has a silo in the center, livestock on the ground floor, and a large hay loft or haymow on the upper level. Many barns, including round ones, were built on small inclines or banks or along a highly visible ridge line. This construction technique would allow the farmer to drive a wagon with hay into the

haymow on top of the bank while cattle could be driven from the pasture into the bottom of the barn for milking or storage.

According to Fraser, round barns had agricultural advantages associated with their construction that made them more convenient, efficient, and less costly than conventional rectangular barns. Advantages of round barns over rectangular barns included: increased square footage, large area for storage of mow and silage, stronger construction, better wind resistance, good ventilation, economical construction, and ease in feeding.

Fraser and Crouch argued that more square feet are contained within a circle than any other geometric figure with the same linear measurements. This shape gave round barns, with their domed roof structure, a large hay storage area in the haymow because no vertical roof members obstructed the space. The haymow furnished storage plus the stored hay provided insulation for the animals living below. The large haymow was one of the main attractions of the round barns to dairymen. During the early 1900s, a common dairy herd averaged twelve to twenty head of cattle. Expansion of the herd often required expanding the barn. One disadvantage of a round dairy barn was that expansion opportunities were thought of as costly and defeating the efficiency of the barn.

The circular construction of the round barns produced a stronger building because it took advantage of the tensile, instead of the flexural strength, of lumber. Green boards were soaked in water for several days to make the wood pliable. The boards were then wrapped horizontally around posts planted in a circle. This horizontal pattern of boards gave it strength over rectangular barns. Fraser compared the strength of round barns to the strength of a barrel. "A barrel, properly hooped and headed, is almost indestructible, and much stronger than a box. The strength is because the stress comes on the hoops in a lineal direction." The "hoops" on the round barns are the boards wrapped around the barn in a horizontal direction. The "heads" would be the foundation and the trusses and other roof members.

Wind resistance is another advantage of round barns. The strong prairie winds can get no direct hold on the walls or roof of round barns. "All exposed surfaces of a round barn are circular, as both the sides and roof are arched, which is the strongest form of construction to resist wind pressure."

Roof ventilation for dairy barns was a requirement of health codes. Cupolas became a functional way to ventilate. "Their

lowered sides help to vent the air of a building and at the same time protect the contents [cattle and mow] from both weather and wild animals." The cupolas on Barns #1 and #2 were removed due to poor maintenance; Barn #3's cupola is still intact.

Round barns were shown to be more economical to construct than rectangular barns. Fraser proved that the construction costs of round barns could be between thirty-four to thirty-eight percent less costly than rectangular barns. Another cost saving characteristic was that no scaffolding was required inside or out if vertical siding or a domed shaped roof were used. "A rectangular barn within the same square footage as a round barn would require twenty-seven percent greater cost for material if it were of plank frame construction and fifty-three percent more if it were of timber construction." In addition to such advantages as "strength, tightness, light, warmth, dryness, ventilation, good room arrangement," round barns have economy of materials.

The ease of feeding was enhanced by the round barn's special architectural features for distributing silage, hay, and grain. The feed and mow were dropped down either an interior chute or the center silo to cattle below. "The feeding commences at the chute, where it is thrown down, and is continued around the circle, ending with the silage cart at the chute again ready for the next feeding." Farmers standing in the center of the barn merely forked the hay around the silo where the cattle would be positioned in stalls for eating. This arrangement of

space decreased the amount of needed labor and time.

Through *Agriculture Experiment Stations Bulletin's* and Crouch's article on the success of the second round barn in *The Illinois Agriculturist*, the idea of the round barn spread from the University of Illinois to many dairy farms across Illinois.

This article was condensed from the National Register historic district nomination prepared by Audra Burlison, under an internship sponsored by The URBANA Group and PACA. The nomination was approved at the December meeting of the Illinois Historic Sites Advisory Council.

News from the Board

In an effort to keep our membership better informed, the PACA Newsletter will offer a new feature on agenda highlights from recent Board of Directors' meetings. Topics such as our Salvage Warehouse, The Discovery Place, and the Hazen Bridge near Mahomet are among regular items on the Board's monthly agendas. As efforts accelerate to ensure that Champaign and Urbana enact historic preservation ordinances, we have also added city activities to the agenda in recent months. Mark your calendars for Saturday, February 5, when PACA, together with the City of Champaign, City of Urbana, Chamber of Commerce, and the Champaign Downtown Development Corporation will sponsor a Preservation Forum from 9 a.m. to 1 p.m. in the Champaign City Council chambers. A panel of state and local representatives from Illinois communities will share first-hand experiences with local historic preservation

ordinances and preservation commissions. The Forum audience will include City Council Members, Plan Commissioners, and Zoning Board of Appeals members; the general public is also invited. We look forward to local government preservation action in 1994!

The construction contract for a new township bridge to replace the historic Hazen Bridge has been awarded to the A.J. Walker Co. of Mattoon. Hank Kaczmarek, who has led PACA's effort to save the bridge, will continue to lead the project as a monitor of the construction and the disassembly of a portion of the historic bridge's approach. PACA will take possession of the Hazen Bridge when the new bridge is completed in 1994. PACA is working with the Champaign County Forest Preserve and CCDC in planning for a new use for the old bridge and PACA is preparing a National Register nomination for the 1893 Pratt-through truss bridge, to enable eligibility for special funding for its reuse.

The Levi Wood House, located in the Middle Fork River Forest Preserve near Penfield, is the newest addition to the Board's agenda. PACA is organizing a committee of concerned individuals and area nature/conservation groups to "brain storm" ideas for the preservation and reuse of this uniquely beautiful brick Italianate house. Committee members are actively being sought.

If you would like additional information about these or other PACA Board agenda items, or would like to attend the monthly Board meeting, please call PACA. Ideas and suggestions from members are always welcome.

Membership Application P.A.C.A.

MEMBERSHIP CATEGORY:

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- Adult \$15.00
- Student (1/2 time or more) \$10.00
- Senior Citizen \$10.00
- Family \$20.00

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- \$75.00

ADDITIONAL CONTRIBUTION _____

- NEW MEMBERSHIP
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Make checks payable to: PACA, Box 2555, Station A, Champaign, Illinois 61825

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In Brief:

PACA will be soliciting new and renewal subscriptions to the *Old House Journal* in January and February. The cost is \$20.00 per subscription with PACA keeping 50%. Send your new or renewal subscription to PACA, P.O. Box 2555, Station A, Champaign, IL 61825.

Heritage Award nominations are still being accepted. Mail your nomination as soon as possible to the above address.

The Salvage Committee will be holding a sale of desks, chairs, tables and file cabinets in late January. Watch for ads in the *Thrifty Nickel* and *News Gazette* or call PACA for more information.

Three Board of Directors' positions will be open for election at the February PACA Annual Membership Meeting. Nominations for these positions are being sought.

Salvage Crew VIPs

Bob Swisher
Hank Kaczmariski
Rex Kummer
Rich Cahill
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Pius Weibel
Bette Harper Swisher
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Salvage Donations

University of Illinois
Mike Lofchen
Jeff Schroader
Rita Sola
Allan Eckel
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Allan Smith

Save the Date

PACA Annual Member-
ship Meeting

Sunday, February 20, 1994
2-4 p.m.
Springer Recreational Center

PACA Newsletter

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