

United States Department of the Interior
National Park Service

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National Register of Historic Places
Inventory—Nomination Form

received AUG 15 1984
date entered SEP 29 1984

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

1. Name

historic

and/or common Central Plan Dairy Barns of New York ^{TR} ~~State Thematic Resources~~

2. Location

12

street & number SEE INVENTORY FORMS not for publication

city, town vicinity of

state New York code 036 county see inventory forms code

3. Classification

Category	Ownership	Status	Present Use	
<input type="checkbox"/> district	<input type="checkbox"/> public	<input checked="" type="checkbox"/> occupied	<input checked="" type="checkbox"/> agriculture	<input type="checkbox"/> museum
<input type="checkbox"/> building(s)	<input checked="" type="checkbox"/> private	<input checked="" type="checkbox"/> unoccupied	<input type="checkbox"/> commercial	<input type="checkbox"/> park
<input type="checkbox"/> structure	<input type="checkbox"/> both	<input type="checkbox"/> work in progress	<input type="checkbox"/> educational	<input type="checkbox"/> private residence
<input type="checkbox"/> site	Public Acquisition	Accessible	<input type="checkbox"/> entertainment	<input type="checkbox"/> religious
<input type="checkbox"/> object	NA in process	<input checked="" type="checkbox"/> yes: restricted	<input type="checkbox"/> government	<input type="checkbox"/> scientific
<input checked="" type="checkbox"/> Thematic Resources	NA being considered	<input type="checkbox"/> yes: unrestricted	<input type="checkbox"/> industrial	<input type="checkbox"/> transportation
		<input type="checkbox"/> no	<input type="checkbox"/> military	<input type="checkbox"/> other:

4. Owner of Property

name various

street & number

city, town vicinity of state

5. Location of Legal Description

courthouse, registry of deeds, etc. various

street & number

city, town state

6. Representation in Existing Surveys

title New York Statewide Inventory has this property been determined eligible? yes no

date 1984 federal state county local

depository for survey records New York State Division for Historic Preservation

city, town Albany, state New York

7. Description

Condition **Check one** **Check one**
 excellent deteriorated unaltered original site
 good ruins altered moved date NA
 fair unexposed
 as noted on individual inventory forms

Describe the present and original (if known) physical appearance

The Central Plan Dairy Barns of New York State Thematic Resources nomination consists of twelve significant barns representative of the introduction and development of this historical building type in the state. The barns were identified as a result of a 1984 survey undertaken jointly by Mark Reinberger, an architectural historian from Cronell University, and Mark Peckham of the National Register and Survey staff of the New York State Division for Historic Preservation.

The survey was based on criteria for inclusion developed at the beginning of the project. The survey was limited to structures that are round in plan or include five or more equal sides, appendages and additions excluded. The criteria further required that such round or multi-sided structures be originally associated primarily with dairying, as distinguished from buildings originally designed as horse barns, carriage barns, corn cribs, etc. The third criterion stipulated that only those structures that retain a substantial degree of integrity be included in the inventory and subsequent thematic nomination.

The survey included an extensive literature search, interviews with National Register regional field representatives in the Division for Historic Preservation, and interviews with local historians. A total of nineteen properties were identified as possible components for nomination statewide, all of which were investigated in the field. Of this total, two were rejected due to a significant loss of integrity and severe deterioration, two were eliminated due to a failure to locate them in the field (it was assumed that they had been destroyed during the past 50 years), one was eliminated from consideration due to its recent loss by fire, and one barn, constructed during the 1940s, was eliminated from further consideration because it was less than fifty years old. Another barn initially identified in the survey was dropped from consideration upon determining that it had been built as a horse barn. The twelve remaining barns all meet the criteria for inclusion and appear to be individually eligible for listing on the National Register in the context of a thematic group. It is expected that additional examples will be identified in the future and other eligible barns will be nominated with complete documentation as they are inventoried. The historical overview developed to explain the twelve barns included in the present nomination appears to be broad enough chronologically and of sufficient depth to provide a context against which additional examples can be evaluated in the future.

The twelve nominated barns share several distinguishing characteristics, most important, a centralized plan with a configuration of a regular polygon of eight or more sides, or a circle. All are either two or three stories in height and predominantly wood framed. Livestock were invariably housed on the ground floor, while hay and grain were processed and stored on the upper levels, which are usually approached by a natural or man-made slope. All of the nominated examples display interesting and innovative structural features, the outcome of builders' adaptations of common barn framing techniques to the centralized form. None of the barns conforms to identifiable architectural styles, yet all of the barns are characterized by a simplicity and directness in form which reflects their structural arrangement and internal configuration. All attest to a pride in workmanship and care for the exterior appearance of these important farm buildings.

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Examples of this concern for appearance within the nominated group include the weathervane atop Leonard Bronck's thirteen-sided barn, the quoined foundation walls of the Baker octagon barn, the slate roof of the McArthur-Martin hexadecagon barn, the marble date stones at the Lunn-Musser octagon barn, the pressed iron exterior sheathing of the Young round barn and the decorative brick and stucco entrance bay facade of the Bates round barn.

Geographically, the nominated barns are scattered throughout the state; however, all are located in traditional dairying regions including the Hudson, Mohawk, Delaware and Chenango river valleys, the upper Susquehanna region, the Finger Lakes region and the eastern flood plain of Lake Erie. Two octagon barns identified in the historical literature were located along the southern and eastern flood-plains of Lake Ontario, but neither survives.

The twelve nominated barns represent the historical development of the round and polygonal dairy barn as a building type in the state, beginning with the earliest known example, the c.1832 Bronck barn, and ending with the completion of the Bates barn in 1931. With the exception of the Bronck barn, an anomaly due to its very early date, the barns included in the thematic group divide conveniently into three loosely chronological types. The first, dating from the 1880's and early 1890's, includes octagon barns with heavy timber framing, undifferentiated hay storage above the first floor, and a rectangular stanchion layout for cows in the stone-walled basement. Included in this sub-group are the Baker octagon barn (1882), the Lunn-Musser octagon barn (1885) and the Lattin-Crandall octagon barn (1893). An intermediate sub-group of two polygonal barns, dating from these same two decades, illustrates the development of a more fully integrated internal organization, consisting of a large unobstructed hay mow at the center (rising from the ground floor to the roof) surrounded by a concentric stanchion layout at the ground floor and a wagon drive above. The two examples of this type identified in the group to date are the McArthur-Martin hexadecagon barn (1883) and the Parker 13-sided barn (1896). A third and more diverse group of barns is distinguished by the presence of a round, central silo and advances made in light wood framing. These barns date from the 1890's through the 1920's and illustrate the final phase in the development of the central plan dairy barn. The nominated examples include the Kelly round barn (1893), the Zoller-Frasier round barn (c.1895), the Gamel hexadecagon barn (c.1900), the Young round barn (1914-1916), the Schultz 15-sided barn (1918-1929), and the Bates round barn (1928-1931).

All of the resources included in this nomination are nominated as isolated structures, significant only for their association with the central plan theme, notwithstanding other contributing or non-contributing farm buildings which may be present on or near each property. In some cases, significant farmhouses or outbuildings are associated with these sites; however, they have been excluded from the nomination due to their lack of significance in the central plan dairy barn context. In these cases, boundaries are tightly constructed in order to include only the barn and the immediate ground on which it stands. In other instances, where significant barns are surrounded by open space, larger sites have been nominated in order to recognize the contribution of this space in providing

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an appropriate historic setting for these properties. Where major non-contributing additions have been attached to historic barns, but are clearly separated from the original building structurally and in plan, such additions are described but eliminated from the nominated site.

The individual components of the thematic group are briefly described and keyed to photographs on the following list. More detailed information for each component, including detailed boundary description, is recorded on the attached Building-Structure Inventory forms.

8. Significance

Period	Areas of Significance—Check and justify below			
<input type="checkbox"/> prehistoric	<input type="checkbox"/> archeology-prehistoric	<input type="checkbox"/> community planning	<input type="checkbox"/> landscape architecture	<input type="checkbox"/> religion
<input type="checkbox"/> 1400-1499	<input type="checkbox"/> archeology-historic	<input type="checkbox"/> conservation	<input type="checkbox"/> law	<input type="checkbox"/> science
<input type="checkbox"/> 1500-1599	<input checked="" type="checkbox"/> agriculture	<input type="checkbox"/> economics	<input type="checkbox"/> literature	<input type="checkbox"/> sculpture
<input type="checkbox"/> 1600-1699	<input checked="" type="checkbox"/> architecture	<input type="checkbox"/> education	<input type="checkbox"/> military	<input type="checkbox"/> social/
<input type="checkbox"/> 1700-1799	<input type="checkbox"/> art	<input checked="" type="checkbox"/> engineering	<input type="checkbox"/> music	<input type="checkbox"/> humanitarian
<input checked="" type="checkbox"/> 1800-1899	<input type="checkbox"/> commerce	<input type="checkbox"/> exploration/settlement	<input type="checkbox"/> philosophy	<input type="checkbox"/> theater
<input checked="" type="checkbox"/> 1900-1931	<input type="checkbox"/> communications	<input type="checkbox"/> industry	<input type="checkbox"/> politics/government	<input type="checkbox"/> transportation
		<input type="checkbox"/> invention		<input type="checkbox"/> other (specify)

Specific dates c.1832-1931 **Builder/Architect** Noted where known on individual inventory forms.

Statement of Significance (in one paragraph)

The Central Plan Dairy Barns of New York State Thematic Resources are significant in the history and development of New York State agriculture. The twelve resources included in this nomination include a period of significance from c.1832 to 1931 and represent the search by progressive farmers of the nineteenth and early twentieth centuries to find new architectural forms to suit the changing functional needs of dairy farming. While central plan barns were more common in such midwestern states as Illinois, Iowa, Wisconsin and Nebraska than they were in New York, this state played a major historical role in the development of the type, particularly in its early stages. New York examples of the central plan barn reflect all phases through which the type developed prior to and during its period of popularity. A majority of the nominated examples date from 1880 through 1920, a period of significant growth in the state's dairy industry. While the nominated examples are located in virtually all of the important agricultural regions of the state, the type is most concentrated in a region bounded by Herkimer County to the north, Schoharie to the east, Delaware to the south and Chenango to the west. This area has historically represented an important center of the state's dairy industry. Architecturally, the twelve examples are distinguished examples of vernacular design and construction. The simplicity and directness with which they express their structure and interior configuration are typical of some of the finest vernacular architecture of this period. Special attention to the exterior appearance of many of these structures (including features such as quoined foundation walls, date stones, slate roofs, pressed iron exteriors and decorative brick and stucco designs), attest not only to the skill and craftsmanship of their builders, but also to the pride with which they were regarded by their owners.

Precedents for the central plan barn can be traced as far back as the St. Gall Monastery Plan of 800 AD which show a circular farm structure, probably intended as a poultry house.² English antecedents include circular hay ricks, sometimes having two levels with cattle below and hay storage above, dating from as early as the seventeenth century. Discussions of polygonal barns appeared in English publications of the late eighteenth and early nineteenth centuries.³ Perhaps the latter influenced George Washington when he erected a 16-sided brick barn on his Dongue Run farm in Virginia in 1793.⁴ Washington was greatly interested in scientific agriculture and corresponded with noted English authorities on improved framing and he introduced a major theme into our story: the connection of the central plan barn with progressive agriculture. A circular brick farm building at Keswick in Powhatan County, Virginia is contemporary with Washington's barn.⁵

In 1824, the Shaker community at Hancock, Massachusetts built a circular stone barn, 90 feet in diameter. Like Washington, the Shakers were noted for progressive developments in agriculture.⁶ This particular barn, though less celebrated than its 1865 replacement, appears to have influenced the design of Leonard Bronck's 13-sided barn in Coxsackie, N.Y., 28 miles away, c.1832 (component 1). As originally built, the Bronck barn included a virtually unobstructed three-story-high hay mow rising from a below grade basement floor upward to the ventilation

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cupola. The mow was augmented by a grade level wagon drive shunted to one side of the mow and by a traditional rectangular wing (no longer extant) for livestock and equipment. Believed to be the earliest extant central plan dairy structure in New York State, it differs markedly from later nineteenth century examples in its use of the central form solely for hay storage. A pencil plan for this structure with notations on its volume and storage capacity suggests the owner's interest in the inherent efficiency of the nearly circular form in enclosing a given volume with the least amount of material. The self-supporting structural characteristics of the circular form dispensed with the need for an internal framework, allowing the construction of nearly unobstructed space ideally suited for the storage of large quantities of unbaled hay.

The second circular stone barn at the Hancock Shaker community, built in 1865 following the destruction of the 1824 structure, was widely publicized and attracted far greater attention.⁸ This structure fully exploited the inherent advantages of the circular form. In addition to its strength and advantageous material to volume ratio, the second barn adapted and integrated the complete dairying operation into the circular form. The design incorporated a huge central hay mow surrounded at the ground floor by a concentric feed alley and cattle stanchions. A circular wagon drive, located above the livestock area, was used for filling the mow with hay from all sides. The monitor roof form with the surmounting cupola provided ample ventilation for the proper storage of hay and was a direct outgrowth of the structural system employed in this barn. The Hancock barn is a remarkable example of the integration of industrial process and architecture in progressive era agriculture, a characteristic theme in the development of subsequent central plan dairy barns.

An alternative centralized plan form was the octagon, discussed extensively in the 1850s. Orson Squire Fowler's A Home for All of 1853 included a chapter on octagonal barns (without illustrations); however, it apparently had little influence on barn construction.¹⁰ About the same time, Charles B. Calvert erected a gigantic octagonal barn and outbuilding complex in Maryland, which was published in the New York agricultural press.¹¹ Calvert was a very wealthy gentleman farmer, and his plan would not have been applicable to the vast majority of New York farms. However, it is significant because its owner outlined most of the arguments advanced by later central plan barn advocates: convenience in feeding livestock and cleaning the barn and economy of space and construction in comparison with a rectangular barn.

These early precedents exerted only indirect or isolated influence on the central plan barns of New York. Of far greater importance was Elliot W. Stewart, a well-known agriculturalist who could be called the father of central plan barns in New York and in the nation. Stewart built an octagonal dairy barn on his farm in Erie County, New York in 1875 and within a year was publishing it nationally. Stewart's activities as a part-time professor at Cornell University's Agricultural College, editor of the Buffalo (later National) Live-Stock Journal, and correspondent for Moore's Rural New Yorker and Cultivator and Country-Gentleman established his credibility and provided a forum for his ideas. He was an officer

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in the Farmers' Alliance (the Grange) and a member of Evans Farmers' Social Club in Erie County, both organizations devoted to scientific farming and agricultural education.¹²

Stewart's octagonal barn was 80 feet in diameter and two stories high.¹³ Cows were kept on the ground floor in two parallel rows of stanchions with their heads facing towards the center aisle, used as the feed manger. (Fig. 1) Outside the rows were aisles for manure disposal, and beyond were areas for horse or calf stalls and storage. This arrangement in parallel rows naturally affected the framing of the upper floor, which was supported by a grid of posts and beams. Stewart also proposed an alternative radial arrangement of stanchions around a central feeding area, but he did not recommend this plan for normal farms as he thought it wasted space and was more expensive to fit up.

The upper floor of Stewart's barn was devoted to hay storage. The barn was built on a flat site, so that access to the hay mow was by graded driveways on both sides, providing a drive-through for hay wagons. The filling of the hay loft was accomplished easily by use of the newly developed hay fork on a circular track.

A prime advantage of Stewart's design was its self-supporting roof, divided into eight wedge-shaped panels firmly tied by continuous rings of timbers around the walls and at the top, where a cupola provided light and ventilation. Such a roof structure needed no internal supports, resulting in an unencumbered hay mow.¹⁴

Stewart stressed the advantages of the octagon over the rectangular barn. The octagon enclosed a greater floor area and volume for a given length of exterior wall, resulting in a saving of construction materials. The short wall sections meant that no long timbers were required for framing, and the self-supporting roof eliminated the need for elaborate internal bracing. The centralized form also shortened travel distances within the barn, and the octagon, by virtue of its continuously tied perimeter, was more resistant to wind stress than a rectangular barn with square corners. Further, the greater relative capacity of the centralized form allowed all farm activities to be combined in one building, rather than having several smaller structures for different purposes, an important ideal in all barn design in this period. Thus, even on Stewart's relatively large farm, his octagon barn held cows, calves and horses on the ground floor and all activities associated with threshing, haying and feed storage in the upper story.

These arguments apparently convinced many farmers. In 1884 Stewart noted that he knew of 30 to 40 octagonal barns built throughout the country,¹⁵ and correspondence in agricultural journals records interest in Stewart's plan as far away as Mississippi.¹⁶ Stewart also recommended 12- and 16-sided plans for barns larger than practical for the octagon.¹⁷ Stewart did not recommend the true circular plan because he felt it too expensive to build. Stewart's¹⁸ example was also followed in Canada where many octagonal barns were built.

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A number of barns are known to have been built in New York after Stewart's model. Nine octagonal barns, most built in the 1870s and 1880s, have been noted in New York, and undoubtedly many more have never been recorded. Extant examples in the nominated group include the Baker octagon barn near Richfield Springs (1882), the Lunn-Musser octagon barn in New Lisbon (1885), and the Lattin-Crandall octagon barn in Catharine (1893). All feature the parallel row layout on the ground floor and its corresponding gridded floor framing. These barns also employed Stewart's roof design, though in some cases their builders were more timid than Stewart and carried up a square of four posts to support the cupola and peak of the roof. Indeed, while Stewart was quite precise about some details of his structure, other aspects of his framing system were unclear from his drawings and descriptions, so that many unique features appear in the extant barns.

Stewart's example also inspired variations of the central plan by other progressive farmers. Agricultural journals published octagonal barn designs of all sizes as well as 16-sided barns. Most of the latter were for very large farms having 100 to 250 cows, far more than the average dairy farm. Indeed central plan barns were always most common among more prosperous farmers. Many of the variant designs represented no important change from Stewart's design, but gradually one significant development gained popularity: a radial layout for the livestock stanchions on the ground floor. As noted, this had been used by the Shakers and Stewart had also given a radial plan variant. The radial arrangement did not become predominant, however, until after 1890. This arrangement, with the cows oriented inward, had the advantage of further concentrating work activities at the center. All feeding could be done from a manger near the center, supplied with hay and grain from above, and there was a continuous gutter around the circumference, allowing faster cleaning. Discussions of these barns in historical sources often exhibit a concern for work flow and production efficiency indicative of industrial organization. For example, one 10-sided barn built in Pennsylvania in the mid-1880s was mechanically heated and ventilated, had electric lights and a watchman's monitoring system, and its loft had a powered hay track. While this was clearly unusual, its owner's progressive interest in technology and efficiency appears to have been common.

Another advantage of a radial layout was a more rational floor framing system. In the earlier octagons, the imposition of grid framing into the centralized form produced awkward or irregular junctions and spacing of floor members where the square grid intersected the diagonal sides. By adopting a radial stanchion layout, a circle of posts resulted which produced a floor framing system in which all members ran either radially or concentrically. There were many variations on such a system and it marked a major step towards the fully circular barns of the 1890s and early 1900s.

New York State has two known examples of this variation, both included in this nomination. The McArthur-Martin barn in Kortright (1883) is the earlier of the two and is the largest barn in the thematic group. Designed with 16 sides and a 100-foot diameter, the concept for this barn seems to have been strongly suggested

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by the 1865 Shaker barn in Hancock. The core of the barn consists of a 60-foot-wide, four-story-high hay mow surrounded by a feed alley and cattle stanchions at the ground floor and two tiers of circular wagon drives above. The framing is relatively heavy with mortised joints and includes a ring of 16 posts enclosing the mow. Floor beams radiate outward from this ring to the exterior walls, leaving the mow unencumbered, unlike the Shaker prototype. The barn's originator, John W. McArthur, described the design and construction of this barn in great detail in a book that also included chapters on the Grange,²¹ the "anti-monopoly issue," co-operative fire insurance and artificial butter.²¹ The book demonstrates a close connection between interest in scientific barn design and a wide range of other topics associated with progressive era agriculture. McArthur's barn appears to have served as a prototype for the Parker 13-sided barn (1896) about 15 miles north of Kortright in Jefferson. The Parker barn is smaller in scale (approx. 80 foot diameter) and includes only a single concentric wagon drive. Its light member framing, however, differs markedly from McArthur's 1883 barn and illustrates the growing acceptance of innovative balloon framing techniques by the end of the nineteenth century.

The evolution of the central plan barn to its final and most widespread form was dependent upon the development of the circular silo, a universal symbol of farmsteads today but virtually unknown a century ago. Silos and the feeding of animals with silage in addition to hay were pioneered in the midwest in the 1870s, but they only became common in the late 1880s.²² The first silos were short, square additions to the sides of barns,²³ but soon it was discovered that a round form was better since most spoilage occurred in a silo's corners. Franklin H. King, a professor at the Wisconsin Agricultural Experiment Station, did early research on the construction of circular silos, and in 1890 he designed a true round barn with a silo at the center. This²⁴ design was executed on his brother's farm in Wisconsin and widely published. (Fig. 2).

The center silo produced an extremely efficient plan. With a radial arrangement of stanchions, the manager ran close to the silo, allowing easy feeding of the livestock from openings in the silo's base. On the upper floor, hay was stacked around the silo and could be dropped into the manger by simple chutes through the floor. The silo was framed with vertical studs, and the spaces between them provided ventilation flues for the ground floor, which opened out through a cupola above the silo. Moreover, the silo was useful structurally as a support for the floor and roof framing, with intermediate supports occurring at both levels at the line of the stanchions. Another innovative feature was King's use of balloon frame construction (widely accepted in some residential and commercial construction only after the Civil War) for the exterior walls of the barn, a technique also increasingly used in rectangular barns at the time. By substituting a frame of repeated small studs for the traditional heavy timber braced barn frame, the cost of constructing a barn was reduced.

King's barn was influential in New York State. The Kelly round barn in Halcottsville (1893) and the Zoller-Fraser round barn in Herkimer County (1890s) are early extant examples of the type included in the nomination, and a now lost barn near Amsterdam, New York was closely modelled on King's prototype.²⁵ The type's

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most important features, the central silo and the balloon framing, appeared in most later central plan barns, even when the plan was not strictly circular, as in the case of the 16-sided Gamel barn in North Collins, also included in the nominated group.

Subsequent development of the round barn type occurred primarily in the midwest, though New York examples reflect the changes. Beginning about 1900, the Illinois Experiment Station built a series of large round barns which were highly influential throughout the country.²⁶ The experiment station's publications discussed details of planning, framing and erection and illustrated round barns from around the state.²⁷ Construction companies, building material suppliers and architects also helped to propagate the round barn by publishing stock plans for barns of various sizes and materials.²⁸ (fig. 3)

The chief sources of variety within the type were wall material and roof configurations. A wood stud frame with siding was most common for walls and silos, but clay tile and concrete were also used, as can be seen in the nominated Bates Round Barn at Greene, New York (1931). Roof types among the nominated examples include conical (for example the Schultz 15-sided barn at Cohecton, New York 1918), gambrel (the Young round barn at Greene-1914), and domical (Bates barn at Greene).

Nationally, the round barn reached its peak of popularity in the 1910s, declined in importance in the 1920s, and never revived after the cessation of building during the Great Depression. The reasons for its demise are somewhat unclear. Among those often cited were: difficulty in filling their silos; difficulty in finding carpenters and masons willing to construct them; higher cost of construction; the inability to add to them; and their inability to handle larger tractors and farm machinery (a problem with older rectangular barns as well).²⁹ Further, national agricultural magazines and even the experiment stations turned against them, citing many of these same criticisms.³⁰ With the mechanization of feeding, cleaning and milking cows, the supposed efficiency of the round form became comparatively less important and its higher construction cost was unjustifiable. Today inexpensive single story, wide rectangular barns have supplanted both the centralized and traditional rectangular barn designs.

As a group, the twelve intact central plan dairy barns identified to date in New York State recall an important episode in the history of scientific agriculture in the progressive era. Experimentation with central plan forms and the variety of planning and framing solutions developed indicate a willingness on the part of enlightened farmers to change their habits of work and thought radically in search of new solutions to the problems of dairy farming. The integration of such innovations as the hay fork, silo and balloon frame into central plan barns makes them important representatives of a period of great technological change in agriculture. Indeed the fully developed round barn was dependent upon these changes. Moreover, the soundness of their design and construction reveals the pride, sophistication and skill of their builders. Both historically and visually these barns are significant artifacts which deserve to be protected and preserved.

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1. Ulysses Prentiss Hedrick, A History of Agriculture in the State of New York, New York State Agricultural Society, 1933, pp. 364-65.
2. Cf. Walter William Horn and Ernest Born, The Plan of St. Gall, Berkeley: Univ. of Ca., 1979, 3 vols.
3. Cf. Larry T. Jost, The round and five-or-more equal sided barns of Wisconsin, privately printed, 1980, p. 4 which cites several sources including Charles Hassali, General View of the County of Monmouth, London, 1812, p. 25, Nigel Harvey, The History of Farm Buildings in England and Wales, London, 1970, and John Martin Robinson, Georgian Model Farms, Oxford, 1983.
4. Paul Leland Hawrth, George Washington, Country Gentleman, Indianapolis: Bobbs-Merrill Co., 1925, pp. 124-5.
5. E.L. Ryan, "Keswick," Virginia Magazine of History and Biography, 48 (1940) 57-60.
6. Hedrick, op. cit., pp. 274-75.
7. Pencil on paper plan entitled "Leonard Bronks (sic) Plan of Barn, Jany, 24-1832," Greene Co. Historical Society archives, Bronck House, Coxackie, N.Y.
8. Lowell J. Soike, Without Right Angles, The round barns of Iowa, Des Moines Iowa State Historical Department, 1983, p. 5. Soike's book is the only source which presents a thorough history of the central plan barn, and was essential for the research and writing of this essay. Publication of the Shaker barn was in Solon Robinson, Facts for Farmers, N.Y., 1868, pp. 302-3. See also Eric Sloane, An Age of Barns, N.Y.: Ballantine, 1967 for the Shaker barn.
9. This arrangement was used later in the great McArthur barn in South Kortright, New York, of 1885. See below at fn.21. Illustrations of the Shaker barn appear in Eric Arthur and Dudley Witney, The Barn, a vanishing landmark in North America, Toronto: McClelland and Stewart, Ltd., 1972, pp. 146-155.
10. This is the opinion of several writers. Cf. especially Soike, op.cit., p. 6.
11. See Country Gentleman 4(17 Aug. 1854) 108-9 and comments 4(26 Oct 1854) 262 and 4(14 Dec. 1854) 74-5.
12. On Stewart see Soike, op. cit., pp. 10-11, Walter S. Dunn, Jr., ed., History of Erie County 1870-1970, Buffalo, 1972, p. 19 and Town of Evans (N.Y.) Sesquicentennial Booklet, n.d. On the progressive activities of the Grange see Hedrick, op. cit., pp. 132-3. The Grange advocated road improvement, rural free delivery, agricultural colleges and experiment stations, women's suffrage, the establishment of the United States departments of Labor and Commerce, election of senators by popular vote, federal control of railroads, postal savings banks, the Sherman anti-trust act, and prohibition.

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13. Publications of Stewart's barn include American Agriculturalist 35 (July 1876) 258-9; National Live-Stock Journal 9(Feb. 1878) 52-3 and 100-1; Illustrated Annual Register of Rural Affairs (1876-79) 229 and 248-52; and Stewart's, Feeding Animals, Lake View, N.Y., 1st ed., 1883, pp. 88-108.
14. The self-supporting roof was the chief difference between Stewart's barn and a slightly earlier octagonal barn designed by Lorenzo Coffin of Iowa. Coffin did not publish his design until after Stewart, so it probably had no influence on the latter. Stewart's roof made his design more popular, even in Iowa. See Soike, op. cit., pp. 12-16.
15. In Soike, op. cit., p. 11.
16. For example, see Cultivator and Country Gentleman 42 (23 Aug. 1877) 535; 43 (25 April 1878) 264; 51(14 Jan. 1886) 27; 52(7 July 1887) 532; 53(29 Mar. 1888) 252-3; 53(10 May 1888) 373; 53(6 Dec. 1888) 912; and 56(23 April 1891) 340. The responses to all these correspondents were by Stewart.
17. See sources in fn. 13 above and Cultivator and Country Gentleman 55 (18 Dec. 1890) 1004; 57(27 Oct. 1892) 812, and 58(27 April 1893) 332.
18. Robert-Lionel Seguin, "Les granges du Quebec," Musee National du Canada Bulletin, no. 192, Ottawa, 1963.
19. See, for example, American Agriculturalist 44 (Mar. 1885) 98; 47(Feb. 1888) 63; and 47(Oct. 1888) 415; Cultivator and Country Gentleman 55(20 Nov. 1890) 924; and 58(27 April 1893) 332.
20. Cultivator and Country Gentleman 50(June 25, 1885) 540.
21. John W. McArthur, New Developments, Oneonta, N.Y., 1886.
22. Hedrick, op. cit., p. 365.
23. The Baker barn in Richfield Springs has such a silo, uniting two progressive features in one structure at a date (1882) early for both.
24. Soike, op. cit., pp. 26-29. Publication was in the Wisconsin Agricultural Experiment Station Report, no. 7, for the year ending June 30, 1890, Madison, Wis., 1890; and J. H. Sanders, Practical Hints about Barn Building, Chicago, 1893, pp. 100-108, among others.
25. Hoard's Dairyman 26(Mar. 1897).
26. Soike, op. cit., pp. 29-31.

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27. Illinois Agricultural Experiment Station Bulletin, no. 143, "Economy of the Round Barn," Urbana, Illinois, 1910; and Illinois Agricultural Experiment Station Circular, no. 230, "The Round Barn," Urbana, Ill., 1918. Both publications were written by Wilbur J. Fraser.
28. For example, William A. Radford, ed., Radford's House and Barns Plans, Chicago: Radford Architectural Company, 1908, pp. 126-8 and 171-3; and Fred C. Fenton, designer, "A Round dairy barn," Dairy Farmer 25 (Aug. 1927) 13. See Soike, op. cit., pp. 44-56 for other examples, mostly applicable to the midwest. Clay tile round barns were presented in Cultivator and Country Gentleman 82 (3 Feb. 1917) 8 and Field Illustrated 26(1916) 750.
29. See Soike, op. cit., pp. 58-61.
30. For example Hoard's Dairyman 20(Feb. 1914) and Country Gentleman 77(14 Sept. 1912) 26.

9. Major Bibliographical References

(See continuation sheet)

10. Geographical Data (see Continuation)

Acreeage of nominated property _____
Quadrangle name _____ See inventory forms Quadrangle scale _____

UTM References

A	<input type="text"/>	<input type="text"/>	<input type="text"/>	B	<input type="text"/>	<input type="text"/>	<input type="text"/>
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G	<input type="text"/>	<input type="text"/>	<input type="text"/>	H	<input type="text"/>	<input type="text"/>	<input type="text"/>

Verbal boundary description and justification

(refer to individual inventory forms)

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

state	code	county	code

11. Form Prepared By

name/title Mark L. Peckham

organization N.Y.S. Division for Historic Preservation date July 1984

street & number Agency Bldg. 1 E.S.P. telephone (518) 474-0479

city or town Albany, state New York 12238

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:
 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 Julia S. Stohr
title Deputy Commissioner for Historic Pres date 8/6/84

For NPS use only
I hereby certify that this property is included in the National Register
See Continuation Sheet for Justification date _____
Keeper of the National Register

Attest: _____ date _____
Chief of Registration

United States Department of the Interior
National Park Service

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1886): 27; 52(7 July 1887): 532; 53(29 March 1888): 252-3;
53(10 May 1888): 373; 53(6 December 1888): 912; 55(20 November
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We give in fig. 5 the elevation of an octagonal barn, of 80 feet diameter, built by the author in 1875, inclosing 5,304 square feet, having posts 28 feet long—with a capacity to the top plates, in the story above the basement, of 148,514 cubic feet. This octagon has an outside wall of 265½ feet and was built to replace four barns destroyed, having an aggregate outside wall of 716 feet, and yet this barn has about 25 per cent. greater capacity than all four barns lost, showing the great economy of this form in expense of wall and siding.

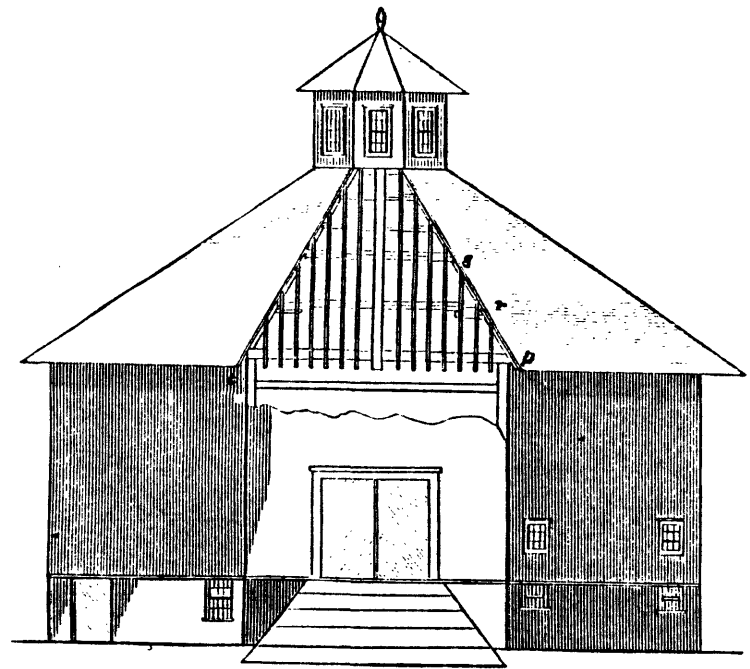


Fig. 5.—OCTAGON BARN (NORTH ELEVATION).

EXPLANATION.—*p*, plate; *r*, tie-rod and bridging between rafters; *s*, purlin rim; *t*, hip rafters.

If we compare it with an oblong barn 50 × 108 feet, the latter will inclose the same number of square feet, and have the same capacity at the same height, but requires 51 feet more outside wall.

It is easy to make the roof of the octagon self-supporting, as it is in the form of a truss. The plates perform the office of the bottom chord, and the hip rafters of the top chord, in a truss. The strain on the plates is an endwise

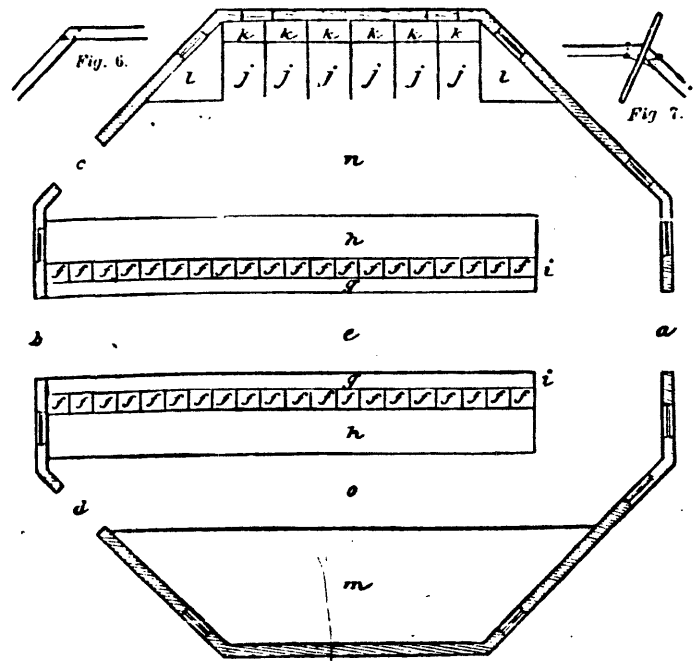


Fig. 8.—OCTAGON BASEMENT (NORTH SIDE).

EXPLANATION.—*a b c d*, doors of basement; *s*, drive-way through the center; *n c*, south drive-way for cart to carry out manure; *o d*, north drive-way; *m*, spare room for root cellar or any other purpose; *l l*, lying-in stall for cows; *k k k k k k*, horse mangers; *j j j j j j*, horse stalls; *f f*, forty cow stalls or stanchions—there should be no separation between these spaces and *h*; *g g*, cow mangers; *h h*, an open grated platform for cows to stand on, the manure falling through upon a concrete floor below.

102 PRACTICAL HINTS ABOUT BARN BUILDING.

reduce the labor of caring for the animals to the smallest amount which will admit of the largest yearly net profit.

5. The form and arrangement of the buildings should be such as to necessitate the least first cost and the smallest maintenance expense compatible with the necessary accommodations.

A perspective view of the barn, from a photograph, is given in Fig. 1 (page 101), showing the main entrances to the two stories, while Figs. 2 and 3 are bird's-eye views of the interiors of the first and second stories designed to show the construction of the barn and the arrangement of its interior. It will be seen that in form the barn is cylindrical, covered with a conical roof, which is surmounted by a cupola of the same form. The barn is 92 ft. in diameter and 28 ft. from sills to eaves. A cylindrical silo 24 ft. outside diameter and 34 ft. deep, having a capacity of 14,126 cu. ft., occupies the center. Around this silo in the first story ninety-eight adult cows are accommodated in two circular rows facing a common feeding alley 9 ft. wide, and behind each row of cattle is a wagon drive 6 ft. wide for cleaning the barn which leaves and returns to the common single broad entrance.

Extending entirely around the silo in the second story is a barn floor 18 ft. wide, from the outer edge of which, through chutes leading to the feeding alley in front of the cattle, green fodder can be delivered to them from the wagon or dry fodder from the storage space above. This floor also permits of driving around the silo and out at the entrance after unloading, even when the ensilage cutter is being run to fill the silo.

On the outside of the barn floor, on the right of the entrance, is stable room for ten horses, 16 ft. from front to rear, 34 ft. frontage on the barn floor and 55 ft. from end to end at the outside. On the left of the main entrance is a workshop and granary whose combined floor space equals that occupied by the horses. In the rear of the silo is a space 16 ft. deep for farm tools, having 32 ft. frontage on the barn floor and possessing a floor space the equivalent of 16x40 sq. ft. Between the tool room and the horse barn on one side and the granary on the other are two hay bays which, together

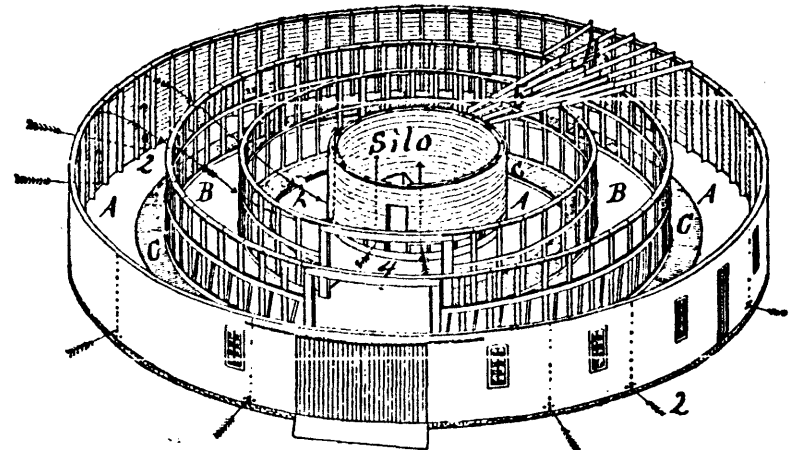


Fig. 2.—Showing arrangement and construction of first story. A, A, A, A, wagon drives for cleaning barn; B, B, feed manger; C, C, platform for cattle; 2, 2, 4, showing method of ventilation; 5, showing method of placing joists.

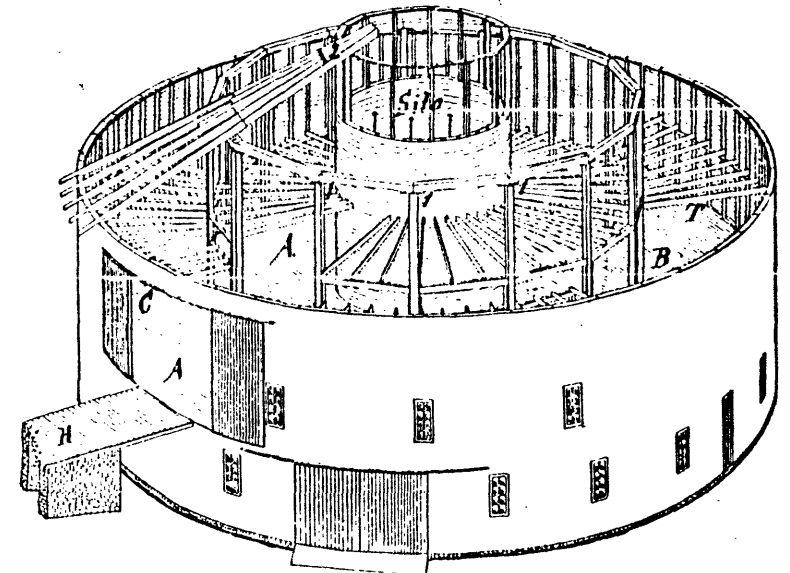


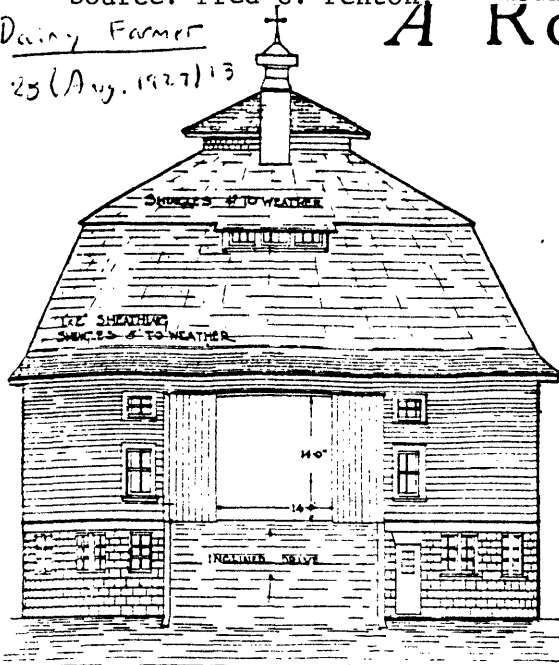
Fig. 3.—Showing arrangement and construction of second story. A, A, barn floor; B, bay bay; T, tool room; C, workshop and granary; 1, 1, purlin plates and method of placing them; 2, 2, showing method of placing rafters; H, entrance drive.

Dairy Farmer
 25 (Aug. 1927) 13

A Round Dairy Barn

Dairy Farmer Plan No. 9

Designed by FRED C. FENTON



ELEVATION

SOME advantages in economy of construction, strength, convenience of feeding and caring for the stock are offered by a round dairy barn as compared with a rectangular barn. It is not to be expected that any one type of barn will fill the needs or desires of all dairymen. Most will prefer the standard rectangular-shaped barn. But some want a barn different from their neighbor's and the round barn has some advantages worthy of consideration. It is a well-known fact that a circular wall requires the fewest lineal feet to enclose a given area. So for the amount of materials in the wall the round barn encloses more floor space than a barn of any other shape. Also, with round construction, it requires less framing and bracing lumber to secure adequate strength. By making use of the hoop and arch in construction the round barn is naturally stronger than the barn with straight walls. A round structure is well adapted to masonry and especially to hollow tile which can be laid with steel rods in the mortar joint similar to silo construction. Not only is the round construction stronger, but it is also less affected by wind pressure. The curved surfaces make a "stream line" which allows the air to pass around the structure with a minimum of pressure.

The round barn has special advantages in the feeding of the cows. In the arrangement shown the cows are in a circle with their heads facing toward the silo, hay chutes and grain chutes. This reduces the carrying of feed to a minimum since all the cows' heads are within a short radius of the feed. The silo is logically placed in the center of the barn where it aids in supporting the roof and floors and where it is most convenient for feeding. The hay chutes can then be run along the interior of the mow. If grain bins are placed on the floor above, the grain chutes should also

come down along the silo wall.

The round barn is equally convenient for cleaning. With a litter carrier or cart running behind the cows, all litter is easily accessible and can be taken out any door into the proper yard. However, in this respect, it offers little advantage over a properly arranged rectangular barn.

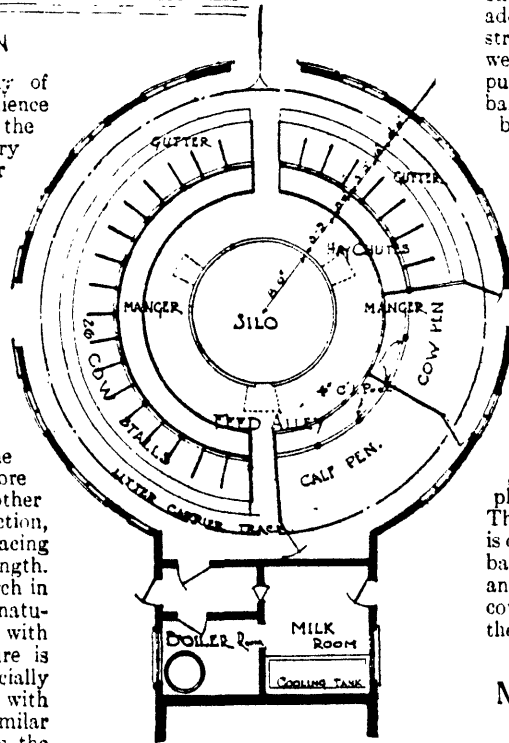
A good arrangement for a round barn is to allow the cows to run loose in

to clean out the litter. Such a plan has the further advantage that it becomes possible to make better use of the ground floor space. One of the greatest disadvantages of a round barn is that there is proportionately much more waste space in the alley behind the cows than in the rectangular barn. Where the cows are allowed to run loose in the round barn it is possible to make better use of this additional space.

The round barn, since it is usually high, provides ample hay space. In fact, there is plenty of room usually to blow in a quantity of straw for bedding the cows. It is very easy to have an open mow because with the silo in the center no interior roof supports are needed.

However, the round barn has some further disadvantages in addition to the one mentioned. It is hard to make any additions or enlargements to the main structure. It does not adapt itself as well to the varied needs of the general purpose barn as it does for the dairy barn. It is not so good for the large barn because when more than one row or circle of rows is put in it becomes very inconvenient. The problems of filling the silo and the hay barn are more difficult than with rectangular barns. There are often no local carpenters who have had experience in building the round barn. This means less efficient carpenter labor. In fact, as a general rule, the round dairy barn is not a practical proposition. However, with some persons, and under certain conditions, it does make an appeal and is to be preferred to the rectangular type. For those individuals this plan will be of especial interest.

The arrangement shown in this plan is one of the most practical for the round barn. There are two open pens for cows and calves, and stalls for twenty-six cows. The milkroom is shown under the drive which leads to the floor above.



GROUND FLOOR PLAN.

the larger part of the barn, with mangers in circular form around the silo. At milking time they can be taken into a room partitioned off with stanchions, where they can be cleaned and milked. With this arrangement the spreader would be driven thru the open space

Complete blue prints for the construction of this dairy barn can be obtained at the cost of printing and mailing from the Dairy Farmer Building Service, Des Moines, Iowa. Price 40 cents.

Milk Marketing Association a Success

The Twin City Milk producers' association has just completed ten years of most successful activity. The membership has increased during the past year by more than 300, and is now past the 7,000 mark. Starting with a sale of product amounting to a little over a million dollars the first year, they showed an increase every year, and last year did a volume of business amounting to almost eight and one-half million dollars. The plan of this organization is first to furnish the distributors all of the milk they need, and then to hold the balance off the market to be made up into such products as may be most profitable. Last year approximately one-half of the milk was sold to distributors. 42 percent was separated and sold as cream or made into butter, and 6 percent was made into cheese.

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Multiple Resource Area
Thematic Group

dnr-11

Name Central Plan Dairy Barns of New York Thematic Resources

State Chenango County and others, NEW YORK

Cover from the Barns 9/29/84

Nomination/Type of Review

Date/Signature

1. Baker Octagon Barn **Substantive Review**

for Keeper Deborah Byrd 9/29/84

Attest

2. Bates Round Barn
Entered in the National Register

for Keeper Deborah Byrd 9/29/84

Attest

3. Bronck Farm 13-sided Barn
Entered in the National Register

for Keeper Deborah Byrd 9/29/84

Attest

4. Gamel Hexadecagon Barn
Entered in the National Register

for Keeper Deborah Byrd 9/29/84

Attest

5. Kelly Round Barn
Entered in the National Register

for Keeper Deborah Byrd 9/29/84

Attest

6. Lattin-Crandall Octagon Barn
Entered in the National Register

for Keeper Deborah Byrd 9/29/84

Attest

7. Lunn-Musser Octagon Barn
Entered in the National Register

for Keeper Deborah Byrd 9/29/84

Attest

8. McArthur-Martin Hexadecagon Barn
Entered in the National Register

for Keeper Deborah Byrd 9/29/84

Attest

9. Parker 13-sided Barn
Entered in the National Register

for Keeper Deborah Byrd 9/29/84

Attest

10. Schultz 15-sided Barn **Substantive Review**

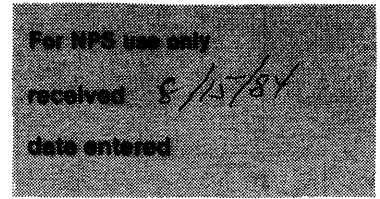
Determined Eligible
for Keeper Deborah Byrd 9/29/84

Attest

DOE/OWNER OBJECTION

United States Department of the Interior
National Park Service

National Register of Historic Places
Inventory—Nomination Form



Continuation sheet

Item number

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Multiple Resource Area
Thematic Group

Name Central Plan Dairy Barns of New York Thematic Resources
State Chenango County and others, NEW YORK

Nomination/Type of Review

Date/Signature

11. Young Round Barn

Entered in the
National Register

for Keeper

Shelore Byers 9/29/84

Attest

12. Zoller-Frasier Round
Barn

Entered in the
National Register

for Keeper

Shelore Byers 9/29/84

Attest

13.

Keeper

Attest

14.

Keeper

Attest

15.

Keeper

Attest

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Keeper

Attest

17.

Keeper

Attest

18.

Keeper

Attest

19.

Keeper

Attest

20.

Keeper

Attest