

About Barns

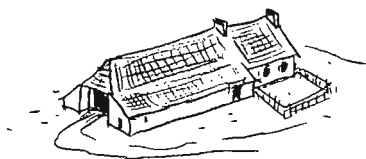
Ann Gourlay Gabler and Mirko Gabler

“One of the striking features of the New York State landscape is the great variety of barns found in the countryside. They dominate valleys or windswept flats the way churches dominate a village.” *These are the opening sentences of The New York Barn Book, and what follows here is the better part of those chapters that provide the means for identifying an old barn and the nomenclature for describing it. The New York Barn Book is the result of Ann and Mirko Gabler’s love of old barns and their extensive knowledge of them, gained in practice from restoring the barn they now live in, and in studying barns across the state.*

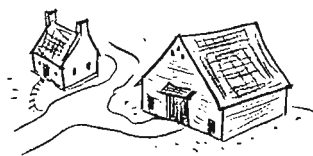
The Preface goes on to explain the book’s purpose: “To an uninformed outsider the story of an old farm is a closed book. But to a knowledgeable observer the whole of New York State becomes an open-air museum. It is a purpose of this book to tell about workings of an old New York farm and to show the different types of barns found in our state.” The illustrations are by Mirko Gabler.

A Brief History of New York Barns

From the early 1600s, when the first farms were established in New York State, until the beginning of the twentieth century, farmers built timber barns using ancient post-and-beam framing techniques which they had brought with them from Europe. The abundance of long straight timber in the New World was a bonanza to the early barn builders, coming as they did from countries where wood was increasingly scarce. As a result, an efficient, uncluttered design evolved in New York State that relied on relatively few but straight and larger timbers.



ca. 1700 HOLLAND



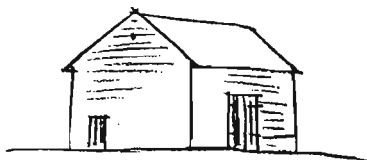
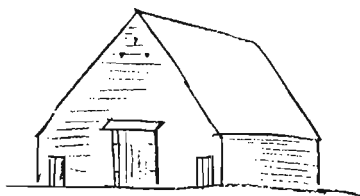
ca. 1800 NEW NETHERLANDS

Although the new immigrants had for the most part built barns patterned after those in their homelands, gradually they made changes in the way the barns functioned in the New World. Whereas in Holland, the barn was nearly

always attached to the house, in New York State no such barns survive. A barn in England was a place to store crops, not to house animals.

The word “barn” is a combination of Old English terms, “*bere*” meaning “barley” and “*ern*” meaning “a place.” Animals were usually kept in a separate building. In America the “English Barns” that survive were clearly built to shelter both crops and animals under one roof. These changes came about in the early days of the colonies for reasons about which we can only speculate.

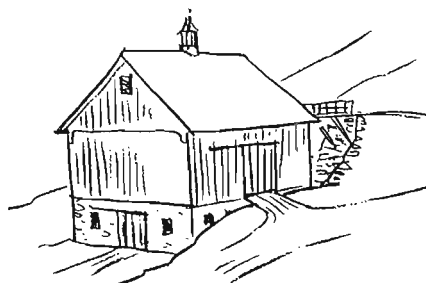
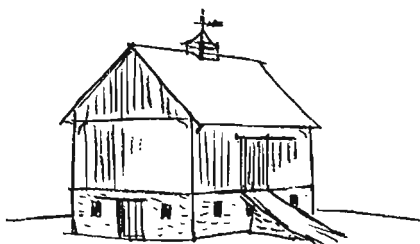
The history of timber barns in New York State begins with the Dutch settlers who farmed in the Mohawk, Schoharie, and Hudson River valleys and on Long Island before the Revolutionary War. They had developed a barn type that had come to be known as the New World “Dutch Barn.” It was nearly square, with steeply pitched roof and with wagon doors in the gable ends.



Farmers from the British Isles and New England who gradually settled throughout the state built a rectangular “English Barn” (also called a “Connecticut Barn,” “Three-Bay” or “Yankee Barn”), with wagon doors in the long sides of the barns.

After the Civil War, New York farmers began keeping much larger dairy herds, and a new version of the English Barn known as a “Basement Barn” evolved. An English Barn was raised onto a stone basement, which housed the dairy herd, while the timber barn above was used for storing hay.

A Basement Barn set into a hillside is a “Bank Barn.” Earth and stone ramps lead to the wagon entrances on the upper level.



In the mid-nineteenth century, a craze for circular-barn building swept the state and the complex “Round Barn” or “Polygonal Barn” became popular, and

many were built at great expense. The few that still stand are true marvels of timber framing.



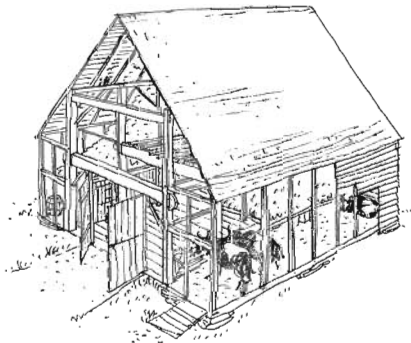
By the end of the nineteenth century, to keep up with the competition from the western states, many small New York farms were consolidated into ever-larger operations and the barns grew accordingly. Barn building had entered the industrial age. Balloon construction became standard and prefabricated trusses were used to span these giant spaces. A new barn built in 1910 was likely to be three times the size of an original English Barn.

What follows here are descriptions of the major types of barns found in New York State. There will be, of course, regional variants that borrow from more than one of the types of barns described below.

Dutch Barns, 1640s–1840s

Identifying Characteristics

- > Found in the Hudson, Mohawk and Schoharie Valleys, and on Long Island.
- > Steeply pitched roof, low side walls.
- > Nearly square floor plan, often 40' x 45'.
- > Wagon doors in both gable ends.
- > Inside, massive crossbeams span the wide center aisle.



The New World

Dutch Barn is well built and spacious. Due to its oversized anchor beams, simple layout, and strong joinery, some fine examples have survived intact to the present time.

The Dutch Barn was built nearly square on a low dry stone foundation or on piers. Like its predecessor in Holland, the New World Dutch Barn was divided into three main aisles. The widest was the center aisle where the threshing and other farm activities took place. In the side aisles were the stalls, with the animals facing the threshing floor. Massive anchor beams that span the central aisle are a dramatic feature of these barns. They connect to the posts, often with large protruding *tenons* that are typically rounded into tongues. These anchor beams support a platform of poles where hay, flax, or straw was kept.



Dutch Barn, Columbia County. Photo: Mirko Gabler.

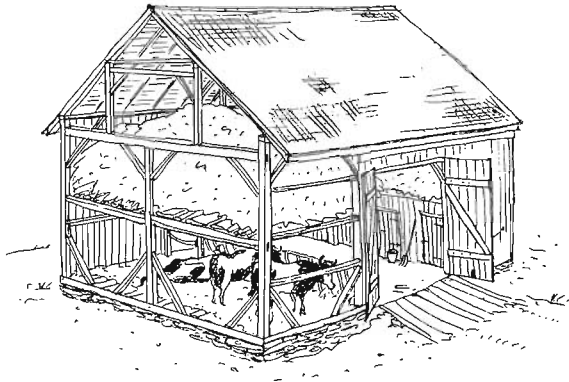
In the Dutch Barns the wagon doors were located in the gable ends of the barn. These doors swung on wooden or metal hinges, with one side halved to create the typical “Dutch door.” Above the door was a small overhang called the *pentice*. A small door for animals and humans was located in the corner of the gable end. Martin holes were cut in various designs high in the gable, allowing for the passage of birds and air. Clapboards ten or twelve inches wide were used as siding. No original glazed windows have been found in any New York Dutch Barns.

Most Dutch Barns standing today were built between the late 1700s and the 1850s. This type of barn was popular, not only with the Dutch; in 1801 a contract was signed in Albany County between Alexander Murray, a farmer, and Abraham Smith, a barn builder, for erection of a “Dutch Barn, 42’ long and 40’ wide.”

English Barns, 1780s–1850s

Identifying Characteristics

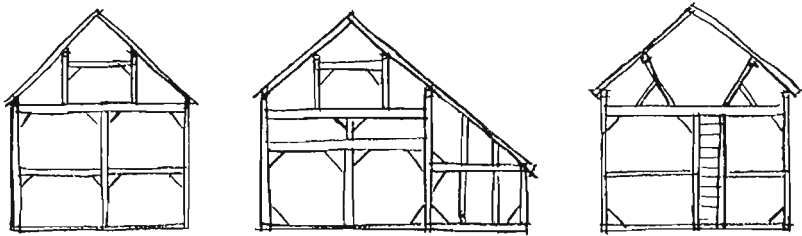
- > Found throughout New York State.
- > One-story, rectangular, 30’ x 40’ or larger.
- > Divided into three bays.
- > Wagon doors on the long sides of the barn, leading into the center bay.



The **English Barn** (also known as the Yankee, Three-Bay or Connecticut Barn), provided the general pattern for most barn building in the state until the latter half of the nineteenth century. The original English Barn was transplanted to New York from New England. It was a rectangular structure built on a dry-laid stone foundation and divided into three sections or “bays.”

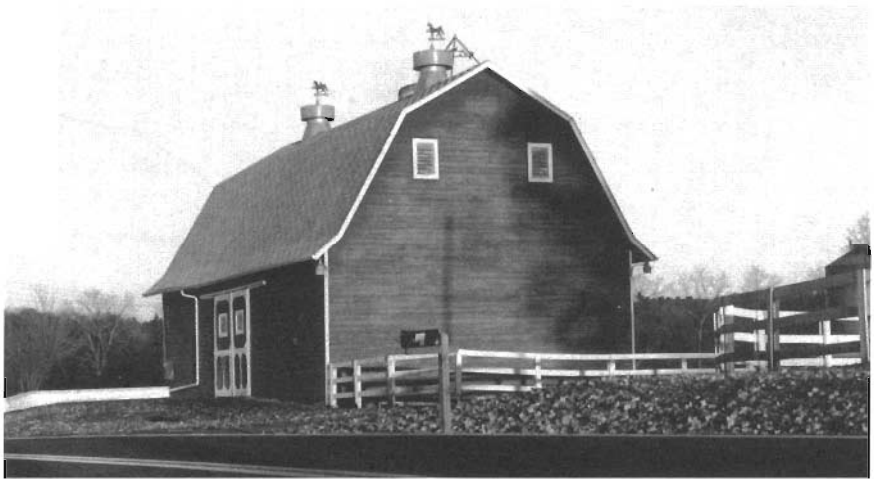
Unlike the Dutch Barn, the English Barn is entered through its long sides, through doors opening onto a center bay. The center bay served as a threshing floor and a wagon runway. One of the bays housed cows, oxen, and horses, while the other was an enclosed granary. Hay or straw was stored on poles in the loft above.

The basic frame of an English Barn consists of four *bents* (cross-sectional framing units connected together by plates or sills). The configuration of the bents varies from barn to barn, sometimes incorporating ladders leading to the loft, additional braces or timbers that mangers were attached to.



In the second half of the nineteenth century, when farms were being modernized, many original English Barns were moved with a team of oxen into a field to become a “Field Barn.” Often they can be found unaltered, as they were built some 150 years ago.

Gambrel-Roof Barns, 1850 to the Present

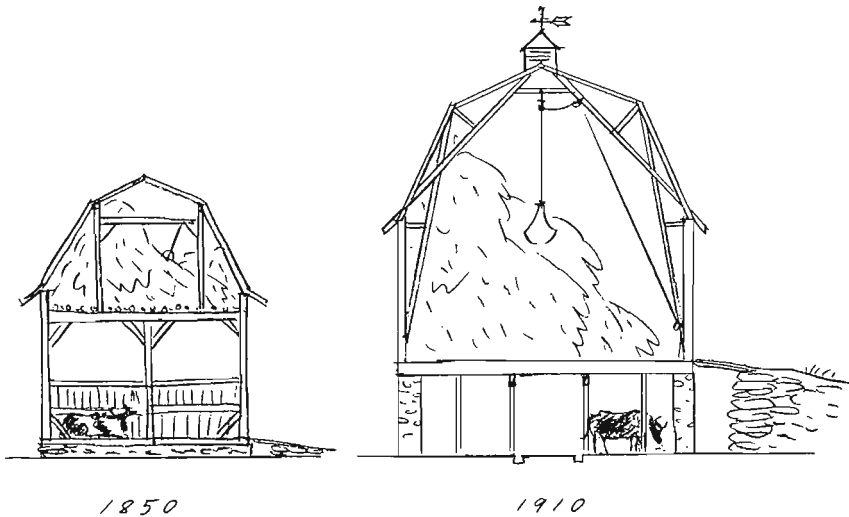


Gambrel-Roofed Barn, Dutchess County. Photo: Mirko Gabler

Identifying Characteristics:

- > Double pitched roof
- > Wagon doors on the long side of the barn

- > Built with or without a basement
- > Three- or multiple-bay floor plan



The **Gambrel-Roof Barn** is a combination of a double-pitched roof, a style borrowed from early colonial houses, with the frame of an English Barn. The gambrel roof was popular with house builders in lower New York State in the late eighteenth century but was not widely used on barns until the beginning of the nineteenth century.

In the latter part of the nineteenth century the Gambrel Barn became popular in the western part of the state and was adapted to the balloon-frame construction, which used sawn planks instead of hewn timbers. With the aid of trussed rafters a clear span could be created allowing for the use of the laborsaving hay trolleys then coming into favor. The older, hand-hewn, timber-framed barns are found mostly in the eastern part of the state, while the larger Gambrel Barns, increasingly constructed from sawn timber, are more common in the western counties.

The Gambrel Barn, painted red with white trim, has come to epitomize the “classic American Barn.” Perhaps it is the reassuring sight of the barn roof seemingly bulging with bountiful crops that has made it such a staple in popular culture.

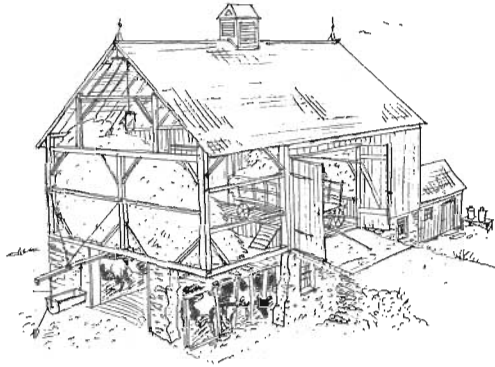
Basement and Bank Barns, 1850s–1920s



Basement Barn, Delaware County. Photo Mirko Gabler

Identifying characteristics:

- > Two or three levels, with ramps leading to the hayloft.
- > Basement usually built of stone.
- > Stanchions for cows in the basement.



The change from English Barns to **Basement Barns** came about around 1850, because of the gradual increase in dairy farming. Dairy farming quickly

became more profitable as railroads allowed for easy access to city markets and regional cheese factories. To provide space for the larger dairy herd, a masonry basement was built, and one or two English Barns were moved onto it. An important feature of a Basement Barn is the cupola on the roof connected to an airshaft that ventilated the basement. To store the increased volume of milk, a milk house was added to the barn where milk was kept cool in cans standing in a water-filled trough.

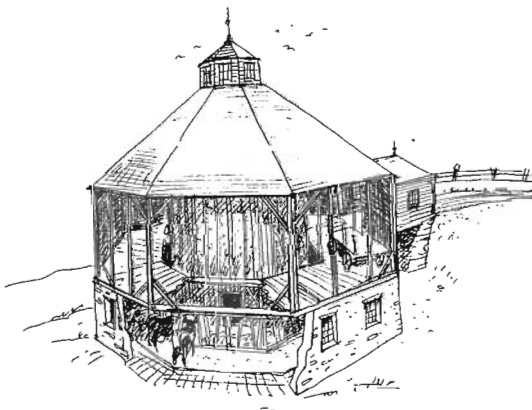
The configuration of the bents in a Basement Barn are nearly the same as those in an English Barn, though by the end of the century timbers connecting the queen posts are omitted to make room for the horse-powered hay fork. The basement has doors in each gable end and a central aisle with stanchions on either side. The manure is collected along the central aisle, which often features a trolley or other mechanical aid for moving the manure out of the barn. The upper level or loft was used for hay storage.

In locations where the terrain was hilly, the basement was built into the hillside, creating a Bank Barn. The locations of doors and ramps to the upper levels were determined by terrain. Some barns are two or three stories high with stone and earthen ramps leading to each level. This way the hay can be unloaded at the top of the barn, and to reach the animals it travels down through chutes to the lower level.

Round and Polygonal Barns, 1850s–1880s

Identifying Characteristics:

- > Two or three levels, with ramps to upper levels.
- > Built round or with eight, ten, thirteen or any number of sides.



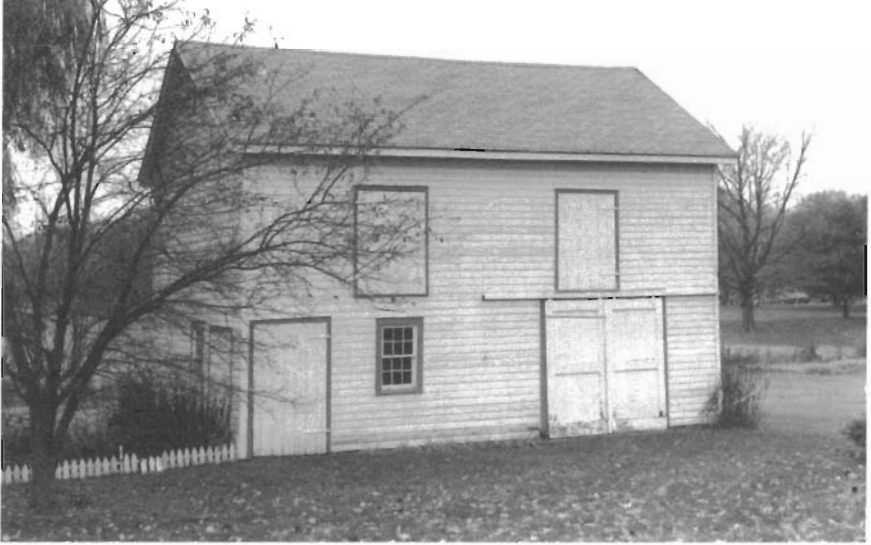
Most **Round and Polygonal Barns** date from the second half of the nineteenth century, although octagonal and hexagonal structures have been built in America since the late eighteenth century. Shakers built one of the earliest round stone barns in 1826 in Hancock, Massachusetts. Soon timber variants of the Shaker barn appeared everywhere along the Western frontier as the new “scientific agriculture” caught on in the second half of the nineteenth century.

Round and Polygonal Barns functioned like the traditional Basement Barn but with unusual, laborsaving ways of handling hay. A ramp led directly into the upper story where hay was easily unloaded from the circular drive into the central silo-like hay shaft. The arrangement of stalls on the ground floor with the animals’ heads facing the hay-storage shaft meant less walking for the farmer at feeding time. It was believed that Round and Polygonal Barns allowed for the most efficient handling of hay as well as the manure. The circular-barn builders were likely to be a notch or two above the ordinary barn builder, as the job required a good grounding in geometry and structural engineering. An open mind and willingness to experiment was probably also an asset. When siding the round barns, the wood clapboards had to be wetted and curved on a form before they could be nailed to the barn frame. Beautifully laid masonry in the basement level is also common.

Silos

Fred Hatch of McHenry County, Illinois, is credited with the first upright **Silo**, built in 1873. Some early silos were built within barns, but problems of proper ventilation and cleaning led to the use of an external square silo attached to the barn. A drawback of a square silo was that the silage in the corners tended to cake and rot. By the 1900s the round wooden silo was introduced, made of upright staves held together with adjustable iron hoops. The round silo made from spruce or pine quickly became the standard. Stone, brick, and ceramic silos were also built until pre-cast concrete and steel became the materials of choice by the mid-twentieth century.

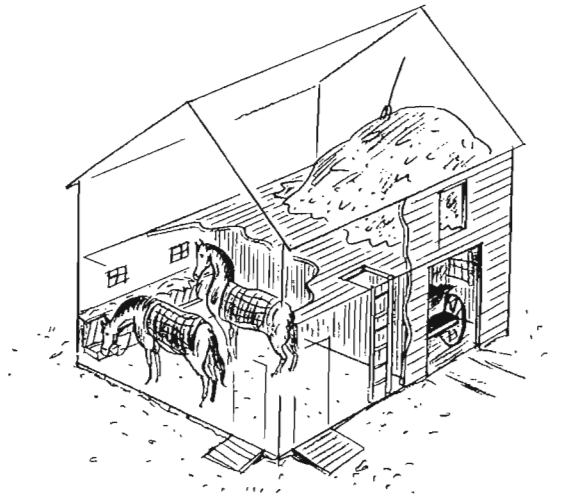
Carriage Barns



Carriage Barn, Dutchess County. Photo: Mirko Gabler

Identifying Characteristics

- > Two-story buildings with stalls and a carriage room on the ground floor.
- > Haymow in the upper floor.
- > Timber framed, balloon framed or in a combination
- > Small windows in the outer walls indicating the number of stalls.



Carriage Barns in our towns and countryside are the most visible link to the so-called horse-drawn era. Unlike oxen, which they gradually replaced for field-work, horses were usually housed separately from other animals in the stable. The stalls and the space for the carriage, a buggy, or a sleigh occupied the ground floor. The upper story served as the haymow and for storage of grain kept in sacks. In the larger stables an indoor hoisting apparatus that was used for moving the heavy sacks to the upper story can often be found. Grain chutes brought the feed directly into the stables below.

The stables were separated from the carriage room and the tack room by a sealed wall that prevented the ammonia from the stables from degrading the running gear's varnish and the leather and brass fittings of the harnesses. The stable walls were usually tighter than a barn, often sheathed from inside with matched boards. *Magner's Standard Horse and Stock Book* from 1900 describes an ideal stable: "The stable should be built on a dry, airy location, facing the south whenever possible. It should be warm, well ventilated and lighted and so constructed as to prevent the exposure of the horse to sudden changes in temperature . . ."

A healthy and reliable horse was a necessity of country life and the decorative treatment and architectural details of the stable reflected the extra care given to both the horse and the building.

Hop Houses



Hop House, Otsego County. Photo: Frank Rollins.

Identifying Characteristics

- > One or more ventilators on the roof.
- > A chimney or a provision for an outside stove pipe, to which a large stove was once connected, providing the heat necessary for drying the hops.
- > A slatted floor in the upper story.
- > Interior walls sealed by lath and plaster or finished with matched boards.

Although vanishing quickly, **Hop Houses**, or Hop Kilns as they are also called, can still be found in Otsego, Madison, Schoharie, Chenango, Herkimer and some neighboring counties where hop growing once flourished. Hop Houses were built in a variety of configurations, but all shared the characteristics listed above.

Hop Houses were built on a regular or a square floor plan. The square type had a pyramidal roof with the ventilator occupying the very peak, while the rectangular version would have one of two ventilators placed at or near the ridge. At times a pair of kilns was connected to a common building where the hops were cooled after drying and where the hop press and the baling operation were located.

Hops were grown in rows, the vines climbing twenty-foot-high wooden poles set in the ground. Harvesting and drying of hops was done in late August and September. The freshly picked hops were brought to the Hop House and spread on burlap sheets across the slatted floor of the upper story, in a layer some two feet deep. The 120-to-200-degree heat rising from the stove on the ground floor dried the hops, the moisture escaping through the ventilators in the roof. When dry, the hops were taken to the cooling room and then pressed into bales and shipped to breweries.

The Dutch settlers grew hops and brewed beer since their arrival here. The first recorded brewery opened in 1711 in lower Manhattan. It was built by Herman Rutgers who on that occasion noted in his Bible: "Today I brewed the first beer in my new Brewery. May the Lord bless us in the work of our hands."

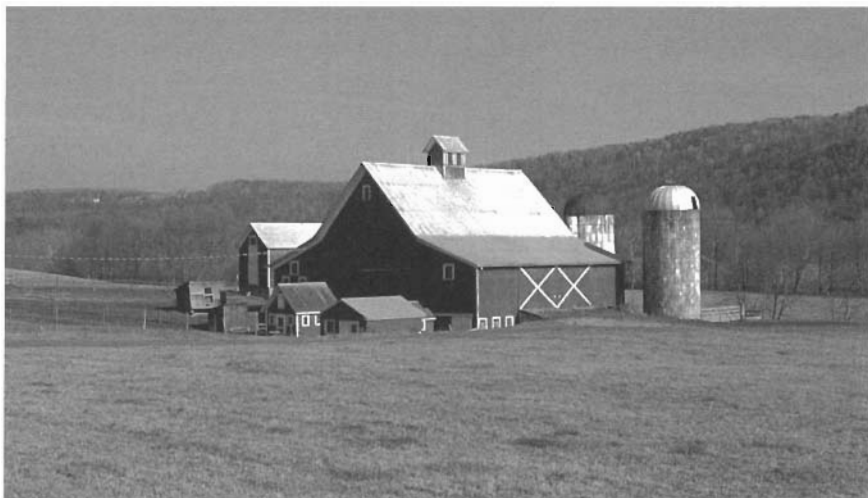
With the growing population, hop production in New York State grew as well, and by 1840 it had become a major branch of agriculture. It thrived especially in the second half of the nineteenth century, with production peaking at twenty-one million pounds by the 1880s. Hop picking by hand was a tedious and labor-intensive task for which seasonal help had to be hired from out of town. Hop dances were held to keep up the pickers' spirits.

In 1894, the *Edmeston Local*, an Otsego County newspaper, reported on such an event: "About fifty people were at the hop dance in the Opera House.

It was one of the finest affairs of its kind. There was none of the rough element present and many of the ladies and gentlemen were dressed in formal attire.” On a more somber note it added: “The hops are about half picked, most in good condition. Some yards have mold and lice.” The end of the century saw a gradual decline as Blue Mold and Downy Mildew, diseases of the vine, struck the industry and hop growing shifted to the disease-free Pacific Northwest. Prohibition finally put an end to the New York hop yards that still remained.

Adding-On and Modernizing

The simple English and Dutch Barns were adequate for the self-sufficient farm operations of the eighteenth and early nineteenth centuries. But as farmers began to expand or specialize in one branch of agriculture, their barns had to be enlarged, adapted, or changed. When in the 1820s the raising of sheep became widespread, sheds were added to protect the sheep from the cold wind, along with buildings for storing and handling of wool. By the 1850s the sheep farming had declined and New York farmers took up dairying instead. Their barns were raised on basements, sometimes doubled in length, milk houses were added, and sheds for calves and haying machinery were built. A windmill was often added to pump water to the milk house and to water the cows. Today, on most farms the original barn has grown into a complex of buildings. Each region seems to have its favorite way of adding on. Each building represents a chapter of New York’s agricultural history.



Barn with Added Complex. Cayuga County. Photo Mirko Gabler.

Roofs, Siding, Stonework, Doors and Windows, Flooring

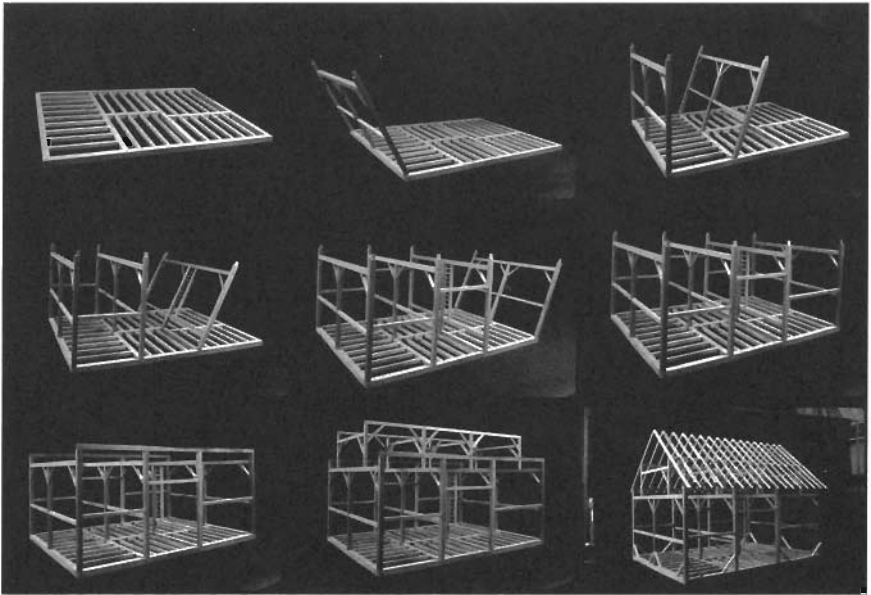
Keeping the water out is essential for maintaining a sound timber barn. Throughout the nineteenth century, wood shingle was the most common roofing material and did the job well, while the “standing seam” metal roof was a popular choice of roof in the later part of the century.

Horizontal clapboard and vertical board and batten are the most common siding types on New York State barns. Clapboard made of pine can vary in width anywhere from six to twelve inches. The wider clapboards as used on Dutch Barns, were straight boards about one inch thick, without the familiar taper found on the narrower clapboard siding. The wide clapboards weren't expected to make a very tight wall, but to let air and light filter into the barn which usually had no windows. The vertical siding, which used a batten to cover the cracks, sealed the barn a little better. It was made of pine eight to ten inches wide, with battens at least one-and-three-quarter inches wide. “Novelty siding” became popular after the Civil War, especially in areas populated by Germans. Boards six or eight inches wide, interlocking through rabbets milled into the edges, made for a very tight wall.

Early barns were most often built on a foundation of dry-laid stones collected in the fields. Chief advantages of stonework laid without mortar are its flexibility on freezing and thawing ground and its ability to ventilate the space under the barn floor. In most Basement Barns, the basement portion is built from masonry. Often beautifully laid in courses of cobbles or in herringbone patterns of flat stones, the walls are built as two veneered faces filled in with rubble. Such walls last a very long time as long as water is not allowed to wash into the porous center causing the veneered faces to buckle out.

Until the 1850s when sliding doors with wheels on a track became popular, the wagon doors as well as the smaller hayloft doors swung on iron strap hinges. Sliding doors were a great improvement in this regard. Their only drawback was the finicky nature of the sliding hardware that had to be kept in top shape if the door was to slide without too much effort.

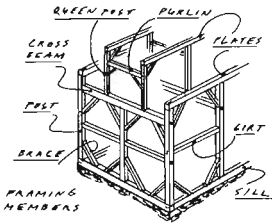
Barn floors were usually made of softwood, one-and-a-half to two inches thick. It was often tongue and grooved or splined, made from pitch pine for the runway, white pine or hemlock elsewhere. At times oak floors were used as well.



Raising a Barn. Model and Photo Mirko Gabler.

Raising an English Barn

1. The first step in raising a barn was to assemble the sill on the foundation and cover it with planking.
2. The four bents needed for raising an English Barn were laid out flat on the ground. On the bottom of each vertical post, short tenons were made called “toes,” that would fit into mortises in the sills.



3. When the bents were ready for raising, a group of men would gather with ropes and iron-tipped poles to raise the bents upright in their place, under the direction of a master carpenter.

Sometimes block and tackle and a *gin pole* were used as mechanical aids, especially for raising of the first two bents.

4. After all the bents were up and joined together with girts, the posts were capped with the gable-to-gable long plates. A tenon on top of each vertical post held the plates in place.



Finished Barn. Madison County. Photo Mirko Gabler.

5. Next the *queen post* assemblies were raised onto each bent and connected together with purlins. Rafters were set over the purlins and plates and joined at the peak. The roof was then covered with roofing boards and wood shingles.

6. Vertical siding of white pine was nailed to the plate, the girt and the sill along the sides of the barn. On the gable ends the boards were first nailed from the sill to the big beam and then overlapped by a second row reaching from the big beam to the roof. When horizontal clapboard siding was used, vertical studs were framed into the horizontal timbers of the frame for nailing.

White oak and pitch pine were the preferred materials for framing members. Horses or oxen would drag the felled trees to the building site where the timbers were hewn, still green, into square beams. The smaller timbers, such as braces and girts, were either sawed at the sawmill or hewn from younger trees. A farmer might do this arduous work himself during the slow winter months or hire a professional crew headed by a master carpenter. The tools used in timber framing (adz, broadax, saws and chisels) have not changed since the medieval times. Nor has the mortise and tenon—the principal joint used in barn building. Working a round log into a square beam was a widely known craft. A modest English Barn could be built by a handful of men and a team of horses. To raise a bigger

barn, the farmer would probably need all the help he could get. A barn-raising bee was a popular community event. A mid-nineteenth-century letter from Ruth A. Whitmore to her brother, Charles W. Ingersoll, describes such a gathering on an Owego farm:

Dear Brother Charles,

Carp [nickname for the local master carpenter] raised Uncle Moses' Barn in the afternoon and Pete went to the raising. Auntie and Joel were there and we all went up to Uncle Moses' to see them raise the frame. It was heavy timbers and a pretty large frame. It went together nicely and all right. Bill for one thought he could not get it up. Ma asked him if he did not feel pretty nicely to think that there was no mistakes in framing. But he said not any better than he did before he raised it, for he knew just as well how it was going as he does now. You know old Carp don't undertake anything that he knows nothing about.

Dating a Barn

Short of finding a date carved into the cornerstone, precise dating of barns is difficult. This is because barns were often disassembled, moved, and new timbers added or combined with "recycled" timbers from much older barns. But if the frame appears to be intact, there are clues to look for that can narrow down the barn's age, give or take twenty to fifty years.

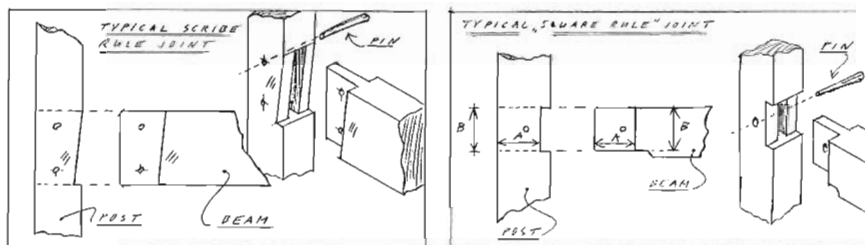
Until about 1810-1820, barns were framed by the "scribe rule" whereby each timber was fitted individually to mate with another, and the two were marked with Roman numerals for later assembly. By the 1830s the "square rule" was applied where the joinery on matching timbers (such as posts and beams) was cut to standard dimensions regardless of the variations in thickness of the timbers as is shown in the photograph. This made the mating halves interchangeable and no marking was needed. All posts were notched in so that dimension "A" (depth of the tenons) would be constant, and all beams were reduced in thickness near the joint, to dimension "B."

Saw marks left on the timbers offer another clue. Structural members sawn on an "up-and-down" saw and framed into the main structure would indicate a date of construction prior to 1830 or 1840, by which time circular saws were coming into use. If all timbers are "circle sawn" the barn is



Inscription on Beam, Columbia County. Photo: Mirko Gabler.

likely to date from 1890 or later. But as there was a time of overlap between these two techniques, both kinds of saw marks will be found in many barns. If all the timbers appear to be hewn, as is often the case in Dutch Barns, the barn is likely to date to the late eighteenth century or earlier.



Inscriptions on the timbers can also help. Often during a year of record harvest, when the hay or straw reached “to the rafters,” the farm hands would record the event in black ink on a beam somewhere high up in the loft, leaving us a date and sometimes a glimpse of the current events. Carved inscriptions are found in the vicinity of the barn doors. Nails and door hinges can help as well. But hinges, like old timber, were often reused in new construction and can be relied on only as “supporting evidence.”

Wooden hinges indicate an eighteenth-century building, perhaps a Dutch Barn. Iron hinges cover quite a span of time. The oldest nails are likely to be in the planking of the runway.

The New York Barn Book *awaits publication*. When it is issued it will include specific information concerning the restoration of old barns. See the HVRR web site (www.bard.edu/hvrr) for a list of barns that may be visited and their locations.