Historical Farming Systems and Historic Agricultural Regions: A Word About Definitions

The concept of a "farming system" is helpful as a framework for understanding how agriculture in Pennsylvania evolved. A "farming system" gathers physical, social, economic, and cultural factors together under the assumption that all these factors interact to create the agricultural landscape of a given historical era. Physical factors like topography, waterways, soils, and climate set basic conditions for agriculture. Markets and transportation shape production too. Other components, equally important but sometimes less tangible, form part of a "farming system." Cultural values (including those grounded in ethnicity) influence the choices farm families make and the processes they follow. So do ideas, especially ideas about the land. Social relationships, especially those revolving around gender, land tenure, labor systems, and household structure, are crucial dimensions of a farming system. Political environments, too, affect agriculture. The idea of a "farming system," then, opens the way to a more comprehensive and accurate interpretation of the historic rural Pennsylvania landscape. Whether we seek to interpret German Pennsylvania, the "Yorker" northern tier, home dairying areas where women dominated, or sharecropping regions in the heart of the state, the "farming system" approach is the key to understanding the landscape. Conversely, the landscape can tell about the farming system.

Extensive primary source research and fieldwork has helped to characterize Pennsylvania's historic farming systems, and also to establish a number of "Historic Agricultural Regions" where historic farming systems shared fundamental qualities over a long period of time, within a reasonably well defined geographic area. These regions differed significantly from one another in soil quality and topography; product mix; mechanization levels; social organization of production; and cultural practices. The six Historic Agricultural Regions are as follows: Northern Tier Grassland; Central Limestone Valleys Diversified Farming; North and West Branch Susquehanna Diversified Farming; Potter County Potato and Cannery Crop Specialty Area; River Valleys Diversified Agriculture and Tobacco Culture; and Allegheny Mountain Diversified Part-Time Farming. Though overlap surely occurs (especially in the twentieth century), each of these areas has characteristics that distinguish it from the rest. For example, the Northern Tier Grassland area was shaped not only by the limitations of glaciated soil and the proximity of urban markets, but by Yankee/Yorker culture, while farm households in the North and West Branch Susquehanna Diversified Farming region followed a diversified strategy that featured hogs and corn. In the Central Limestone Valleys, Pennsylvania German cultural influence was strong, and customs of share tenancy and rich limestone soil permitted one generation after another to raise wheat and livestock in a highly mechanized farming system. For a brief time in scattered river valley bottoms in the north and center of the state, tobacco culture forced significant alterations to farming patterns, and to landscapes. Potter County's specialty system flourished in the twentieth

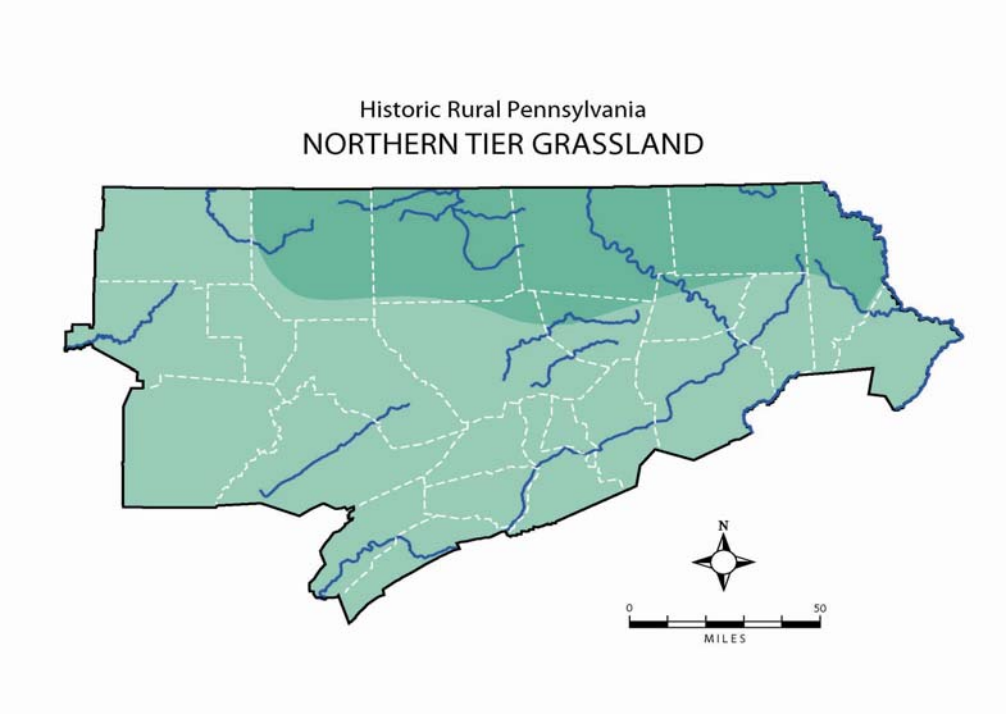
century, and for a time relied upon African American migrant labor. And finally, in the poor soils of the Allegheny Mountain Diversified Part-time Farming region, mining and manufacturing households used farming as a means to ensure family subsistence when wages were low.

Research into Pennsylvania's historic agricultural heritage quickly establishes an important point. No matter what the region or time period, where production was concerned the typical Pennsylvania farm unit was family-based, and survived by pursuing a wide variety of strategies; while particular *regions* of the state came to emphasize some products over others, *individual farms* rarely could be regarded as being specialized. So, we cannot approach historic Pennsylvania as if it were today's specialized, thoroughly commercialized agriculture writ small. The true essence of past Pennsylvania farming can only be captured by attending to the close-grained texture created by a multiplicity of small-scale, flexible enterprises, all of which served multiple purposes, including on-farm use, *or* off-farm sale, *or* barter. Thinking about Pennsylvania farms in terms of diversified production will allow for the most faithful interpretation of the Pennsylvania farmstead and rural landscape, which after all consist of a rich variety of buildings and landscape features -- with a variety of specialized spaces such as smokehouses, poultry houses, potato cellars, woodlots, summer kitchens, springhouses, and perhaps workshops or mills, not to mention intricate field and boundary patterns. This perspective also preserves -- indeed reclaims -- the contributions that a preoccupation with specialized market commodities tends to obscure: those of women, children, and farm laborers.

Northern Tier Grassland, 1830-1960

Location

The Northern Tier Historic Agricultural Region includes all of Tioga, and Bradford, Susquehanna Counties and parts of Potter, Wayne, and Sullivan Counties.



Climate, Soils, and Topography

This area is characterized by cool summers and relatively cold winters (average mean temperature 44-47 degrees Fahrenheit).[1] The growing season ranges from well under one hundred days in Potter County, but in most places falls between 100 and 140 days.[2] The climate in this section "is

[1] Franklin Menges, *Soils of Pennsylvania* (Harrisburg: W.S. Ray, 1914), page 48 facing.
[2] Pasto, Jerome, and Pritam S. Dhillon. "Farm Production Trends in Pennsylvania to 1960," Pennsylvania State Agricultural Experiment Station Bulletin # 693, 1962, 33.
[3] E. Willard Miller, *A Geography of Pennsylvania*, (University Park, Pennsylvania: Pennsylvania State University Press, 1995), 53, 72, map page 69.

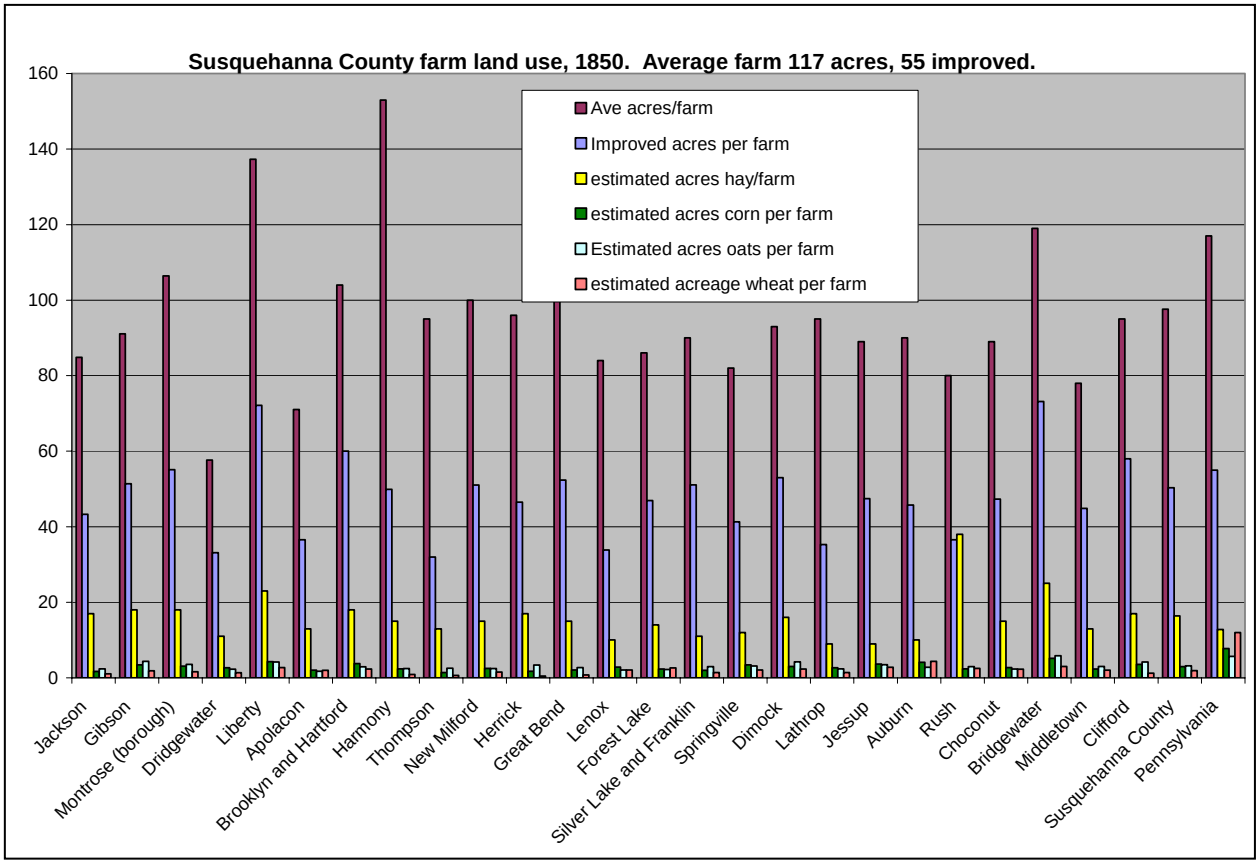
characterized by both the greatest annual temperature range and the largest annual precipitation range in the state," and the soils are predominantly inceptisols of glacial origin, heavy, poorly drained, and of average natural productive capacity (though they can be improved with "fertilization and conservation practices." [3] Topography is rolling to mountainous. The relatively short growing season is due to altitude (500-1900 feet) rather than latitude. Rainfall averages 35-45 inches per year. The Susquehanna River North Branch, Chemung, Tioga, and Cowanesque River are the major waterways.

Historical Farming Systems

Four historic farming systems can be identified in the region from settlement to 1960. These are the period from settlement to about 1830, the period of farm making; from about 1830 to about 1860, a diversified woodland, grassland, and livestock economy; 1860-1900, when diversified home dairying dominated; and 1900-1960, when fluid milk dairying and poultry production were emphasized. For a treatment of the early agriculture during the period of settlement, see the separate section on early agriculture. Because the processes of occupying the land and farm making were similar throughout the twenty-four county region, and because they took place during roughly the same years, the entire area is treated as a whole for this early period.

By about 1830, the farming system of this region bore a recognizably regional stamp. Grassland (hay and pasture) and animal husbandry took precedence over crop cultivation; there was little need for expensive farm implements and horses; production relied heavily on family labor, especially women; and farming was conducted almost exclusively by owner-operators. Another factor that helped to shape the landscape were New England and New York cultural and building traditions.

A Diversified Woodland, Grassland, and Livestock Economy, c. 1830-to About 1860
Products, c. 1830 to 1860



This chart uses yields from a mid 19th century estimate to estimate acreages in Susquehanna County and Pennsylvania. It clearly shows that Susquehanna County farms had a much greater attention to hay, proportionally, than the state as a whole. Data for this and the following two charts taken from *Nonpopulation Census Schedules of Pennsylvania*, 1850.

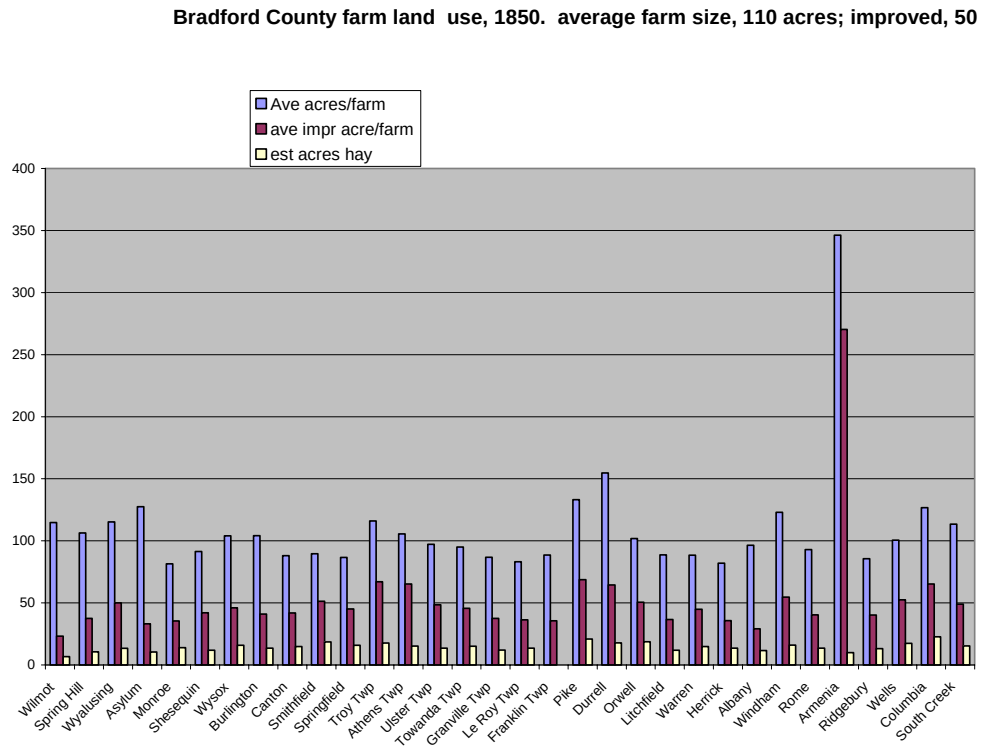
In 1845, a local farmer in Wells Township, Bradford County, reported that "very little Surplus is raised I think more is purchased for home consumption in the cours [sic] of the Year than is sold of Bread Stuffs." If farm families did manage a surplus, he said, "Most of the surplus agricultural products are disposed of either at Elmira or upon the River."[4] From Susquehanna County, reported a farmer from Choconut Township, "some little advantage has arisen from the N[ew] Y[ork] improvements particularly the Chenango Canal, and the Ithaca and Owego Rail road, by which plaster and salt have been largely introduced, and a way opened to send our butter to markets." He continued, noting that butter, cheese, and wool went out on the Chenango Canal to New York and to the "woollen manufactures in that State and New England." Moreover, he said, "our cattle and sheep are sold to Drovers, and our oats, which is the only grain sold, is sent with some little pork to Carbondale – where it is generally exchanged for coal, or bartered with the storekeepers." He continued: "Ours is not a grain growing, but a grass and cattle country." "Our corn, wheat, rye and buckwheat are consumed here, chiefly by new settlers." He concluded, "We generally have a cash market for such stock as Drovers buy. And also for our wool—our butter – and our cheese." [5] But he complained in 1848 that the only way to get these items to market was via road: "There are no facilities, except common roads, within the county for reaching market."[6] From Wayne County, products went to markets in Easton, Philadelphia, and New York City, via the Delaware and Hudson Canal, roads, and the Delaware River. From Pike County, surpluses were sent by teams to New York City via road and rail (the Erie Railroad). Maps of the period show these transportation lines.[7]

Even at this point, butter, cheese, and livestock on the hoof were important in the local economy. Most township farms averaged well above the state per-farm butter production of 305 pounds.

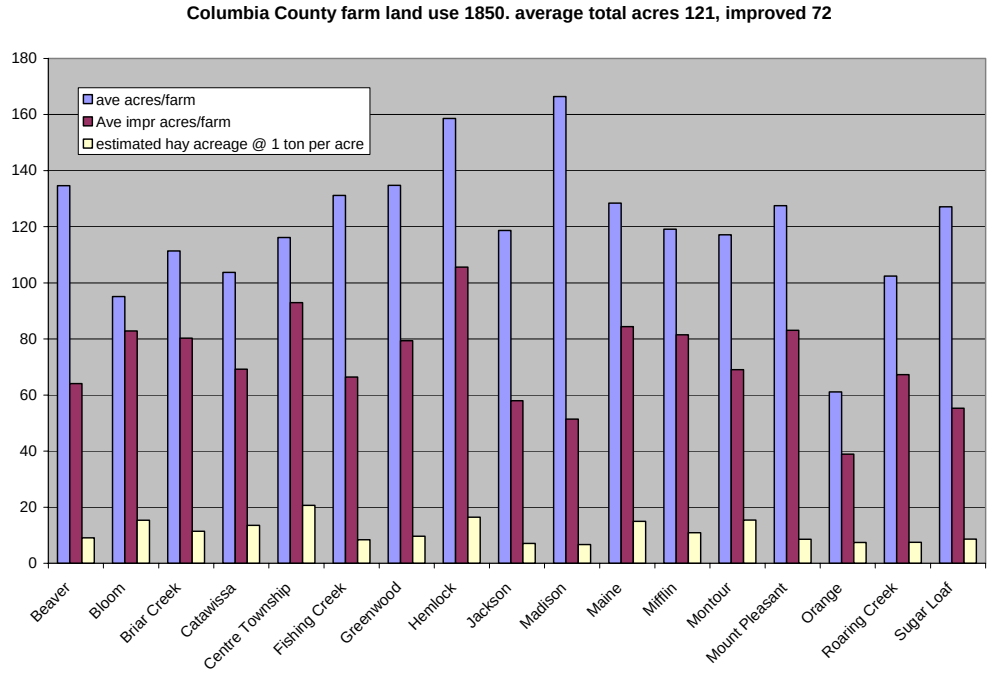
Early boosters promoted the area's potential for grassland, and hay and pasture dominated from the start. Reliable figures on the proportion of grassland are scarce for this period, and so estimates have been made. The average Northern Tier farm had about 50 acres improved, not far from the state average of 60 in 1850. However, total field crop production was considerably below that of comparably sized farms in other regions. Even accounting for poorer yields, this suggests

[4] Answers to Interrogatories, Pennsylvania State Archives, Record Group 28; Treasury Department, Box 1, Board of Revenue Commissioners 1845-1863, Folder 4, 1845.
[5] ibid
[6] ibid
[7] See U. S. Patent Office Report, 1851, 259, from Montrose, Susquehanna County, notes that a great deal of butter and cheese is sent out vi rail and cattle are driven out. Also, the 1855 Annual Report of the State Board of Agriculture from Susquehanna County, 243, notes butter in firkins is shipped to the New York market. The Annual Report for the State Board of Agriculture from Tioga County, 300, notes this is "the first quality of butter-land."

that less acreage was taken up with crops. And, as a percentage of improved land, hay acreage was significantly higher (20-40%) in the Northern Tier than in the Limestone Valleys or the North/West Branch region (typically less than 20 percent).[8] Therefore, at the very least, grassland in the form of hay meadow was more common in the Northern Tier than elsewhere; and it is very likely that pasture accounted for proportionally more of the remainder.



[8] This estimate is based on the assumption that PA hay yields were consistently around one ton per acre almost everywhere in the state at least until the late 19th century. Evidence from many sources suggests this. Of course there were pockets of intensive treatment of meadows, and exceptional years in either an upward or downward direction, but the consistency is quite apparent.



This comparison shows that hay as a percentage of improved acres was higher in the Northern Tier county of Bradford than in the North/West Branch Susquehanna county of Columbia.

Most taxable persons had horses, oxen, or both; and no one was assessed for more than five cows. Along with human muscle power, the horses and sturdy oxen furnished power. Oxen were still popular; the 1850 manuscript census shows that in some townships, half the farms still declared oxen. They suited this farming system for several reasons: Little cropland was cultivated, so plowing and cultivating were not as important as in other areas. Oxen were better suited to the hilly topography. They were part of a longstanding New England tradition. They thrived better than horses in the cold winters and could survive well on rudimentary shelter, eating just hay – they didn't need scarce feed grains. And in the end, unlike horses, they could become beef.

Labor and Land Tenure, c. 1830-1860

Patterns of labor and land tenure showed essential continuity from the early period. Labor was supplied almost entirely by family and neighbors. The gender division of labor was distinct, but flexible, though since dairy products were more important here than elsewhere, women's production for market was more significant. Mechanization was very low, so human labor was more important than elsewhere. Owner-occupancy was near one hundred percent by the end of the period.

Buildings and Landscape, c. 1830-1860

Houses, 1830-1860

By this period, the most common houses were small frame dwellings, often built of plank, one and a half or two story houses, sometimes with an "ell," built in Greek Revival style. Geographer Pierce Lewis has called these "upright and wing" houses. These buildings shared much more in common with adjacent New York State than with southern Pennsylvania.

117-SU-005-11. House from north. Tioga County, Sullivan Township c., 1845 (based on cornice detail). This house is two stories, but it has the Greek Revival detailing and gable-end door characteristic of the New England "upright and wing" type.

117-WE-001-01. Front of House. Tioga County, probably mid-19th century. Upright and wing house, with eyebrow windows, wide fascia board, imitation quoins, and six over six-sash windows. This house represents the type nicely.

105-WB-001-04. Front of House (looking E). A Potter County house. While this house possesses little in the way of ornament, the proportions and eyebrow windows are faint echoes of Yankee/Yorker aesthetic vocabulary.

17-OS-001-02. Side of House, Tioga County – based on its architectural details, at least the front portion of this house dates to the early or mid-nineteenth century.

Barns, c. 1830-1860
The available evidence suggests that the "thirty by forty" or "English" barn continued to be popular in this period. (See Settlement Period narrative for discussion).

015-OR-001-114. Front of Barn. Bradford County. English barn. Dating before 1878.

Outbuildings, c. 1830-1860

A separate granary was not uncommon in the Northern Tier. It would be raised off the ground, to keep rodents out, and often would have tight construction and interior bins. (In the "Pennsylvania Barn" common in the southeast and central areas of the state, by contrast, granaries were usually integrated into the larger barn's fabric.) The New England types identified by Thomas Visser very much resemble the ones found in the Northern Tier. These granaries probably did not serve to store grain prior to sale, since wheat was not an important cash crop in this area. Rather, Visser notes, granaries in New England (and probably also in the Northern Tier) stored oats for animal feed.

117-OS-001-18. Front of Granary. Tioga County.

Landscape, c. 1830-1860
Apart from a greater percentage of cleared land, landscape features from this period would continue features from the settlement period.

1860-1900: Diversified Home Dairying

Products, 1860-1900
To summarize developments to about 1860, Northern Tier agriculture had established itself as a grassland-oriented system, emphasizing animal husbandry and woodland products. The system relied on mostly hand labor supplied by family members. Farm tenancy was low. The system's product mix and physical appearance were shaped by transportation, soil, climate, and topography, and also by the cultural heritage of New England. The "English" barn, for example, was well adapted to small-scale grassland farming, and it also derived from New England forms. Granaries and ice houses also borrowed New England forms and reflected a self-sustaining agricultural mix. The upright-and-wing house and its relatives borrowed from the popular classicism so prevalent in New England and New York State during this period.

In the period from 1860-1900, the grassland system entered a new phase. The overall proportion of hay and pasture still was high, especially in comparison with other parts of the state. By the 1880s there were over 15,000 farms in the three Northern Tier counties of Bradford, Tioga, and Susquehanna. The total amount of improved acreage had doubled, and farm size averaged a little over 100 acres. The value of Northern Tier farms was still low compared with other parts of the state, but by the late nineteenth century the area caught up to the state average in mechanization, completing the shift from oxen to horsepower.[9] Possibly competition for labor from the lumber industry hastened this shift.[10] The Northern Tier region also expanded; Potter County, not farmed on a significant scale before 1850, (its population was only about 6,000 at mid-century and the county only had 600 farms) became a more integrated part of this Northern Tier. The Northern Tier was situated within reach of markets in the burgeoning cities and industrial areas of the East Coast. Soon rail and canal links connected the area to New York State and New York City; Philadelphia; and the Pennsylvania coal regions.[11] In particular, rail connections expanded: the

[9] Evidence for this shift is scarce, but the manuscript census for 1850 shows that oxen weren't uncommon, while by 1880 they had disappeared.
[10] *National Stockman and Farmer*, February 12, 1891, 1030.
[11] RR and canal connections 1854 to Elmira, Williamsport; Lackawanna Valley RR in 1860s. Erie RR opened 1849, not in county but nearby. NY Central opened to Waverly 1869. In Clement Ferdinand Heverly, *History and Geography of Bradford County, Pennsylvania, 1615–1924* (Towanda, Pennsylvania: Bradford County Historical Society, 1926).

Lehigh Valley Railroad, Erie Railroad, and New York Central Railroad were the most important, but smaller companies operated lines within the region, especially to the coal areas. In response, farm families engaged in a more intensive production effort, tuning up the animal husbandry enterprise to a higher pitch.

In this environment, Northern Tier farm families raised and marketed a wide variety of products. Population in the area had roughly doubled and agriculture was the primary occupation, so clearing was carried on apace. As the woods fell, so did maple sugar and syrup production. Newly cleared areas supported crops of oats, buckwheat, potatoes, corn, and hay, while wheat production dropped from levels that were already low (see chart, farm crops). In Potter County, the 1882 Industries of Pennsylvania survey noted,[12] "the northern part of the county is in an excellent state of cultivation, oats, buckwheat and potatoes thriving abundantly." The significance of the area's field crops is that they fit well with the climate, soil, and market conditions. Oats, corn, and hay fed farm livestock. Hay was also grown for sale; in the wintertime, farm people loaded baled hay on their sleds and took it to railheads for shipment to the cities or industrial areas, where it was fed to animals that worked in mines and on city streets.[13] Buckwheat, a short-season crop, responded well in the unpredictable and cold weather; it also supplied important nutrients to the glaciated soils, could be fed to animals, made a popular flour, and even complemented honey bee culture.[14] (The Northern Tier counties were the state's biggest honey producers in 1900.) Potatoes, also, grew well under the prevailing soil and climate conditions, and became an important cash crop to be marketed in the coal regions. They too could be fed to animals. All cultivated crops in this system had multiple uses: on-farm consumption (by people or animals);

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[12] Richard Edwards, *Industries of Pennsylvania, Williamsport, Lock Haven: Statistical and Trade Review*. (Philadelphia: Edwards, 1882), 61,

[13] Edward Glover, *Centennial History of Knoxville Tioga County Pennsylvania* (Elkland, Pennsylvania: Elkland Journal Press, forward dated 1951) has the story about sledding hay.

[14] Honey – See David Craft, *History of Bradford County, Pennsylvania: With Illustrations and Biographical Sketches of Some of its Prominent Men and Pioneers* (Philadelphia: L.H. Everts & Co., 1878), 258. Also, Alfred Mathews, *History of Wayne, Pike and Monroe Counties, Pennsylvania* (Philadelphia: R. T. Peck & Co., 1886) has an extensive section on honey industry there, pp. 325-329. The latter notes the close connection between honey production and the tanning industry, as the felled, stripped trees created a habitat for wild raspberries that produced choice honey, 329.

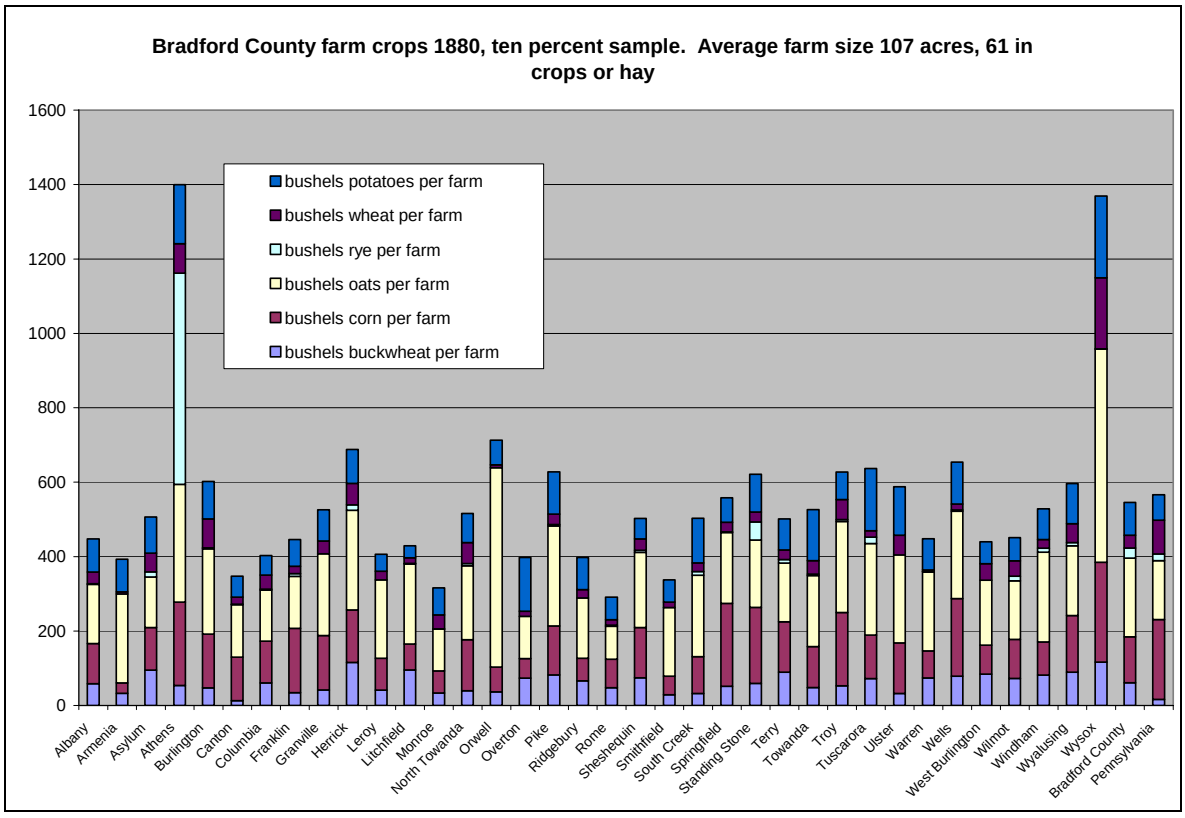
sale for cash; trade with neighbors. An 1886 history of Wayne County also mentioned apples and turnips as items that were marketed to cities.[15] Tobacco was raised on a limited scale.[16]

On a typical late 19th century farm here, pasture, meadow, and hay in rotation would take up at least half of a farm's improved land (see chart below, Land Use). The overall proportion of land devoted to grazing and forage was probably even higher, because many animals still grazed in wooded areas too. These proportions contrast strongly with areas of Pennsylvania that emphasized grain, where perhaps only a quarter of improved acreage would be devoted to grass. In short, Northern Tier cultivated lands should be regarded as part of a livestock system rather than intended for crop production in its own right. Indeed, the system was quite extensive, in that each animal had several acres of pasture, and hay yields averaged a ton or less per acre.[17]

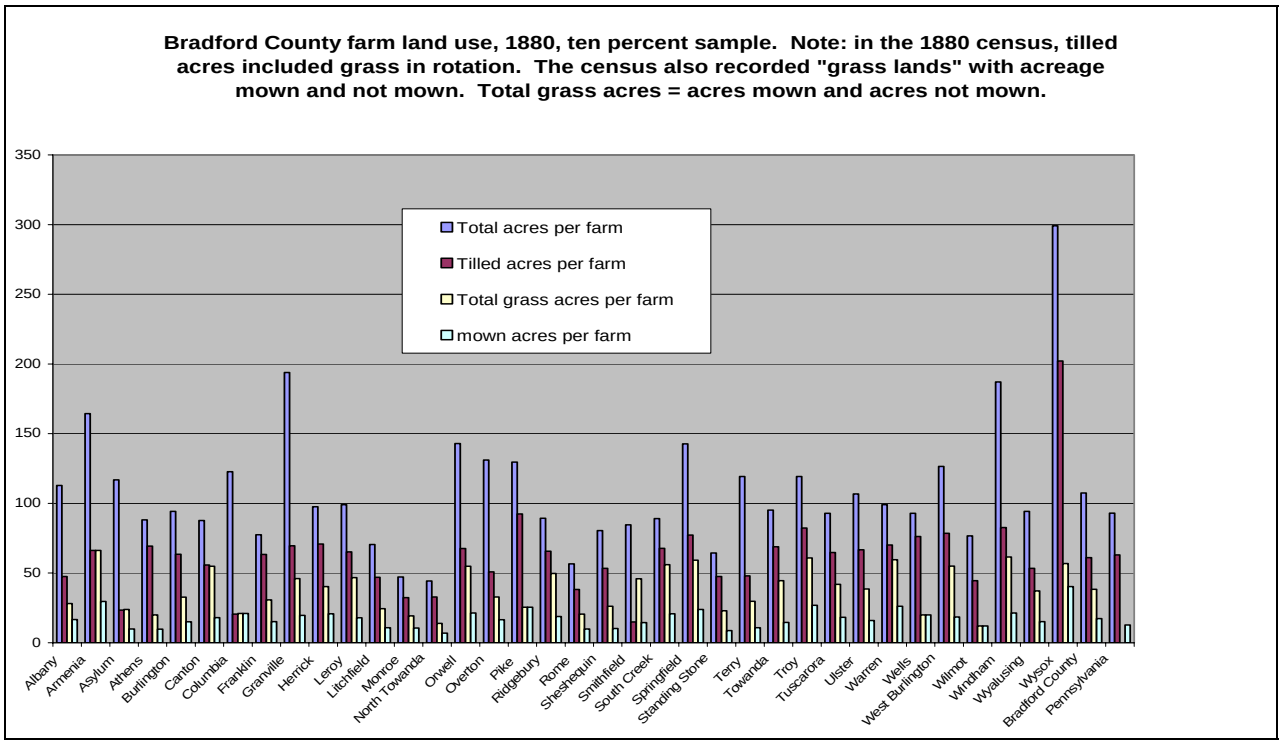
[15] Alfred Mathews, *History of Wayne…*, 257. The Wayne County Agricultural Extension Agent's Report for 1920 also says apples are an important cash crop

[16] See River Valleys Diversified Farming and Tobacco narrative for more discussion.

[17] *Nonpopulation Census of Pennsylvania, Agriculture. 1880*. Tons Hay divided by Acres Mown. In Susquehanna and Bradford Counties, hay per acre ranged from .6 ton to 1.3 ton, with most right around one ton per acre. More testimony as to the dairy and grassland nature of local agriculture is found in John Franklin Meginness**,** *History of Tioga County, Pennsylvania…* (Harrisburg: R.C. Brown, 1897) 117; *History of Tioga County, Pennsylvania*, 1883, 61-2.



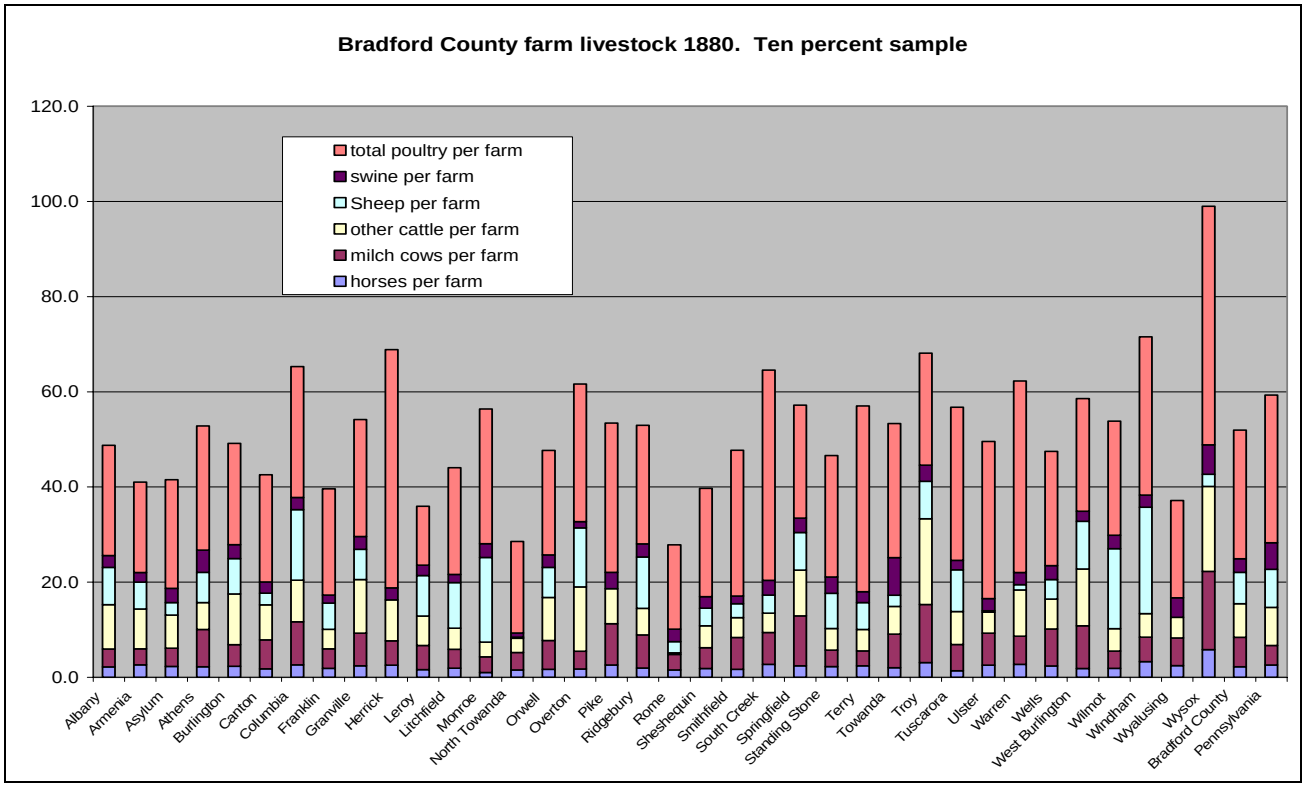
Data for this and the following three charts taken from Nonpopulation Census Schedules of Pennsylvania, 1880.



Livestock and its products constituted the core of the late-19th century farm's enterprise (see charts, livestock and butter). Cattle were chief among them. The 1880 manuscript agriculture census shows that most farms had between six and twenty milk cows, and often as many other cattle. Animals were still sold to drovers; the Bradford County atlas of 1869 lists quite a few livestock dealers. Farm-made dairy products dominated. Butter production tripled between 1850-70, and by about 1880 Bradford County farms alone averaged over 700 pounds of butter per year; it was not uncommon for a single farm to produce over a ton of butter. Residents and boosters proclaimed Northern Tier butter to be of very high quality, comparing the area to New York State's famous Orange County. Historian Emily Blackman pronounced Susquehanna County the "butter county of our State." Farm-made butter went mainly to New York City, but also to Philadelphia and to the coal regions.[18] As of 1880, very little milk was sold in fluid form, either

[18] Butter: Craft boasts of its high quality, in William Egle's *History of the Commonwealth of Pennsylvania.* (Philadelphia: E. M. Gardner, 1883), and repeats oats, corn, and buckwheat, 408. Potatoes are sent to the coal regions. Butter: Emily Blackman, *History of Susquehanna County, Pennsylvania.…* (Philadelphia: Claxton,

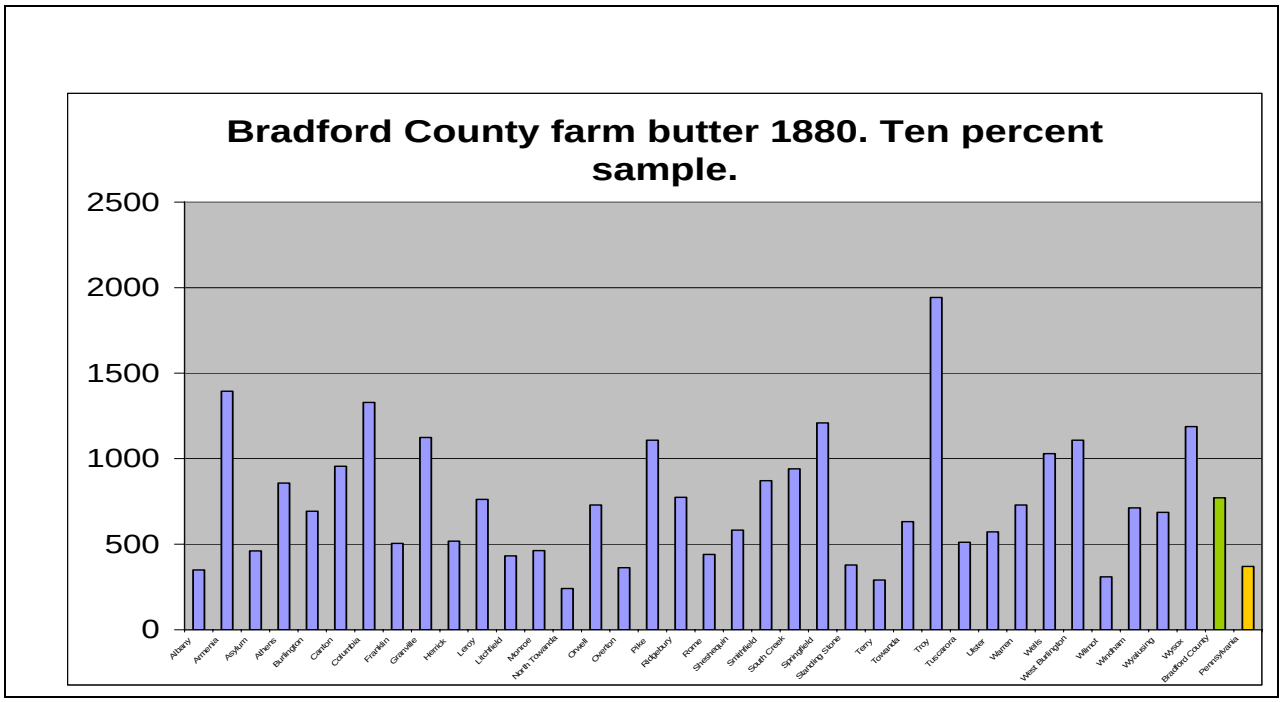
for direct consumption or to creameries (centralized buttermaking facilities).[19] Cheese was made on a few farms, and after about 1870 in factories[20], but in the bigger picture cheese production was never high in this area.



Remsen & Haffelfinger, 1873) pronounces Susquehanna the "butter county of our State;" local butter goes to city markets. Butter: Wayne County is compared to Orange County– 1.1 million pounds per year- in Egle's 1883 work, and butter goes to New York. Buttermaking was seasonal, *Harford Township, Susquehanna County, Pennsylvania*. (Harford, Pennsylvania: Harford Sesqui-Centennial Committee, 1940), 350. See also *Pennsylvania Historical Review: Gazetteer, Post-Office, Express and Telegraph Guide/ City of Philadelphia: Leading Merchants and Manufacturers* (New York: Historical Pub. Co., 1886), pp. 41 and 50; Annual Report, State Board of Agriculture, 1889, Bradford County, notes that dairying brings in needed income. Hay – people shipped it out, see Glover, *Centennial History of Knoxville*, where it says people loaded baled hay on their sleds and took to the railhead.

[19] The manuscript census shows this clearly. Very few farms listed milk sold. The Annual Report of the Pennsylvania Board of Agriculture for 1883, 30-31, lists the results of a survey of correspondents about dairying. Wyoming, Susquehanna, Tioga, and Potter Counties sold most of their butter out of the county, to New York state and the oil and anthracite regions. None of these counties declared more than 10 percent of its milk sold outside the county.

[20] *National Stockman and* Farmer, February 12, 1891: 1030; see also June 9, 1892: 181.



Among secondary livestock enterprises, poultry raising occurred on a small scale (a dozen to four dozen hens). Chickens, of course, were raised for eggs and meat, and some farm people raised turkeys too. A few hogs were probably kept to be fattened on skim milk—but pork production was low compared with other areas of Pennsylvania. Sheep raising also dwindled into relative insignificance, faced with western competition and low wool prices.

All in all, "competency" is a period word that describes agrarian aspirations in the Northern Tier, if not actual achievements. The word was an elastic one – it connoted more than a bare sufficiency, but also carried values that abjured consumption and acquisition for their own sake. Rather, a competency consisted of a comfortable living.[21] Northern Tier farms were not necessarily "prosperous" in the same sense as their southeastern Pennsylvania counterparts, or of the developing farm economy in the Midwest. The soil was poor; the climate was challenging; and land values were low. However, in this period, the Northern Tier farm families were able to take

[21] And of course the content of "competency" changed over time. One family's competency was another's poverty, and so forth.

advantage of their access to dairy markets, and many were able to achieve a competency through this form of livestock husbandry. If their resources were limited, so were their outlays; access to land was freer than elsewhere, and the need for expensive machinery and labor was low.

Labor and Land tenure, 1860-1900

Tenancy rates were among the lowest in the state, between 10 and 15 percent; arguably the Northern Tier was a prime example of "yeoman" country. The term "yeoman" in the nineteenth century customarily referred to an independent, landowning farmer. Land values were comparatively low, but perhaps that helped young people to acquire farms.[22]

Making a gilt-edge dairy product for city markets demanded considerable skill and organization. Buttermaking was women's work, but dairying required extensive cooperation among all family members, still the primary source of farm labor in this period. (A few farms hired wage labor, but seldom even a year's worth.) The gender division of labor was fairly predictable, but nonetheless flexible. Men plowed, cultivated, and harvested (switching over from oxen to horses in this period); but, as always, women participated in these jobs at times of peak need. Women also weighed in on matters of animal feed and pasture grasses. In general, because grassland farming de-emphasized field crops, field labor was less important than in cropland systems. Work with animals, by contrast, was more intensive and more sustained than in a crop system (where bursts of work punctuated slow periods). Feeding, housing, herding, milking, and cleaning up after milk cows claimed a great deal of attention – but in this period, milking was not the year-round grind that it later became.[23] Ice harvesting should probably be counted as part of dairying labor. Beef animals were usually grass fed in the summer, but needed feeding and attention in the winter. Since dairying was a seasonal occupation, only pursued from about April to October, winter feeding could fit nicely into a seasonal routine.

The actual work of buttermaking was quite exacting. First, of course, the cows had to be milked. According to the farm press, New England custom assigned milking to men; though "on the ground," it seems that women sometimes milked. Most likely milking took place in the barn or stable, and later with animals confined into new-style "stanchions," adopted in the late 19th century. The milk was carried in pails to a cool spot, such as a spring house or dairy house, where

[22] Henry Bradsby, *History of Bradford County, Pennsylvania*… (Chicago: S.B. Nelson & Co., 1891), 2, extolled the county as a place where there were "no powerful land barons…with their swarms of attendant serfs and poverty."
[23] While the milking season did become more extended during this period, in general, dairying was still seasonal. See Sally Ann McMurry, *Transforming Rural Life: Dairying Families and Agricultural Change, 1820–1885* (Baltimore: Johns Hopkins University Press, 1995).

it was poured into shallow pans set on shelves. The cream would rise to the top; then it would be skimmed off and churned into butter. The dash-style churn was the most popular, though inventors never ceased in their search for an improved churn. Sometimes the churn was powered by a dog on a treadmill. Once the butter "came," it was removed, "worked," salted, and packed for market. It was stored in a cool place if not sent immediately to market.

Farm work was aided by new types of machinery. The average value of implements per farm had crept up to the state average, after lagging in the earlier period. Mowing machines were probably the most important, given the large hay crops, but fanning mills, hay rakes, hay forks, tedders, hay presses, etc also were increasingly common.

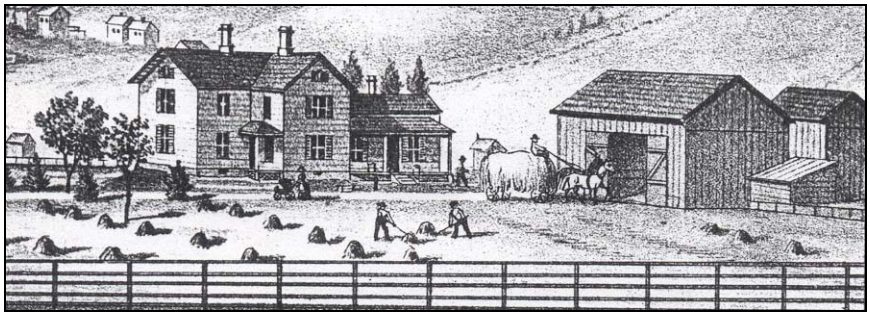
Some primary evidence suggests a notable shift in the gender division of labor on Northern Tier farms. For example, Bradford County resident Ada M. Warner's diary records working "at the Barn", "worked in haying," "packing "Buter", butchering hogs, churning berrying, building straw stacks, and cooking for threshers.[24] Certainly, dairying was increasingly demanding for both men and women, but it is likely that the work intensified more for women than for men. Some contemporary commentators thought that men's labor was greater in grain-based farming. An outbuilding type on farms of this period is the workshop, raising the question of whether since agricultural labor was so dependent on women's skills, men contributed to the household through artisan skill such as blacksmithing.

Buildings and Landscapes, 1860-1900

The farm culture and economy in this period produced a landscape that was enriched compared with its rather spare predecessors. House form and style still revealed a strong New England/New York influence. The "basement" barn, kitchen ell or detached dairy kitchen, and ice house all indicated the primacy of home dairying. Separate granaries, wagon houses, and carriage houses were needed to accommodate horses and their provender. Machine sheds accommodated increased mechanization. And workshops housed ancillary enterprises. Landscape patterns would show a much more open scene, with cleared land right up to the tops of the many hills; small enclosures for pasture and hay; woodlots; and patches of cropland.

[24] Ada M. Warner, *Diary of Ada M.Warner of Bradford County, Pennsylvania*, 1873–1886 (The Pennsylvania State University's Special Collections Library).

Houses, 1860-1900



D. J. Butts Farm, near Mansfield, c. 1882, from Crafts, *History of Tioga County*, 1897. This engraving shows some key characteristics: the frame house with not one but two ells; one-story kitchen ell with porch and ridge chimney; English barn; dooryard work space.

The comparative prosperity of this era was reflected in housing. By this period, most farms would have a substantial frame house, usually of two stories and two rooms deep, often with an "ell" extension to the side and/or back. Classical lines and gabled roofs still seemed to predominate, with entrances either in the eaves side or gable end. An occasional Italianate four-square with hip roof appeared. Trim occasionally revealed the prevailing Victorian taste of the period.

It is very important to remember that farmhouses were workspaces, and they are properly considered as an integral part of the entire farmstead. The kitchen "ell" appears in a significant number of the Craft illustrations, historic photos, and fieldwork photos.[25] Certainly they served other social functions too, but even these were usually important to agrarian community life.

[25] In the Craft history of Bradford County, see the following illustrations: William H. Bates (wing behind main house); Henry McKinney (wing behind main house and freestanding structure); George Lyon; A. E. Smith; Chandler Canfield; Joseph Towner; John McKean; E. R. Vaughan. Henry Glassie, *Pattern in the Material Folk Culture of the Eastern United States* (Philadelphia: University of Pennsylvania Press, 1971), 132-3, illustrates some of these types.

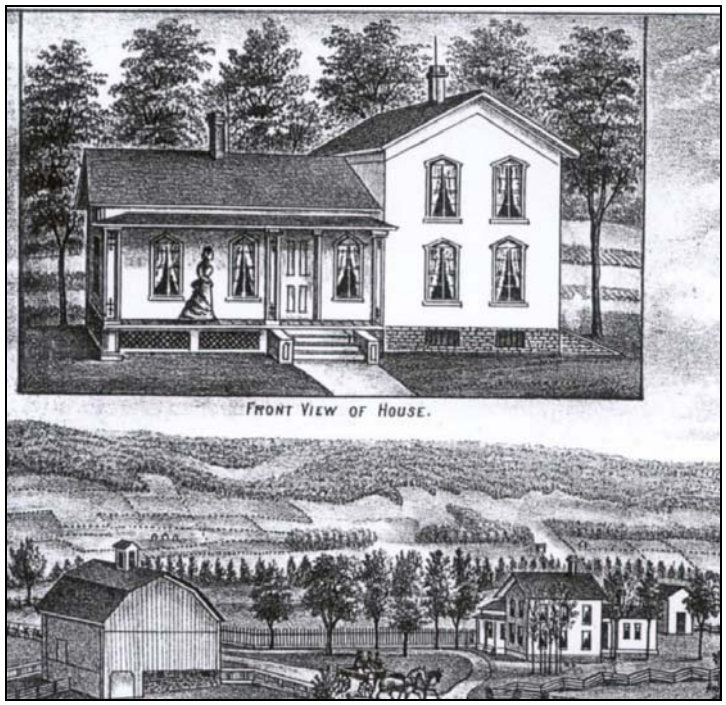
Below, see photos from fieldwork that confirm these generalizations:

Bradford County Italianate house, site # 015-CA-002, Photo 4.

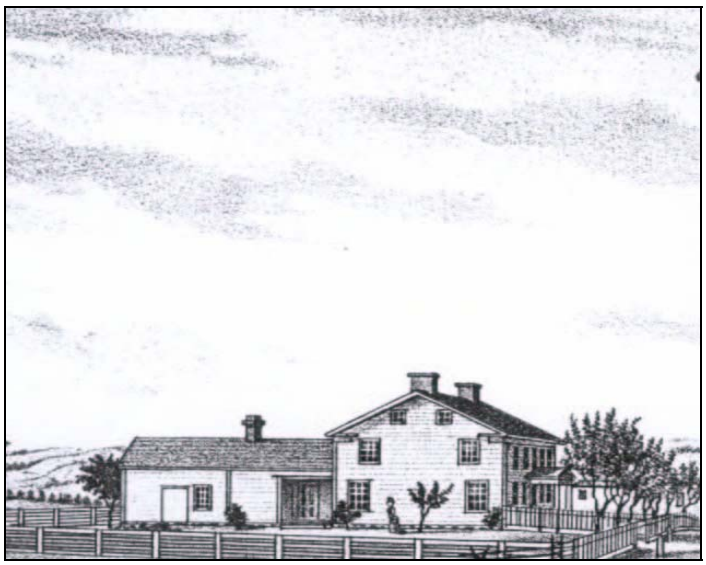
This house with wing, Bradford County site 015-ST-001, photo 1, shows a characteristic wing, which probably housed dairying and other women's farm work.

This classical revival house in Bradford County, site 015-WY-001, photo 3, has a work wing.

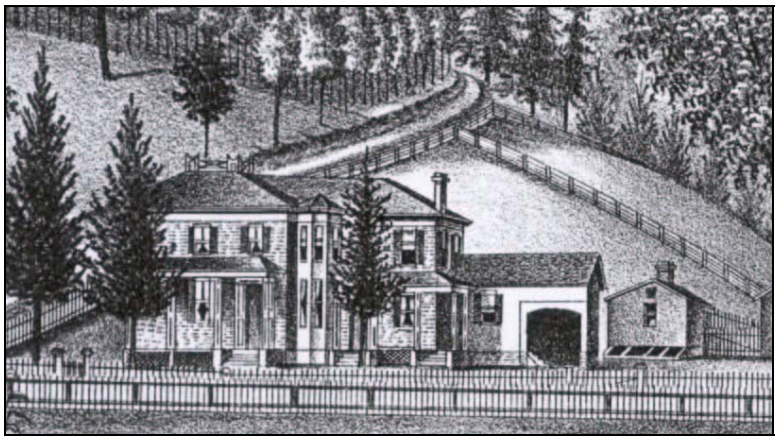
117-BR-001-04. S. Side of House, Tioga County. This house shows a more modest one and a half story variation on the theme.



William Bates House, Canton, Bradford County. From Crafts's history, 1878. Note the one story ell with chimney. The examples found in survey work correspond very nicely to period depictions.



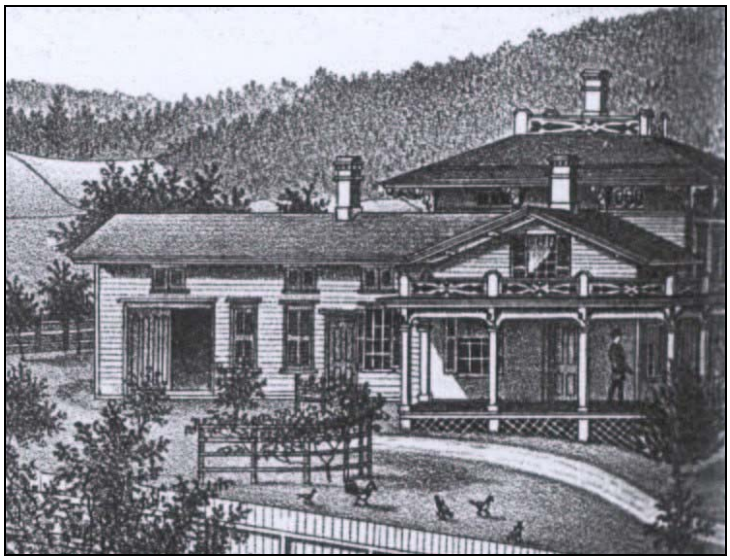
Home of Henry McKinney, Litchfield, Bradford County, from Crafts's 1878 history. The recess in the wing is a common feature in the region, perhaps having served as a sheltered workspace.



Enoch Towner house, Sheshequin, Bradford County, from Crafts's 1878 history.

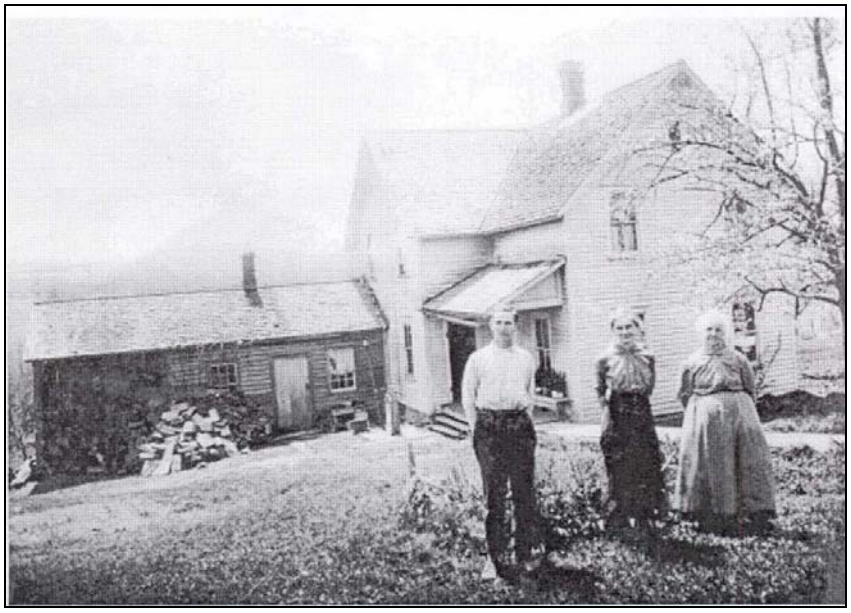
The kitchen ells so common on these houses bear close examination. Most are a single story. All have chimneys, some of which are located on the gable end of the ell, but most of which sit midway along the ell's roof ridge. The eaves-sides are pierced by several kinds of openings, and just as significantly, are often blank at strategic points, probably indicating storage or cooling facilities. The openings consist of windows, doorways, and recessed porches. Comparing these to their probable New England antecedents,[26] we find some highly suggestive similarities. Thomas Hubka analyzes the "ell" in the New England connected farm as an outgrowth of what he calls a "farm factory," that is of an intensified family farming (late 19th century) in which efficient organization of women's work in kitchen ells was an important feature. Often the ells contained a "set-kettle" (located somewhere in the middle, and thus dictating the ridge-top chimney location), stove, washroom, and milk room. This could explain the appearance of Northern Pennsylvania ells, too. Sometimes a woodshed filled out the end – and again, the 1878 engravings suggest the same sequence of "Big house, Little house," followed by a woodshed:

[26] As discussed by Thomas Hubka in his *Big House, Little House, Back House, Barn: The Connected Farm Buildings of New England*. 2nd ed. (Hanover, New Hampshire: University Press of New England, 2004).



Bascom Taylor house, Wyalusing Township, Bradford County. From Crafts's history 1878. The ell suggests the New England sequence with woodshed at the end of the ell.

Finally, also taking a clue from Hubka's analysis, we should consider that the area enclosed within the "ell" functioned as a dooryard workspace.



This photo, taken c 1920, of the Mudge and Holly families of Gray Valley Road, Tioga County, shows the two-story "L" shaped frame house, the single-story ell kitchen wing, and wood house. http://www.rootsweb.com/~srgp/photos/mudgefrm.htm, accessed 7/11/06

Barns and Outbuildings, 1860-1900

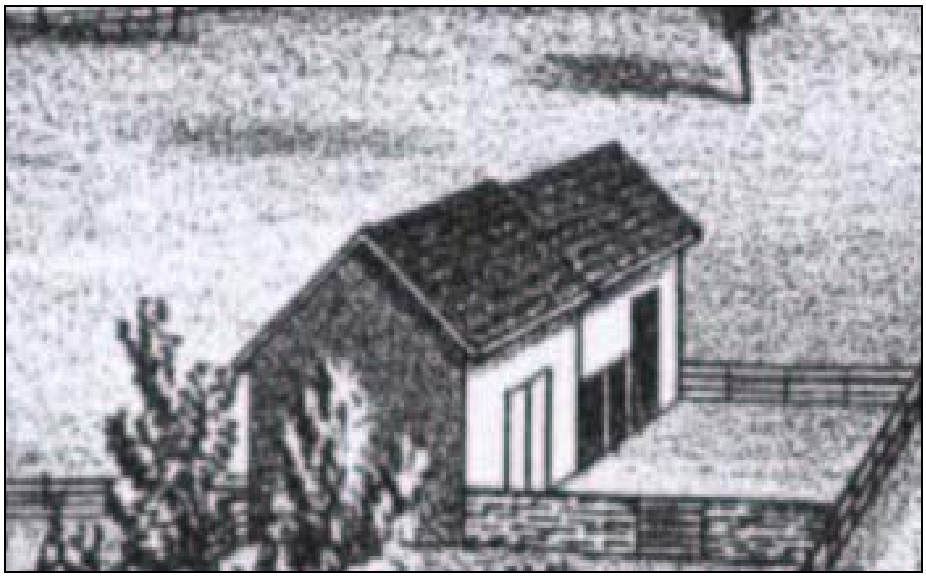
The Tioga County state agriculture board reports for 1860-63 mention the E. Bentley farm in Tioga Township, as having barn, stables, wagon house, granary and workshop; it said William Wass in Chatham Township had a stable, wagon house, barn, and shed. The state board of agriculture paid the most attention to high-end farms, but fieldwork and illustrations suggest that many farms, if not most, had a complement of outbuildings. These relatively small buildings functioned to store feed (granary, corn crib); store equipment (wagon house, machine shed); store carriages; and provide space for workshops.

Barns, 1860-1900

Barns underwent significant transformations in this period to accommodate larger numbers of livestock and the increased importance of dairying. Barns show a range of solutions to the labor and shelter demands of the expanding system. The 1878 Craft county history (Bradford County) shows this range well. The English barn of the earlier period could be expanded via shed additions (Jos McKinney, Mrs. A. E. Smith, John McKean) or by adding another English barn (Ezra Rutty, Joseph Towner) or by adding an "ell" (S. W. Elliott,).[27]

Joseph McKinney property, Athens Township, Bradford County. English barn with shed additions on gable ends. From Craft 1878 history.

[27] In *Barns* (New York: W.W. Norton, 2003, p. 31), J.M. Vlach shows a 1900 three-bay, log barn at Coudersport, Potter Co., HABS drawn in 1936.



Ezra Rutty property, North Towanda Township, Bradford County, English barn with gable-end addition. From Craft 1878 history.

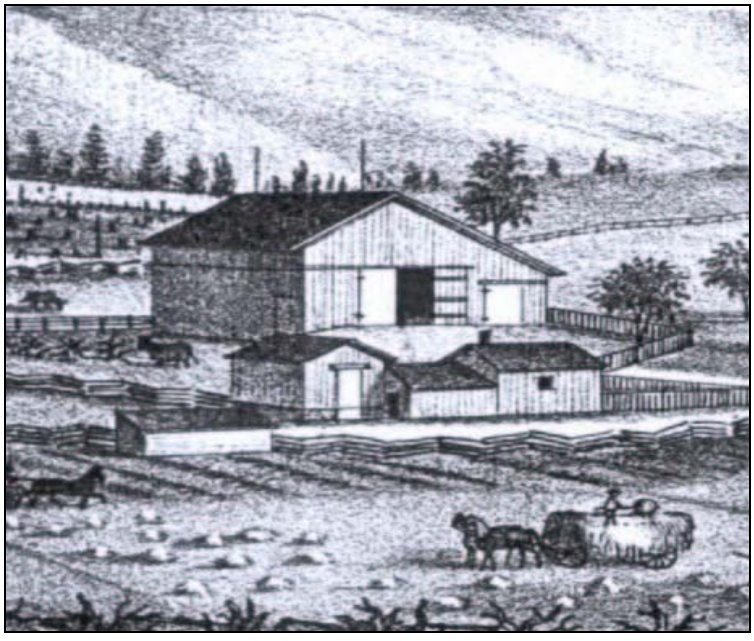
S. W. Elliott property, Rome Township, Bradford County. English barn with ell addition. From Craft 1878 history. Compare with site 117-WE-002 barn. (below)

117-WE-002-04. Barn, looking N. Tioga County. An English Barn with ell, dating to 1881.

Bradford County – Ballard farm, gambrel roof English Barn with ell.

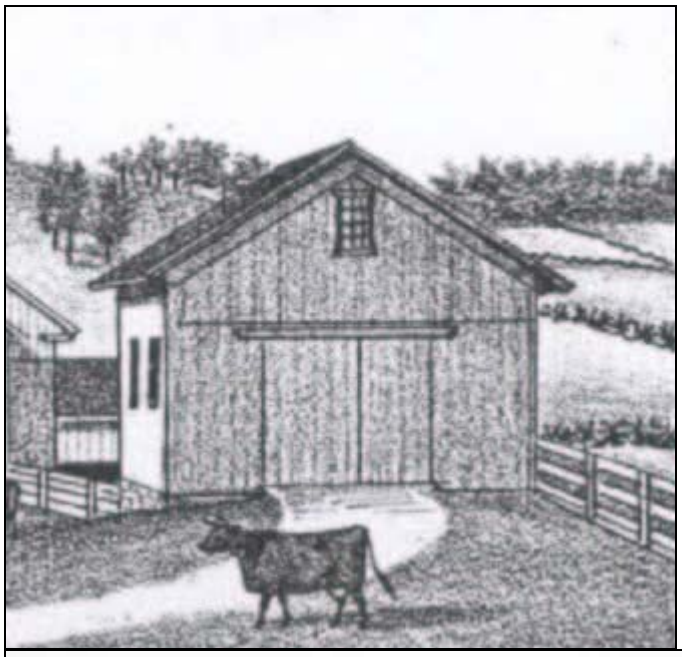
A more popular solution consisted of creating a multi-level barn. This could be done in several ways.

The Gable front bank barn (Thomas Visser's term, also called gable-entry banked barn by geographer Allan Noble) reflected both the rise of dairying and increasing cost of labor. Cows, manure, granary, and occasionally roots (for feed) would be situated on the ground floor. The stalls or stanchions were usually arranged lengthwise (i.e. parallel to the roof ridge), in two rows flanking a central aisle (cows usually faced outward, but in some barns inward). On the upper level, hay and machinery were stored. A large gable-end entry sometimes provided easy access, while gravity aided feeding hay to the stables below. Examples in the Craft history appear in the illustration of William Campbell's and Barker Brown's farms in Bradford County.[28]



Barker Brown property, Burlington Township, Bradford County, from Craft 1878 history. Gable entry bank barn (Visser's terminology)

[28] George Allen Noble, *Wood, Brick, and Stone: The North American Settlement Landscape* (Amherst: University of Massachusetts Press, 1984) points out the essential differences with PA Barn: lower level access in gable ends; arrangement of lower level; no forebay.



William Campbell property, Litchfield Township, Bradford County. Gable entry bank barn. From Craft 1878 history.

015-NT-001-01. Barn Front. Bradford County, late 19th century. Gable entry bank barn.

015-BU-001. Josephus Campbell barn, 2004. Bradford County, pre-1878. Gable entry banked barn.

Basement Barn, northern Pennsylvania

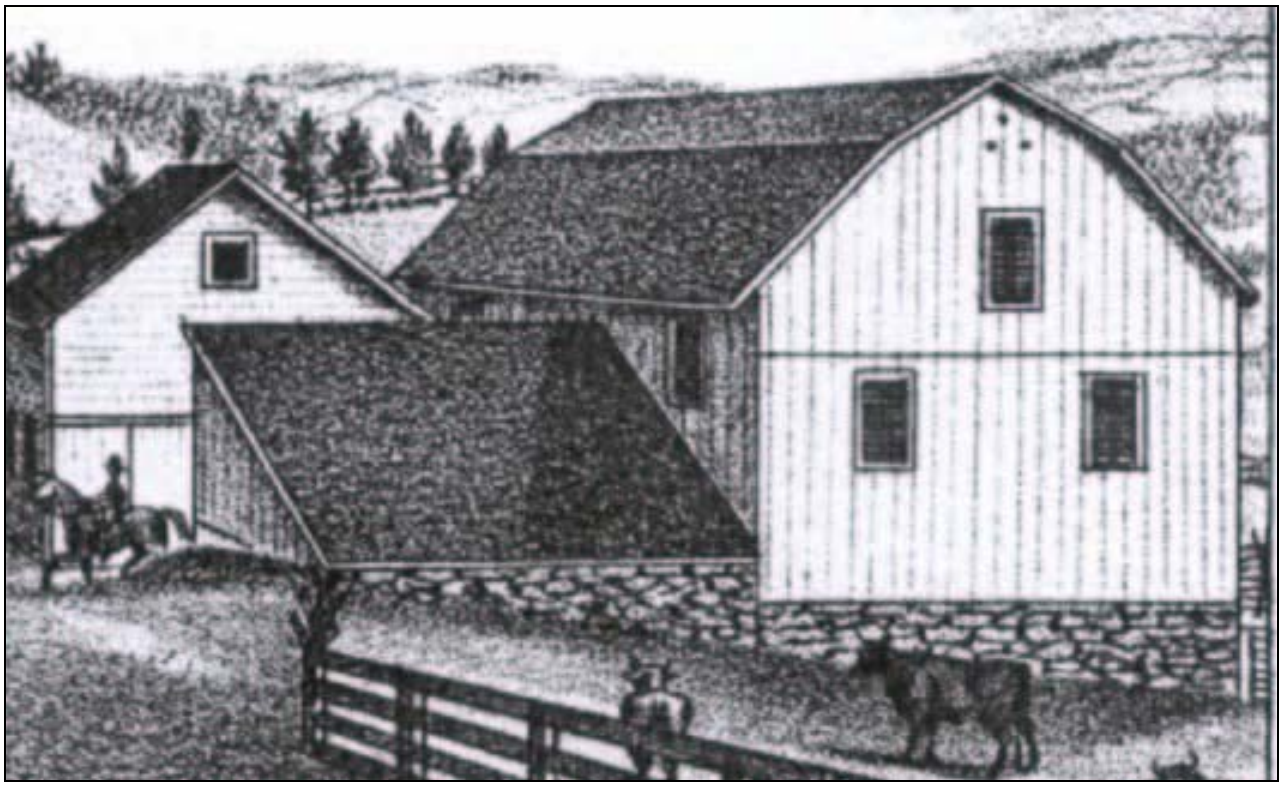
More popular was the Basement barn[29], also called the "raised three-bay" or "basement" barn.[30] According to Henry Glassie, who surveyed barns in Otsego County, New York, these are "one-level barns [i.e. English Barns] built up on basements" and usually have a road-level entrance in the eaves side. The lower level usually has a lengthwise central aisle, and stanchions for dairy cows. Sometimes there would be doors in each gable end. Off center windows in the gable can indicate where the stable area is located. The most common location for these barns was across the road from the farmhouse; the entrance was just off the road. Fieldwork by Glenn Trewartha found these patterns in a 1948 survey, and they also appeared at sites examined for this survey. These barns frequently had gambrel roofs for extra hay storage, even in the 19th century. They are different from the "Pennsylvania Barn" of southeastern PA in that they do not have the projecting "forebay"; are generally smaller; often have gambrel roofs; often originally had lengthwise stall arrangements; and usually are located right up against a road. And, importantly, the lower level is not banked but instead extends underneath the entire length and width of the building.[31]

[29] Glassie, Henry. "The Variation of Concepts Within Tradition: Barn Building in Otsego County, New York," in *Geoscience and Man* 5 (June 10, 1974): 177–235, 185.
[30] Noble, *Wood, Brick, and Stone.*
[31] Illustrations appear in the Farm Security Administration 1936 photo (on page E76 of this narrative); and in Craft's 1878 engravings of farms owned by William H. Bates, George W. Griffin, Stephen Evans, Silas Mills, H. B. Chaffee, Chandler Canfield, John Salisburn, John McKean, Benjamin Lyon, M. Coleman, Henry Gibbs, J. V. Ballard, and Bascom Taylor.

015-ST-001-01. Barn & Milk House. Bradford County. Basement barn.

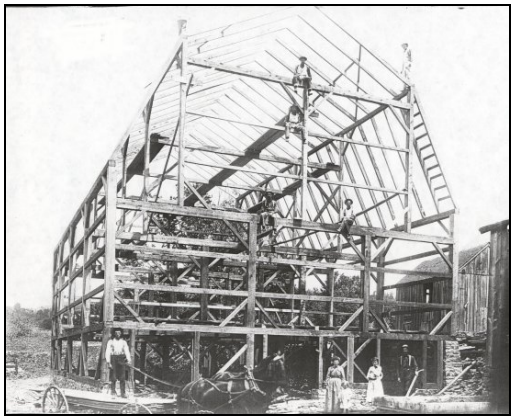
015-TR-002-06. E. Side of Barn. Basement Barn. Bradford County.

117-LA-001-06 Side and front of dairy barn. Basement barn, Tioga County.



Alsuph Baldwin/Stephen Evans barn, Litchfield Township, Bradford County, gambrel roof raised basement barn. From Crafts 1878 history.

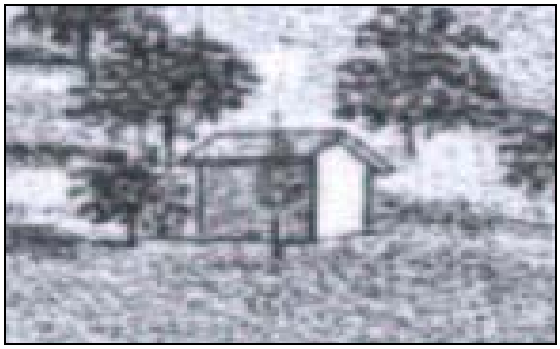
A derelict farm near Canton, Bradford County, showing a house with multiple wings and Northern basement barn. Photographer: Paul Carter. Digital ID: **fsa** 8c51747. 1936. FSA/OWI collection of photographs, Library of Congress.



Clymer Township, Tioga County, barn raising, c. 1902. This image shows clearly how the basement barn ground floor extends the entire length and width of the ground level. Photographer, L. Jackson. http://www.rootsweb.com/~srgp/photos/barnrais.htm, accessed 7/11/06

Woodshed and Wood houses, 1860-1900
Fieldwork did not locate any separate woodsheds, though historic images show woodsheds attached to kitchen ells.

Ice House, 1860-1900
Ice houses were important in the pre-refrigerator days, especially for dairying. Diagnostic features (according to Visser) include thick walls and lack of windows; location near dairying buildings or house.[32]



Possible ice house, engraving of Barker Brown property, Burlington Township, Bradford County, Craft 1878 history.

117-LA-001-17. Multi-Bldg, looking SE. This building, dated c. 1885, once functioned as ice house and corn storage.

[32] Possible ice house illustrations (from the 1878 David Craft county history of Bradford): Barker Brown; George Lyon, H. B. Chaffee; Mrs. A. E. Smith, Joseph Towner, E. R. Vaughan; G. W. Brown.

015-AS-001-05. Root-Ice-Shed, Bradford County.

Sugar House, 1860-1900
These would be located in the sugar bush. No sugar houses were found in fieldwork.

Poultry House, 1860-1900
There would have been increasing numbers of poultry houses on Northern Tier farms in this period, but it is hard to date extant ones, and most appear to date from the 20th century.

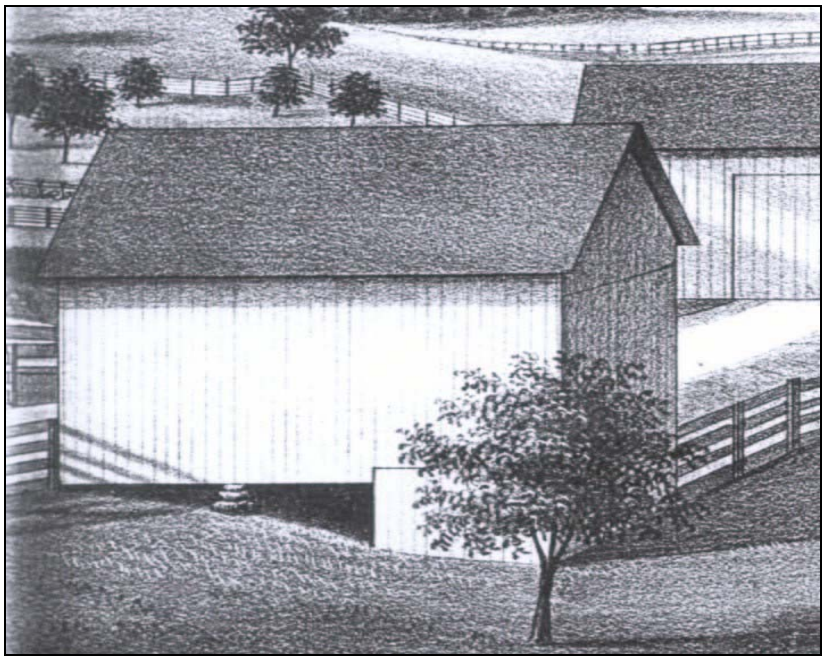
Privy, 1860-1900
These too were essential buildings but again few extant ones date before 1900.

Granary, 1860-1900:
Extant granaries were found on a number of Northern Tier sites. Based on materials, proportions, framing, and other architectural characteristics, many of these appear to date from the late 19th century. These buildings tend to lack windows; they are raised on posts, and open underneath to deter vermin. Thomas Visser characterizes the typical New England granary [for storing oats for workhorses] as was one and one-half stories high with a pass door on the gable end and a loft door above that.[33] A pass door is a door that is elevated above ground level (so that heavy bags, etc can be offloaded down onto a waiting wagon). Northern Tier granaries surveyed match this description well. They also tended to be located typically with gable end facing the road, closely. The resemblance to New England prototypes reveals another case of New England's cultural influence on Northern Tier agricultural buildings.

Bradford County, Josephus Campbell site. The blank wall, pass door, gable end openings, raised foundation, and interior partitions suggest that the upper part of this building may have been a granary.

[33] Thomas Visser, *Field Guide to New England Barns and Farm Buildings* (Hanover, New Hampshire: University Press of New England, 1997).

015-NT-001-05. Granary. Bradford County. This building has the trademarks of a granary: blank wall, raised off the ground, pass door in gable end, opening in second story gable end.



Possible granary, Ichabod Sellard property, as depicted in Craft's 1878 history of Bradford County; no township given.

105-EU-001-07. Granary looking N, Potter County.

Wagon Shed, 1860-1900

Wagon sheds would be gabled sheds with open sided bays, often a single story. This would reflect the rising (though still only average) role of machinery in the farm operations. Probably mowers were most significant during this period, but there would be a modest complement of other equipment. Architectural historian Jerry Clouse notes, "The drive-through section of a wagon shed was built to a sufficient height to contain racks at ceiling level to support wagon beds while the chassis could serve another purpose such as support a hay wagon." [34]

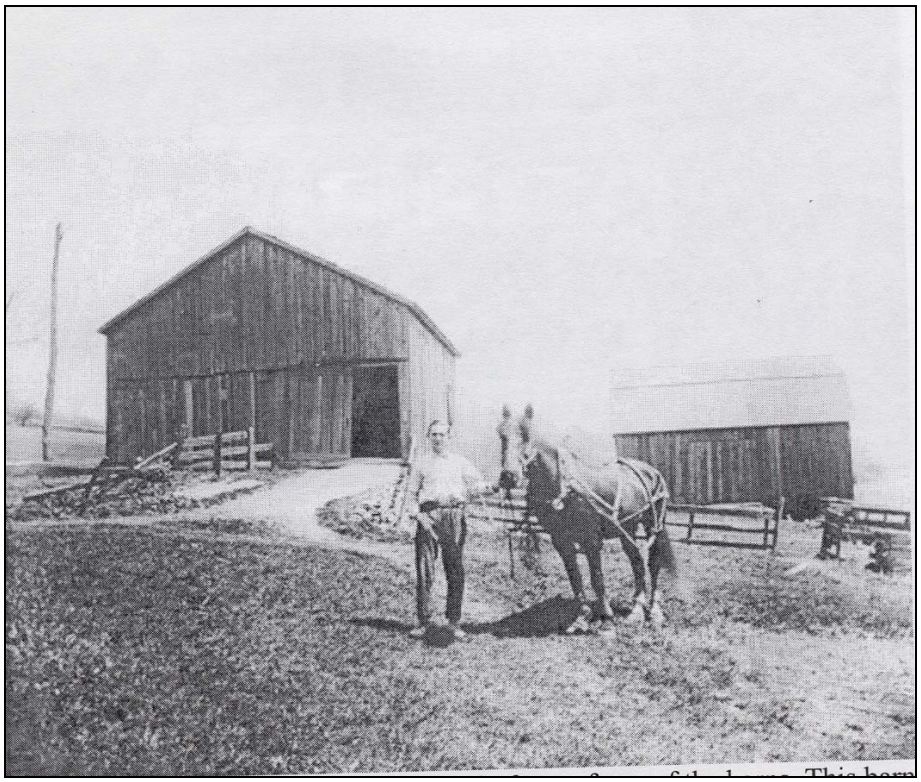
[34] Jerry Clouse, In Conversation with the Author.

117-SU-001-05. Machine and poultry house from west. Tioga County. Machine shed is in the center.

117-MO-002-14. Wagon shed looking NE, Tioga County.

117-RU-002-09. Outbuildings, east side. This Tioga County site (below) shows a typical row of gable front outbuildings fronting immediately on the road. The near building has characteristics of a carriage or wagon shed; the far building probably housed poultry; while in between are open bays for implement storage and possibly also wood.

Carriage House, 1860-1900
According to Visser, early ones were "distinguishable by their large hinged doors, few windows, and proximity to the dooryard."[35] A carriage house would not usually be as large as a barn, and it might sit on the same side of the road as the house; also, carriage houses not uncommonly had some ornamental architectural trim that would not always appear on a barn. Interiors (originals that is) would have large stalls, a hayloft above.



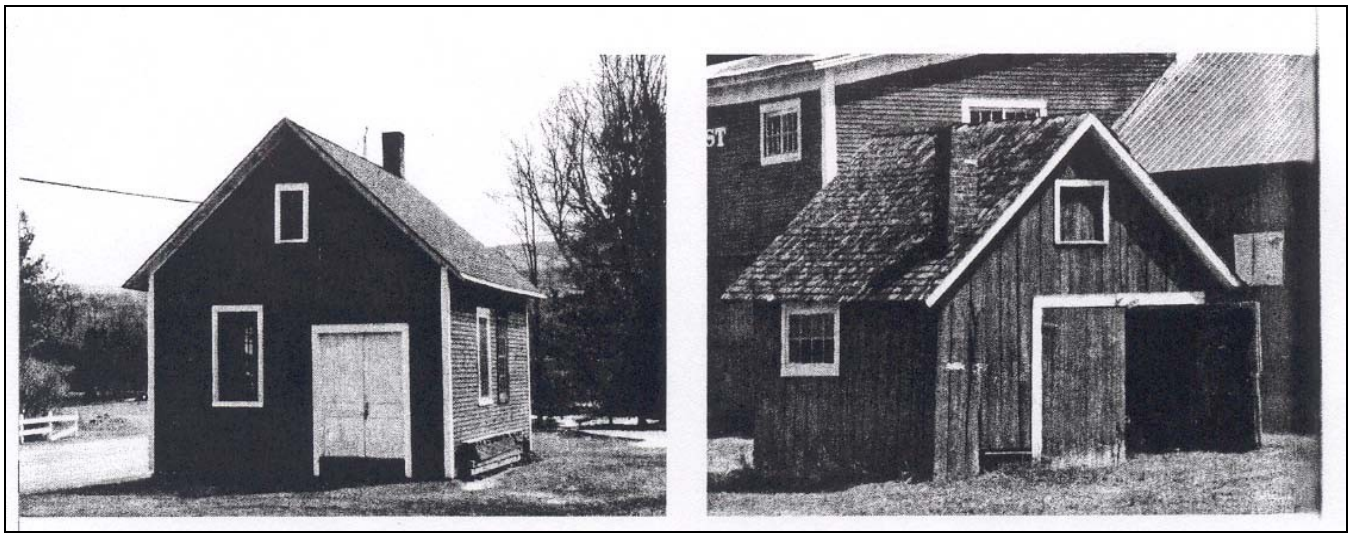
This photo was taken c. 1920. It depicts Harold Mudge of Gray Valley Road, Tioga County.. Based on Visser's description, the building in the left background would seem to be a carriage house. http://www.rootsweb.com/~srgp/photos/mudgefrm.htm, accessed 7/11/06

Carriage houses are not as common as other outbuildings. Wealthier families would likely have built them.

[35]Visser, *Field Guide*, 145.

Shop

Farm shops were not uncommon features of Northern Tier farmsteads. They probably relate to the common practice of supplementing agricultural income by working at a trade or service. For example, in the Sullivan Township, Tioga County Directory of 1899, the following listings appeared: "farmer and mason"; "farmer and hay presser"; "carpenter and farmer"; "postmaster and dealer in general merchandise, farmer." The Rutland Township Directory for 1899 listed a physician and farmer; "wood grower" and farmer; "town auditor" and farmer; "manufacturer iron ore paint and farmer"; dealer in agricultural implements, as well as carpenters and blacksmiths.[36] Dairying at this time was still seasonal work, even though the milking season was longer, cows still were allowed to dry for a few months before calving in the spring. So, many if not most farmers supplemented their income. Diagnostic features of a workshop include chimneys; access to road; large gable end doors; and multiple windows.



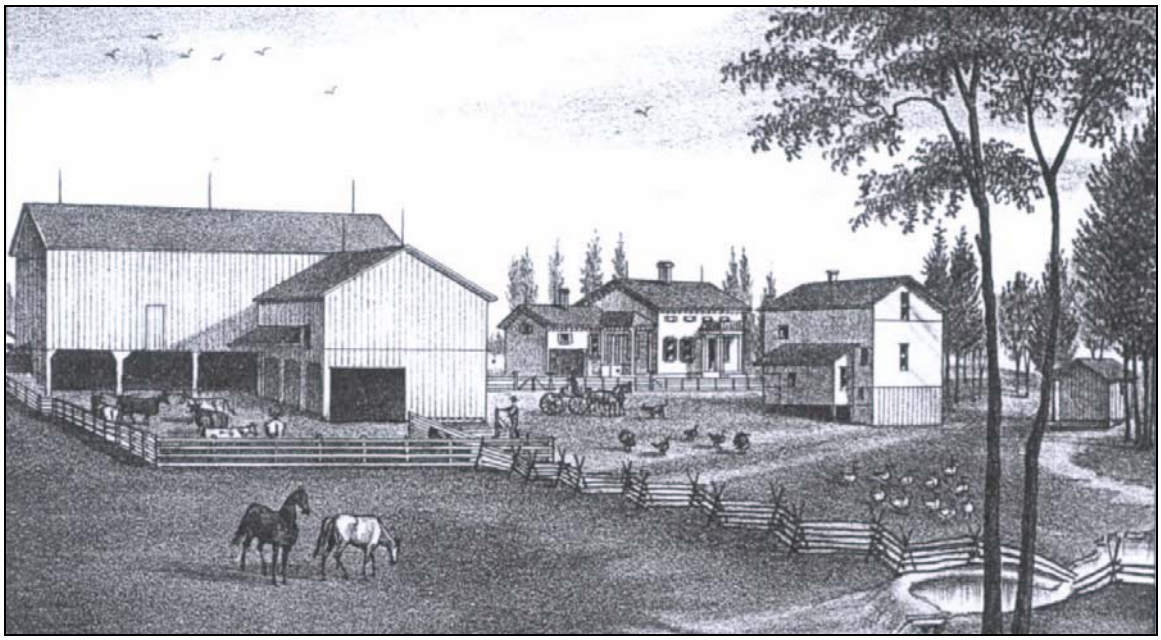
These are pictures of blacksmith shops from Visser's book, p. 152.

[36] Rutland Township Directory (Tri-Counties Genealogy and History Website) at http://www.rootsweb.com/~srgp/director/1899p421.htm.

Below are pictures of shops from Summer 2004 fieldwork:

015-LI-001-02. Blacksmith Shop, Bradford County.

015-PI-001-03. Workshop. Bradford County.



Jonathan Stevens property, Standing Stone Township, Bradford County. Note the banked barn with ell addition; house with single story kitchen ell; and possible workshop across the road from the house; and possible ice house behind that.

Honey Colony 1860-1900s
These likely were ephemeral; none were found in fieldwork.

Corncrib, 1860-1900

Corn was not a very important crop per se in the Northern Tier, but corn was used for animal feed, and so corncribs are found. Most are relatively small (especially when compared with those in the Susquehanna North and West Branch).

117-We-002. Corncrib, Tioga County

117-OS-001. Corncrib, Tioga County.

Landscape Features, 1860-1900

Field Patterns

By the late nineteenth century, the cleared area in Northern Tier farms was approaching three-quarters; and at least three quarters of the entire land area in Bradford, Tioga, Susquehanna, and Wayne Counties was in agriculture. So the landscape was quite open and would have presented a patchwork of small, square-shaped fields. Pasture and meadow would have been the most predominant landscape features. "Permanent" pasture would be areas that were not plowed, but used periodically for grazing. More research is needed to determine their appearance and overall proportion to the larger enterprise, but to date we can say that in the 19th century these would be fenced fields that showed the impact of grazing animals: close cropped, with many varieties of grasses and other forage plants; unpalatable plants would be left untouched and thus pop up randomly; possibly there would be a clump of trees for shade; and, a water source. One observer in 1899 put it colorfully: "agriculture has shaven these hills to their very crowns, leaving only here and there a tuft of woods for a scalplock."[37] Meadow would be more like cropland, sown with grass seed and harvested for hay. Haystacks would have been a common ephemeral landscape feature. Overall, the land in this period probably had a somewhat scruffy look, even though much of it was cleared; commentators of the period noted the extensive (as opposed to intensive) nature of the grazing practices, that is to say that there were comparatively few animals for the amount of cleared land.[38] This extensive system reflected the available resources: the soil was poor, farm families lacked the labor and financial ability to fertilize (pastures especially); so they let their animals loose to fend for themselves on a comparatively large acreage, rather than expend labor and cash to graze cattle on smaller, more productive pastures.

Fences

As clearing proceeded, stake-and-rider, or post and rail fencing continued to be put up; however as more labor became available, stone fences were also built to divide fields and pastures. The Tioga County reports to the state Board of Agriculture mentioned these in the 1860s. These fences are important landscape features. In the first instance they represent the cultural legacy of New

[37] Charles Bump, *Down the Historic Susquehanna: A Summer's Jaunt from Otsego to the Chesapeake* (Baltimore: Sun Printing, 1899), 76. J. Trowbridge is being quoted here. See also *Tioga County Centennial Celebration, 1804–1904* (Wellsboro, Pennsylvania: Tioga County Centennial Commission, By Authority of the Centennial Commission, 1905), 151-2, where Edward B. Dorsett notes that the hemlock and pine is mostly cleared, and that many farms still have "stumps and stones" in their fields.

[38] Extensive pasture and hay dairying: few cows for the amount of land (Pennsylvania Board of Agriculture Report, 1882), 262-3.

England. They often evolved from split-rail fences, having been built from the piles of stones placed in the "V" of the wood fence. An 1871 survey concluded that probably a third of fences in this area were of stone. There are still unanswered questions about these fences, such as who built them.[39] Clearly fences served important symbolic purposes; think of Robert Frost's famous words. However they also served purely utilitarian needs in a largely pasture based cattle-based agrarian economy. Today few traces remain; many have been cannibalized for other purposes.

The earlier types of wooden fences (see above) would continue along with the new stone fences; and toward the latter part of the period, types of barbed wire or wood-and-wire fences would appear; these are more fully described in the section on the 20th century. A hierarchy of fencing also dictated that near the house, picket fences would enclose yards, while fencing types became rougher as one moved out into the fields and pastures.

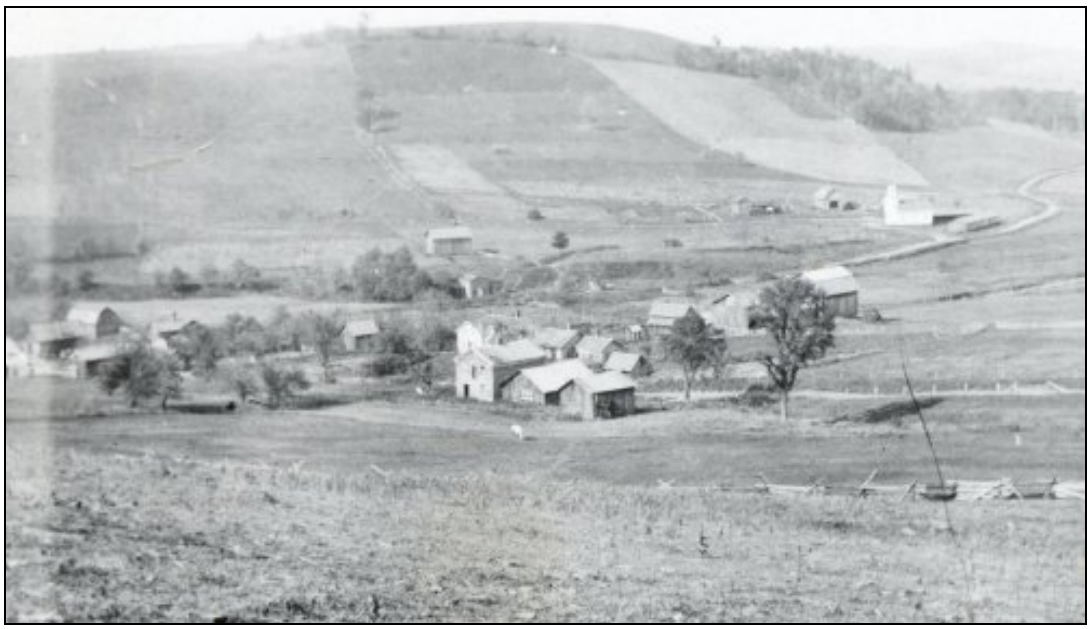
Pastoral Place Names, Fish Farms
An interesting phenomenon in the Bradford County Atlas of 1869 and the Susquehanna County Atlas of 1872 is the frequency of romantic, mostly pastoral place names.[40] Farms were labeled with names like "Quiet Home," "Pleasant Farm," "Orchard Home," and even "Infidel Home." Another, perhaps minor, type noted in the 1869 Atlas is the fish farm. Several of these appear, for example in South Creek Township, "Crystal Spring Trout Ponds," "Trout Brook Farm," etc. The significance of these places has yet to be researched.

Wood Lots
Wood lots were still an integral part of the farmstead. Many times they would be squarish in shape, because surrounded by pasture and meadow fields. They occupied a much smaller proportion of the farmstead land area than before.

[39] Stone fences: see Gerald L. Pocius, "Walls and Fences in Susquehanna County, Pennsylvania," *Pennsylvania Folklife* Spring 1977: 9-20. *The Settler,* November 1956, page 166 says "fence builders" received 75 cents a day with board and meals. A postcard of Lake Wesauking in Bradford County, dated 1908, shows a stone fence in the foreground (Pennsylvania State University Archives MG 213).

[40] F.W. Beers, *Atlas of Bradford County, Pennsylvania… Assisted by Geo. P. Sanford & others.* New York: F.W. Beers, A. D. Ellis & G.G. Soule, 1869; F.W. Beers, *Atlas of Susquehanna Co., Pennsylvania, From Actual Surveys…*(New York: Pomeroy and Co., 1872).

Liberty, PA, Tioga County, c 1907. Note worm and wire fencing; English barn in center foreground, with shed extension. From Tri Counties site.



Elk Run area, Sullivan Township, Tioga County, c 1898. Note cleared fields up to ridge; worm and wire fencing; ground level barns and at least two gambrel roof basement barns.

Bradford County mowing scene, near Tioga; no date; from Tri-County Web Site.

View near Terrytown, Bradford County, no date, from Tri-Counties Web Site. Accessed 2004.

Panorama of Troy, PA, no date. http://www.rootsweb.com/~srgp/booksb/troypan.htm, accessed 7/11/06

Sugar Bush
No documentation is available at present.

1900-1960: Fluid Milk and Poultry

The next phase in the Northern Tier production system began around the turn of the twentieth century. Rural population was already declining in the late 19th century, as lumbering and mining declined, but the number of farms actually did not peak until sometime in the first decade of the twentieth century. This trend coincided roughly with a major shift from farm buttermaking and diversification, to relatively specialized fluid milk dairying. After 1910, farm numbers dropped and average farm size rose as farm families adjusted to new circumstances. Depression conditions starting in the 1920s buffeted agricultural communities. Many farms had negative labor incomes, and young people continued to migrate out of rural areas, unable to find enough economic opportunities to sustain them.[41] The New Deal of the 1930s injected the federal government into farm policy in a big way, introducing price supports, set-aside programs, rural social-service

[41] Ralph Watts, *Rural Pennsylvania* (New York: The Macmillan Co., 1925), 136, notes that Susquehanna, Bradford, Tioga, and Wayne led the state in declines of rural population after 1880. See also Alfred M. Paxton, "The Incidence and Influence of Socialization Factors in Tioga County, PA," Penn State MA thesis, Rural Sociology, 1928, which contains many pictures of abandoned farms and notes other community changes.

agencies, and aid for rural electrification. The impact of specific policies is debated. However, there is little doubt that the rise of an "agricultural establishment" in these years had a huge impact on the direction taken by agriculture. Funding for agricultural colleges (the US Land-Grant system was set up by the Morrill Act of 1862), extension services (established by the Smith-Lever Act, 1914), and experiment stations (established by the Hatch Act, 1887) stayed steady or even increased (Pennsylvania State College's agriculture faculty increased by 25% even during the Depression years). In tandem with the increasing influence of "agribusiness," these forces promoted capitalistic, mechanized, scientific farming. The agricultural economy revived with the Second World War, but by that time federal policy had shifted from a focus upon keeping farm people on the land, to actively encouraging urbanization and a smaller number of highly capitalistic farms. So though farm prosperity rose (at least temporarily), agrarian communities continued to empty out. The auto, school consolidation (occurring only in the 1950s), and changing patterns of retailing resulted in the decline of small villages and favored larger centers that served a bigger rural hinterland. In the Northern Tier, this process had already begun in the pre World War II period: Penn State rural sociologists and agricultural economists conducted a survey of rural communities between the 1920s and 1950s that show businesses in Bradford County communities declining, rural population declining, and village population stagnating.[42] These were national trends.[43]

One new demographic trend was occupancy of farms by immigrants from Eastern Europe. The Wayne County soil survey (1938) mentioned increasing numbers of Poles farming in the western part of the county – as many as twenty percent in some areas. It is not clear how their occupancy was reflected in the landscape. However, this occurred only in a few spots; overall the Northern Tier was consistently characterized in the 1930s and 1940s as socially homogeneous.

Products, 1900-1960

By about 1900, a major transition was well underway. Home dairying, especially buttermaking, though still important, was giving way to the sale of fluid milk to urban and industrial markets, and to centralized dairy processing (butter mainly, but also such products as evaporated milk,

[42] See for example "Rural Organization of Bradford County," Penn State Agricultural Experiment Station Bulletin # 524, 1950; Edmund de S. Brunner, *Village Communities* (New York: George H. Doran & Co., 1927), whose 1927 description of "Alford" described the neighborhood of Wyalusing in Bradford County. Also, the Community Program Studies, The Pennsylvania State University Department of Agricultural Economics and Rural Sociology, survey materials for Troy, Bradford County give a sense of population characteristics.

[43] These changes are captured well in the Community Program Studies interviews for Troy and Wyalusing.

condensed milk, and ice cream) off the farm.[44] In the state as a whole, 60 percent of milk produced on farms in 1890 was used to make butter on the farm; by 1924, farm-made butter accounted for just under 30 percent of milk produced. The Northern Tier counties of Bradford, Susquehanna, Tioga, and Wayne led this trend. Even as early as 1884, only a third to two-fifths of farm-produced milk was converted into butter on the farm. This shows how much more developed fluid milk production was in the Northern Tier than in the remainder of the state. By 1927, farm butter production had dropped precipitously in these counties, as low as one percent of total milk production in Bradford County. Refrigeration, faster transportation (first rail, then trucks via improved roads), and burgeoning demand drove this shift. By 1930, at least half of Northern Tier farms were classed as dairy farms, deriving at least 40 percent of their income from dairy. This trend to reliance on one product was singular in the Commonwealth.

The rising proportion of dairy income signified, in the view of Penn State College agricultural economists in 1929, that the "Northeastern dairy area" was "the most specialized dairy region in

[44] Dale, Norman C., "Agriculture in Susquehanna County Pennsylvania," MS Thesis, Penn State Department of Agricultural Economics, 1932, 22-30, says that Susquehanna County shifted from home dairy to fluid milk within a decade, from 1880 to 1890, and that 80% of the cattle were purebred when he wrote, and that dairy accounted for more than 50% of farm income. The average dairy herd had about 14 cows. Northern Tier figures:
Bradford, 1884: 15.7 million gallons milk X 14 lbs/gallon = 220.5 million pounds total; 4.7 million pound butter made, time 20 (pounds milk to make a pound of butter) = 94 million pounds of milk made into farm butter, divided by 220.5 = 46 percent of farm milk made into butter – almost 10% below the state average for 1890.
Susquehanna County, 1884: 12.4 million gallons milk times 14 = 173.6 pounds; 3 million lbs butter made, time 20 lbs milk:1 lb butter = 60 million lbs, divided by 173.6 = only 34 percent of milk converted to farm made butter
Tioga County: 1884 – 10 millions gallons milk times 14 = 140 million pounds milk; 2.7 million pounds butter made on farms, times 20 = 54 million pounds milk made into butter on farms divided by 140 = 38 percent of milk converted to farm made butter. Wayne County, 1884: 7.5 million lbs milk times 14 = 105 million pounds milk produced on farms; 1.7 million pounds butter produced on farm X 20 = 34 millions; 34/105 = 32 percent of farm produced milk converted to butter.

[45] Rauchenstein, Emil, and F. P. Weaver, "Types of Farming in Pennsylvania." Pennsylvania Agricultural Experiment Station Bulletin # 305, 1934, 54.

[46] Susquehanna County Agricultural Extension Agent Report, 1936

[47] Both the extension agent McCord's farm management survey of Tioga County says only 10 percent purebreds. J. E. McCord, "Farm Management Survey of Tioga County PA," Penn State University Agricultural Experiment Station Bulletin # 282, 1932.

[48] "Milkshed" is a term used to indicate the area from which a major urban area imports milk – the imaginary equivalent to a watershed. It changes with transportation; New York City's milkshed extended just a few miles from the city center in the mid 19th century, and well into Northern Pennsylvania by the late nineteenth and early twentieth century, and into Central Pennsylvania by about 1930.

[49] Susquehanna County Agricultural Extension Agent Report, 1922.

the State."[45] The Susquehanna County dairies served by the agricultural extension agent in 1936 averaged 16 cows, and the largest had 55.[46] (The average Pennsylvania farm had five milk cows in 1924.) Purebred cows were more common, but still a small proportion of the total.[47] Isolated from alternative employment opportunities, limited by soil quality and climate, suited to pasture and hay, and positioned within major milksheds,[48] the Northern Tier's geography supported dairying as one of the few ways to make money from the land. This only intensified between 1930 and 1950; by 1940, the percentage of income from dairy products had climbed to around two-thirds. With increased emphasis upon quantity of milk rather than quality of product, farm families began to pay more attention to yields, first by improved feed and shelter, and later by breeding.[49] This latter was a long, drawn-out process, and even by the 1940s herds were very mixed; for example, in Susquehanna County in 1936, only twenty percent of the dairy herd was purebred. Eventually the Holstein came to dominate, but not until after World War II.

Northern Tier farms typically gave between a third and half of their acreage to pasture and in some Northern Tier counties, hay took up fully three-quarters of the cropland. Again, this proportion was significantly greater than in other parts of the state. Before 1930, hay both fed cows on the farm and was sold off the farm to mines (for horses and mules) and cities. After 1930, when urban and industrial markets evaporated because of the switch to machines and autos, hay went exclusively to feed farm animals. Despite this, locally produced feed "…is supplemented by an enormous amount of purchased concentrates," said the agricultural economists in 1929. Corn for silage accounted for an increasing amount of cropland during this period. Sale of dairy cattle was another source of income.[50] Poultry raising rose to the second most important income generator in the Northern Tier farm economy of this period, especially for commercial egg production.[51] The county extension agent reported in 1939 that poultry accounted for 20% of Bradford County farm income. Specialized poultry farms were the second most predominant type in two sections: southwest and south central Bradford County, and eastern Wayne County.

[50] Bradford County Agricultural Extension Agent Report, 1940.
[51] "Types of Farming in Pennsylvania," Agricultural Experiment Station Bulletin # 305, Pennsylvania State College, by Emil Rauchenstein and F. P. Weaver, 1934, 54-56.

A few ancillary enterprises continued, but overall, diversification decreased. Oats were raised to feed horses, at least before about 1940. Buckwheat continued to be important especially in Bradford County (where it took up 10 percent of the crop area, nearly as much as oats). Indeed, "buckwheat fields and an abundance of flowering weeds have made honey production a profitable sideline on many farms, Bradford leading all counties in the number of bee hives."[52] Potatoes were raised for home consumption and for market. A significant amount of foodstuffs for farm consumption was still produced.[53] In Sullivan County, beef production prevailed before the county entered the milkshed in the mid 1920s.

General farming did not disappear. It remained quite common. In addition, quite a number of farms were characterized as "abnormal." These were usually part-time farms, often where income was supplemented by off-farm employment. In southern Tioga County this would probably mean mines in the Blossburg vicinity, but it is not clear what made farms in northeastern Susquehanna County part-time, unless perhaps it was lumbering. This pattern continued the multi-occupational tendencies of the earlier period, only now it seems off-farm wage employment rather than on-farm workshops were the site of this part-time labor.

Reflecting the area's strong dairy and poultry production and perhaps the influence of New York State's political culture, cooperative marketing associations were very influential in the Northern Tier. The Dairymen's League, formed around 1915, controlled most of the milk produced for New York City. According to the extension agents, virtually all the dairy farms in the Northern Tier marketed their milk through the Dairymen's League or other cooperatives. In 1921, the Bradford County agent estimated that two thousand local dairy farmers belonged to the Dairymen's League; in Potter County in 1916, the extension agent reported that the year had opened with a bang when 90% of the dairymen withheld milk for a month "when the Condensory refused to pay league prices for milk." In Susquehanna County in the early 1920s, the league, noted the extension agent, "sets the price of all the milk produced in the county and markets 90% of it. It owns three plants in the county." BradCo, an egg marketing cooperative, bought eggs at a premium price, and while they did not market all the eggs produced in the Northern Tier, their impact was significant. Though these organizations could end up being just as corporate as private capitalist organizations,

[52] See also *Historical, Industrial, Commercial and Agricultural Review of Pennsylvania*, 1917 (Chicago: George F. Cram Co., 1917), 13, says Bradford County has 3,898 bee colonies. For buckwheat in Tioga, see *National Stockman and Farmer* June 9, 1892: 181.
[53] Bradford County Agricultural Extension Agent Report, 1941.

they played an important role in sustaining prices and offering a counterbalance to rampant free market forces.[54]

Labor and Land Tenure, 1900-1960

Farm tenancy continued to be low in this area. The shift from farm-made dairy products to fluid-milk sales had important repercussions. A sea change occurred in women's work. Women continued in income-producing labor; their expansion of the farm poultry enterprise, in particular, carried many a farm through the Depression. They also continued in the altered rhythm of dairy work – milking, operating and cleaning equipment (separators for example), participating in the intensified routine of feeding, and in new forms of cooperative labor such as neighborhood silo fillings and hay pressing.[55] When the automobile arrived, farmwomen found themselves driving to market and on errands. It seems possible that women may have worked at honey production, too, though more research is needed to confirm this. Of course, women's work in childcare, cooking, sewing, and canning also continued. This type of work, in which labor was substituted for cash outlay, assumed particular importance during the Depression. Women also continued to do the work that cemented community ties, such as labor exchanges, Grange work (such as organizing programs and study groups), and church work.

Northern Tier farming households were affected not only by the trend to specialized dairying, but by new ways of conducting the business. In the fluid-milk business, quantity of milk mattered more than ever, because farm families could not add extra value through skilled processing, as they did with home buttermaking. To increase milk quantities, of course, farm people turned their attention to getting ever more milk from their cows. This was accomplished through varied strategies: extending the milking season, improving feed and shelter, and (last, and not important until after the second world war) using more purebred animals. Gradually dairy work became a year-round rather than seasonal business, so labor too intensified. It was in this period that dairy farming became firmly associated with an incessant round of work that tied families close to home. Haying and other crop harvesting was mechanized (mowers, tedders, fork lifts, hay tracks, and silo fillers); tractor power (stationary and mobile) appeared after about 1920. However, tractor power had by no means supplanted horsepower immediately. There were almost two horses per farm according to the 1940 census. Though their numbers diminished significantly by 1950, horses remained a presence on Northern Tier farms. Milking slowly mechanized, but this process was not

[54] Agricultural Extension Agent Reports: Bradford County, 1921; Potter County, 1916; Susquehanna County, 1921. Hal Barron, *Mixed Harvest, the Great Transformation in the Rural North 1870-1930* (Chapel Hill, N.C.: University of North Carolina Press, 1997), especially chapter three.

[55] The latter, Tioga County Soil Survey 1929, page 7; there is a photo on the Tri-Counties Web Site Also.

completed by the end of the Second World War. Electrification, put in place comparatively early (for rural Pennsylvania,), assisted in running lights, coolers, milking machines, and the like. The rise of the silo (see below) brought with it new labor, including planting and harvesting hay or corn silage, and filling the silo, which was a neighborhood activity that helped to continue patterns of shared work.

Buildings and Landscapes, 1900-1960

Houses, 1900-1960

Fieldwork to date suggests that new house building was unusual in this hard-up period. Geographer Glenn Trewartha (1948) made a survey of farmsteads in which he found that farmhouses in the New York/Boston milk shed overwhelmingly had two stories and many rooms (most had 5-8 rooms and many had more than 8).[56] All had basements.[57] Trewartha did not attempt to date the buildings he surveyed. Probably the ones that were built would be in tune with prevalent forms and styles popular nationally at the time – such as the "foursquare," Colonial Revival, etc. While to some extent, their functioning in farm production declined with the disappearance of home buttermaking, houses were still the site of productive activities such as home canning and feeding farm hands. The use of the house for productive purposes may have extended to the egg business in these years; the extension agent reported that he inspected a number of home egg cellars (usually, what this meant is that people had cool basements where they stored, cleaned, and graded their eggs) and helped producers improve conditions in them in 1940.

Barns, 1900-1960

Before World War II, survey work suggests that the "Basement barn" remained predominant. The biggest changes were likely in barn layout, as labor efficiency in dairying became more important and as farming specialized more. Layout changes would include adding stanchions, subtracting horse stables, widening barns from the customary 30 to 36 feet; raising the roof to give more hay storage; and reorienting the floor plan from crosswise to lengthwise. In keeping with the emphasis on larger dairy herds, another strategy for altering barns was to add a one-story cowshed (see photos below). I. F. Hall, writing in 1929, surveyed over 700 New York state farms and found that over 500 of these had cows face out, so manure could be efficiently gathered; cows could reach

[56] Glenn Trewartha, "Some Regional Characteristics of American Farmsteads." *Annals of the Association of American Geographers* 38, No. 3 (September 1948): 169–225.
[57] He did not analyze housing according to age, so it is not possible to tell without fieldwork when the bulk of this housing stock was.

their stanchions more easily; hay could be thrown down in front of cows, and so on. Gambrel roofs and "rainbow" or "gothic" style roofs were popular, framed to accommodate hay tracks and forks, since the average farm produced a lot of hay and storage became more critical as pressures for quantity milk production increased. Framing systems were probably simplified. I. F. Hall, in a study of barns in nearby New York State, said that new barns built since 1920 were plank framed. An illustration of plank frames can be seen below. [58]

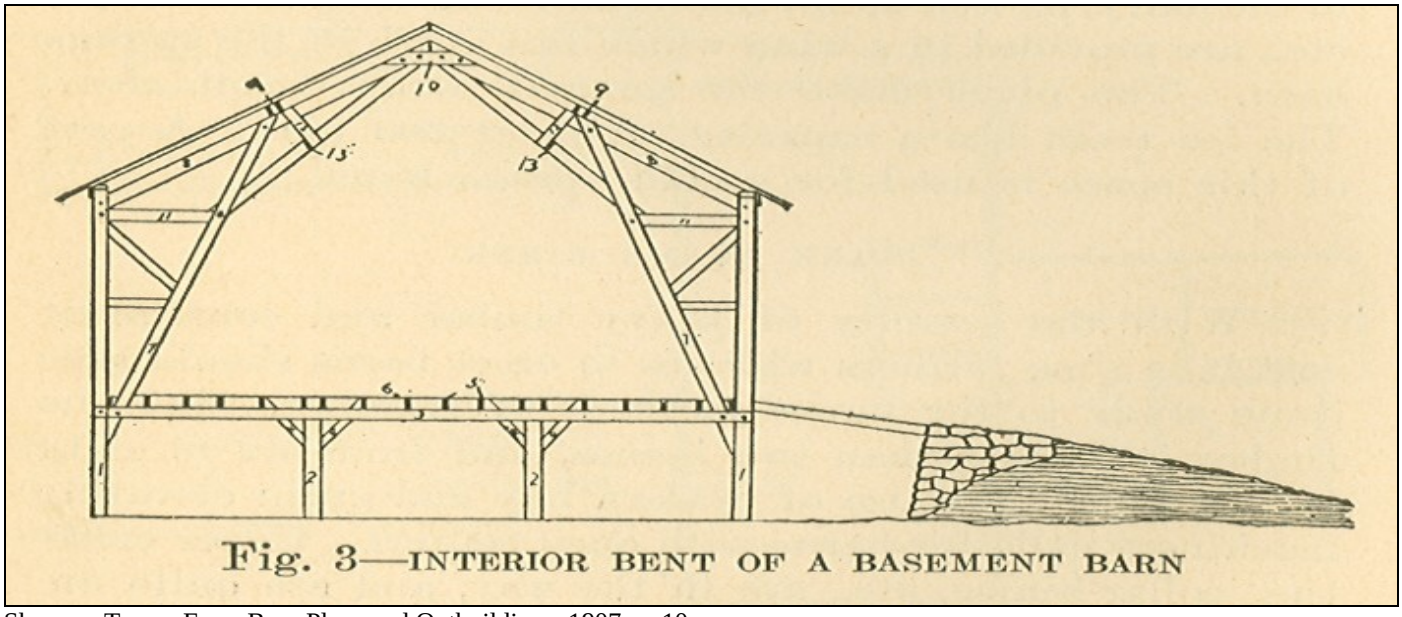
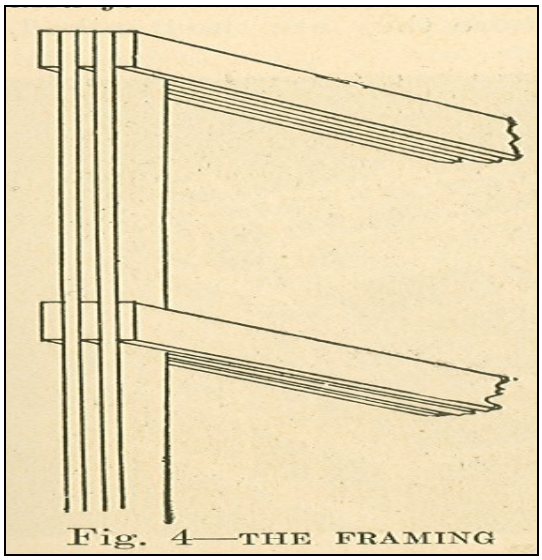


Fig. 3—INTERIOR BENT OF A BASEMENT BARN

Shawver Truss. From Barn Plans and Outbuildings, 1907, p. 10.

[58] Hall, I. F. "An Economic Study of Farm Buildings in New York." Cornell University Agricultural Experiment Station Bulletin # 478, May 1929, pp. 39, 54-5, 75, 42.



Plank framing, from Barn Plans and Outbuildings, 1907, p. 11.

117-SU-002-02. Barn addition from west. This Tioga County barn complex nicely illustrates 20th century changes. The gabled basement barn probably dates from the late 19th or early 20th century; the rainbow roof addition is a single story cowshed with ample loft for hay.

117-SU-004-11. Barns and silos. This Tioga County complex has a basement barn with several additions; a milk house, altered to accommodate a bulk tank; a wood stave silo probably from the 1920s, and two concrete stave silos.

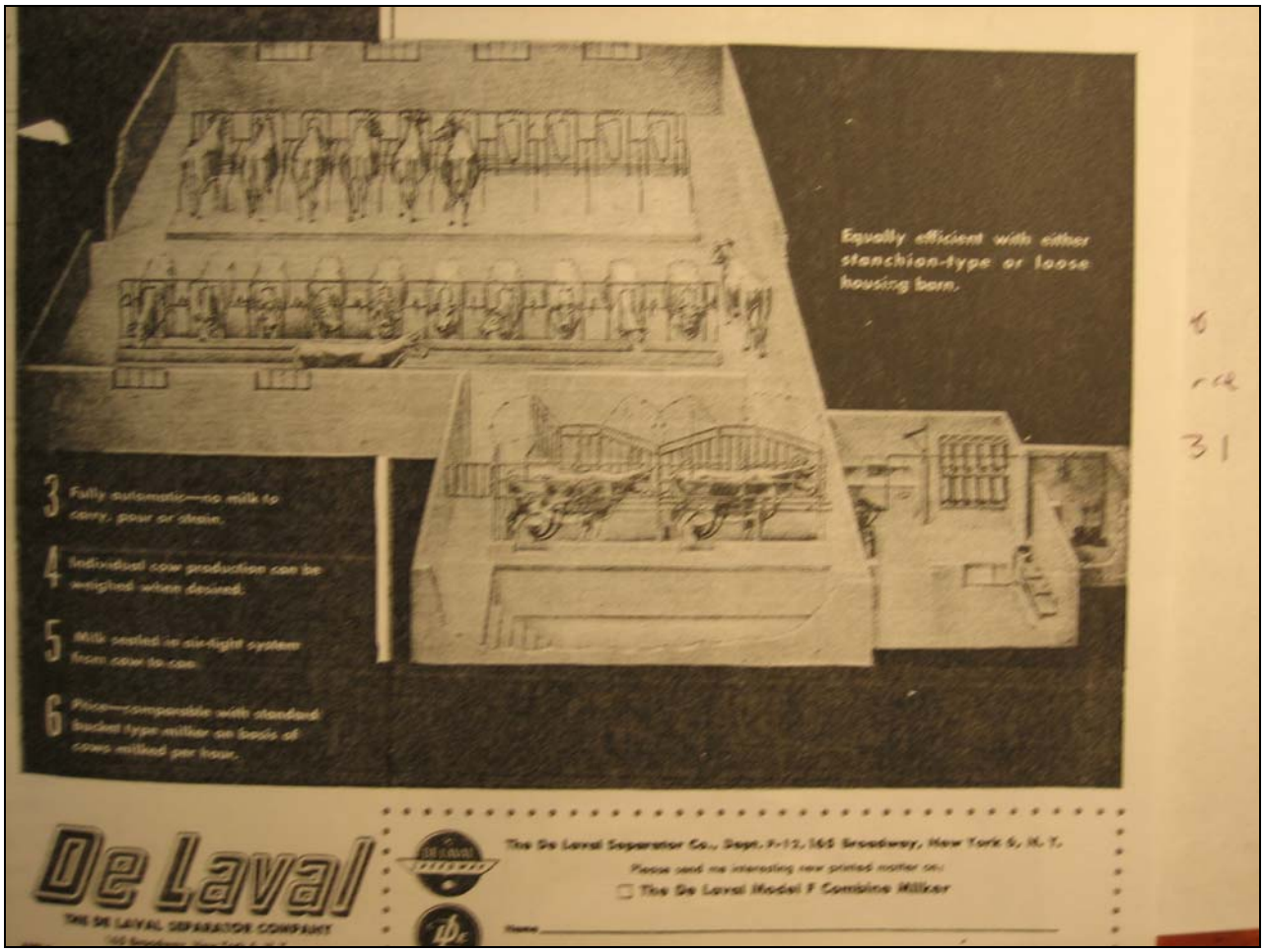
117-SU-006-01. Barn from road. Tioga County. A basement barn (right) with hay barn extension.

015-SH-002-01. Cow Shed, S. Side of Barn. Bradford County. Basement barn with cow shed addition.

Barns of this era almost universally were altered to include concrete flooring and increased sunlight. Whitewashing appeared; metal stanchions replaced wooden ones; ventilation was added; windows were added and/or enlarged.[59] Alterations relating to light and cleanliness can be directly traced to the impact of municipal (later state) sanitary regulations. In the years when requirements for Grade "A" or "B" milk in New York City were introduced or tightened, the extension agents reported a flurry of building and advising activity. In 1928, for example, the Tioga County agent reported that "Dairymen have been getting ready for board of health inspection and have needed changes in barns and plans for milk houses. Assistance in this work has been general in the county." These regulations were aimed at securing a clean and disease-free milk supply for the city. Since the Dairymen's League signed contracts on behalf of thousands of individual farmers, the impact of these regulations was arguably faster and more uniform in this part of the state than (for example) in central Pennsylvania, where agent reports show that farmers altered their barns in a piecemeal way extending well into the 1950s. In keeping with the discipline exerted by the New York City market, Northern Tier counties led the way in testing and certification programs for bovine tuberculosis and Bang's Disease. The architectural alterations also contributed to these anti-disease programs.

Another new barn-related structure that came into use after the Second World War was the milking parlor. Under the older system, human milkers moved from cow to cow, and carried milk from barn to milk house. With milking parlors, the cow moved to the milking machine, and the human attendant did not have to stoop, nor to move from one cow to another, nor even collect milk, since it was pumped directly to cans. Milking parlors were low, relatively small, usually concrete block structures appended to a barn, sometimes integrated in a newer barn.

[59] "Suggestions for the Improvement of Old Bank Dairy Barns," USDA Circular # 166, June, 1931.



Milking parlor cutaway, from *Farm* Journal, February 1951.

Sullivan Township, Tioga County. Wisconsin Style dairy barn.

A few Wisconsin Style dairy barns were found in field survey work. This type has no bank. A full first story rises up from ground level; its walls are pierced with many windows. Internally, this barn has a central aisle running the entire length of the ground level, with gable end doors on one or both ends. The second, upper level provides ample feed and hay storage room, often by means of an arched roof. This is preeminently a dairy barn. Early versions sometimes also accommodated horses, but in the post-horsepower era, this type of barn housed increasingly large herds of dairy cattle. It reflects specialization, large scale, and a break from traditional forms and materials. Its large size accommodated not only larger herds, but larger Holstein cows and the huge amounts of feed they required. The Wisconsin Style Dairy barn also represents a response to stepped-up state regulation of the dairy industry, which mandated (among other things) ample light and ventilation for dairy cows.

This type of barn probably had nineteenth-century roots, but became popularized through the agricultural experiment station/extension system establishment. In particular, the Wisconsin agricultural colleges published designs and plans that seem to have been widely circulated. Agribusinesses also marketed designs and materials for barns. For example, the Weyerhaeuser Corporation distributed catalogs with plans for barns and equipment, and sold materials and plans. The 1954 barn illustrated below in Morris Township, Tioga County has some of the features of barns illustrated in the Weyerhauser catalog. These mid twentieth century barns represent the widening influence of an ideology that stressed capitalistic, scientific, systematic farming.

117-MO-002-19. Barn lookng NW. This barn dates to 1954. Morris Township, Tioga County.

117-MO-002-021. Mow drive.

Weyerhaueser catalog, barn mow drive, Weyerhaueser archives, no date

In the post World War II period, the pen barn (also called a free stall barn) became more highly recommended by agricultural engineers. Some farmers used the pen system to replace the stall-and-stanchion type of arrangement. The advantages of the pen system involved saving on labor and construction costs. When not being milked, cows roamed freely in a large open space with dirt floor and ready access to hay or silage. At milking time, the cows were trained to walk into a milking parlor, where they ate feed concentrates while being milked, then proceeded straight ahead back into the pen or pasture. This saved on labor costs in feeding (the animals fed themselves in the pen, and were fed concentrates simultaneously with milking) and stable cleaning, and it saved construction costs because the pen barn lacked expensive stanchions and full concrete floors, and was less well insulated. The pen barn system incorporated milking parlor, and often the milk house then adjoined the parlor.[60] Very often, the pen barn was made of pole construction, also an innovation in the postwar period.[61] Fieldwork did not locate these types of barns in the Northern Tier – at least not any that could be definitely dated to the period before 1960.

Silos, 1900-1960

The most significant new structure to appear on the agricultural landscape in this period was the silo. A silo is an airtight structure that holds fresh organic matter (moisture content 50-65 percent) destined for winter animal feed. It is filled with shredded or chopped grass, corn, or sometimes other plant material, which ferments into a highly nutritious feed. Silage feed resulted in significant productivity increases for dairy cows, and also permitted marginal farms to carry more animals. Ensilage was first publicized in the US in the late 19th century when the results of experiments in Europe became known. However, it did not become widespread until dairying was taken up more seriously. Bradford quickly became the leader in the state in numbers of silos; though in 1924 still under half of farms in the Northern Tier counties had them. By 1930, the percentage was up to 56 in Susquehanna County.[62]

[60] H. J. Barre and L. L. Sammet, *Farm Structures* (**Ne**w York: Wiley, 1950), chapter on "Dairy Buildings;" University of Wisconsin College of Agriculture June 1953 Bulletin titled "Loose Housing or Stanchion Type Barns for Dairy Cattle" noted that while loose housing is relatively new in many areas, its many advantages now make it well worth considering when a new barn must be built or an old barn remodeled.

[61] "Construction of Pole-Type Buildings," Penn State Agricultural Extension Circular # 437, Roger Grout, 1954; William Gilman, "A Barn They Drive Miles to See," *Farm Journal*, July 1952: 32-33 (this describes a New York State open stall dairy barn setup).

[62] Dale thesis, 1932, 9.

Silos can be constructed horizontally in pits, or vertically. Most silos of the first half of the twentieth century were vertical. Early silos were sometimes placed inside the barn, rectangular in shape, and of wood construction. These were quickly supplanted by round vertical silos located outside the barn, usually in a spot that would permit efficient filling (usually from holes in the top) and unloading (either from a tier of successive doors from which silage was thrown down an exterior chute, which contained a ladder for access to the doors, or from the bottom). Early silos were unloaded by hand, from the top. The land-grant establishment published many "how-to" brochures aimed at helping farmers build their own silos of wood or concrete. Because masonry is more durable and cleaner, it became the norm.

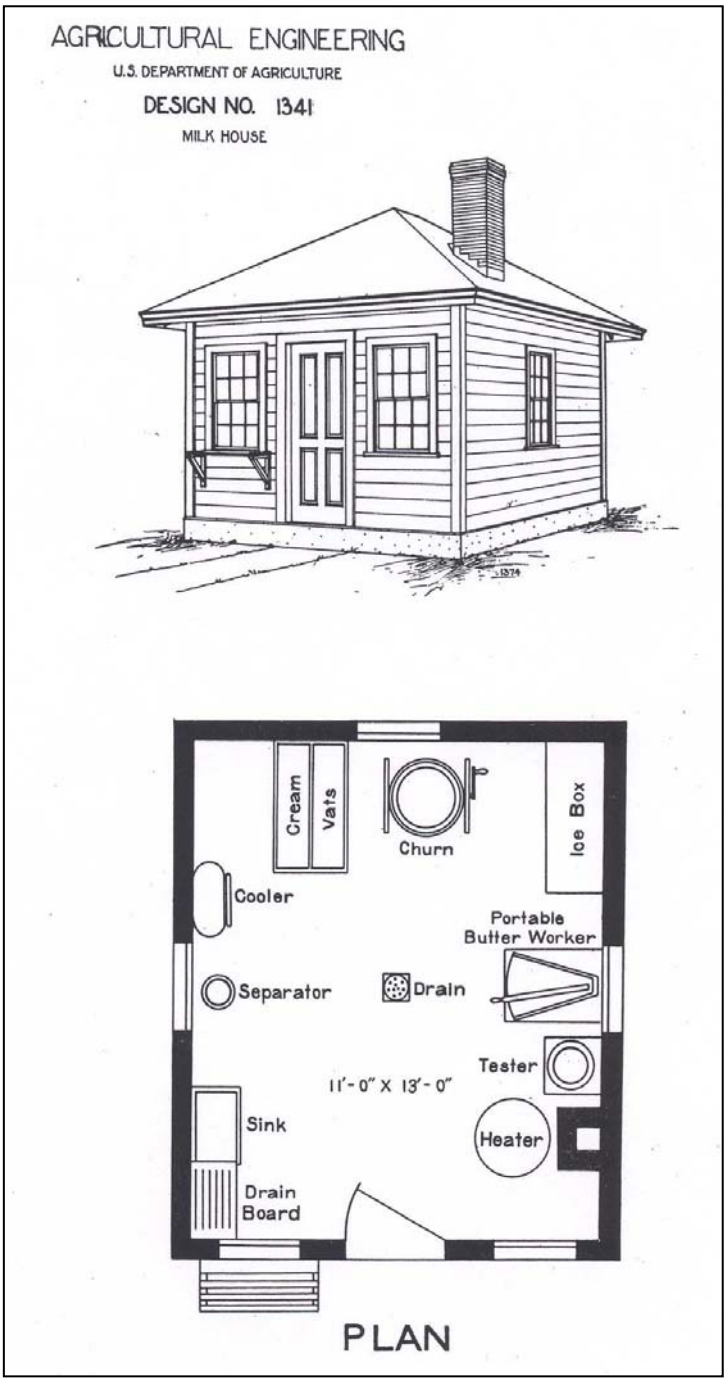
Wood Stave silo, Tioga County

Commercial organizations marketed many types of silos too. Some sold special curved brick; others made tiles; still others advertised systems depending on interlocking rings of poured concrete. Cement staves became popular after about 1910. Galvanized iron was mentioned by Hall in 1929.[63] A 1918 Pennsylvania State College circular (# 72) mentioned wood stave, hollow tile block, poured concrete rings, concrete staves, concrete blocks, metal, and bricks as silo construction materials.[64] Alan Noble, in Wood, Brick, and Stone, argues for a sequence in roof types, from gable to cone to hip to dome to hemisphere. [65]

[63] I.F. Hall, "An Economic Study… 60.
[64] United States Department of Agriculture. *United States Department of Agriculture Circular #72.* Washington, D.C.: Government Printing Office (date unknown).
[65] See Alan Noble, *Wood, Brick, and Stone*…

105-EU-001-15. Silo looking NW. This Potter County silo had its patent recorded on a sign affixed to the silo. First patented 1903, later revisions 1914 and 1915.

For images of concrete silos, see the section on “Barns.”



Milk House #1341, USDA design taken from: USDA Office of Cooperative Extension Work and Bureau of Public Roads Cooperation, *Farm Building and Equipment Plans and Information Series*, 1929.

Milk Houses, 1900-1960

The milk house was another major new form on the early twentieth-century dairy farm. It wasn't a big building, but is an important reminder of the new role of the state and the agricultural establishment in agriculture. The state (meaning the government at any level) influenced the construction of milk houses in the first place, because during the Progressive and New Deal eras, legislatures and municipalities passed sanitary codes that required inspection not only of milk, but of dairy herds and milk production facilities.[66] New York City pioneered in these efforts, and also seems to have been more effective at enforcement than other areas. In Pennsylvania, according to Stevenson Fletcher, a very few municipalities had inspection laws starting in the late 19th and early 20th centuries; however, enforcement was patchy. The first statewide dairy inspection law was passed in 1929, with a revision in 1933. This law provided for inspection of farm sanitary conditions, including facilities for sterilizing dairy equipment and milk houses for isolating milk.[67] It is not clear how well these were enforced. These regulations were a facet of the assault that was launched on bovine tuberculosis and other diseases in this period, aiming at ensuring a fresh, uncontaminated milk supply. In order to market milk, increasingly farm producers had to comply with regulations that required them to install easily cleaned surfaces (like concrete) in barns, remove milk storage areas from dirt and odors (by building milk houses), cool milk, sterilize equipment, and the like. In Pennsylvania, these regulations took effect relatively early in the Northern Tier, because New York City, where most milk went from there, passed quite stringent inspection standards by the 1920s. The milk house was one product of these new laws. In turn, its form and construction were influenced significantly by the agricultural establishment (meaning the complex that included state departments of agriculture, the land-grant university and extension apparatus, and agribusinesses). This new element in the farm landscape, therefore, illustrates the growing influence of the "agricultural establishment" on everyday farming practices and landscapes. Agricultural extension agents regularly disseminated plans for milk houses. Likely, for every farmer who followed a plan exactly there were more who either copied his building, or who adapted the basic guidelines using available materials and expertise. The overall result was a new level of homogeneity and standardization.

Milk houses provided a place to store and cool fluid milk before it was transported to market; to store milk cans not in use; and to wash containers (and sometimes other equipment like

[66] The New York City "Dairy Report Card" is reproduced in I. F. Hall, "An Economic Study of Farm Buildings in New York," Cornell University Agricultural Experiment Station Bulletin #478, 1929, pp. 29-34.
[67] Stevenson W. Fletcher, *Pennsylvania Agriculture and Country Life*. Two volumes. (Harrisburg: Pennsylvania Historical and Museum Commission, 1950–1955), Volume 2, 217-219.

separators). Plans offered by the USDA for farm milk houses typically gave dimensions ranging about 10 by 13 feet up to around 12 by 20 feet. Interior plans for a 10 by 13 milk house with ell (# 909, "capacity 20 to 30 head market milk") show a two-room plan with door leading to a wash room; milk room to one side, which contained a cooling tank and led to raised loading/unloading platforms and sunning racks, mounted on the outside. The ell contained a boiler room[68] with its fuel supply, and back door. Larger milk houses had the same basic three spaces, only larger, and sometimes equipped with testers and separators. One (#1337) had a churn, butter worker, ripening vat, and refrigerator, and another (#1339) had quarters for workers. Another small, 12 by 14, one-room milk house (#1341, see illustration) was designed for "butter making by hand" for 20 cows. It contained the same basic spaces, but not divided. The very smallest, at 7 by 9, had a concrete foundation with a sunken vat for cooling cans of milk.[69] All of these plans had sloping floors with drains, and provision for ventilation and light. After about 1950, milk houses were sometimes altered to accommodate bulk tanks.

Actual milk houses on farms that were surveyed tend toward the smaller end of this range. Though the USDA models were frame, of the milk houses identified in the Northern Tier, a majority were made of concrete block, and the remainder were frame. The frame milk houses appear to date earlier than the concrete block ones. The most popular design was not for a detached building, but for a small shed addition, located most commonly on the gambrel roof end of a barn, sometimes along the eaves side. This design was more popular than the freestanding milk house.

[68] Plans referred to are from *Farm Building and Equipment Plans and Information Series.* See text box for publication details. Pennsylvania Circular 107 says the boiler would be needed where "the herd is large and milk is to retailed."
[69] Pennsylvania Circular 107 says an 8 by 8 house would "do for a dairy of 10 cows."

015-TR-04 Barn, Silos, Milk House, Bradford County

117-SU-09 Milk house, Tioga County

Poultry Houses, 1900-1960

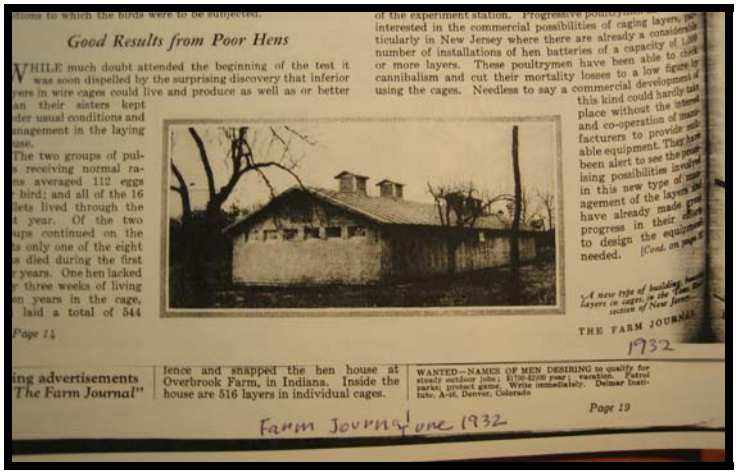
General Developments in Poultry Housing

In general, poultry housing in the twentieth century responded more and more to developments initiated by the agricultural establishment, whether the extension system, agricultural research universities, or agribusinesses marketing mass-produced equipment. For example, home-scale incubators and "brooder stoves" were advertised and illustrated in the farm press in the 1920s. The incubators were heated box like affairs mounted on legs. The brooder stoves had a central heat source (sometimes an oil burner), which warmed a protective, usually conical hood under which the chicks could huddle. It is not clear where these devices would be set up, but advertisements usually featured women making testimonials, which suggests that this equipment might be set up near or possibly even within the farmhouse.[70]

By the 1930s, "battery" brooders were appearing where larger numbers (over 500) of chicks were raised. These consisted of stacked cages with "wire-mesh floors with dropping-pans underneath

[70]For illustrations, see advertisements, *Farm Journal*, March 1922 and January 1922.

and water- and feed-hoppers on the outside."[71] Proponents claimed many advantages over the traditional brooder house, especially lower cost of building, the ability to keep many more birds in a smaller space, and lower labor costs.[72] Notably, one author pointed out that "battery brooding will produce good birds without much experience on the part of the operator…"[73] The shift to less-skilled labor probably occurred as men took over poultry raising, and also as sheer numbers rose. The buildings in which batteries were housed often were indistinguishable from other types of poultry houses; but some purpose-built battery houses were built which were characterized by high windows around the perimeter walls. These permitted batteries to be ranged along the walls, and light to enter from above. No field examples of this type were encountered in this study.



Good Results from Poor Hens

WHILE much doubt attended the beginning of the test it was soon dispelled by the surprising discovery that inferior pens in wire cages could live and produce as well as or better than their sisters kept under usual conditions and management in the laying house. The two groups of pullets receiving normal rations averaged 112 eggs per bird; and all of the 16 pullets lived through the first year. Of the two groups continued on the test only one of the eight pullets died during the first two years. One hen lacked but three weeks of living ten years in the cage, and laid a total of 544

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THE FARM JOURNAL

1932

ing advertisements The Farm Journal"

fence and snapped the hen house at Overbrook Farm, in Indiana. Inside the house are 516 layers in individual cages.

WANTED—NAMES OF MEN DESIRING to qualify for steady outdoor jobs; $1,700-$2,100 year; vacation. Patrol parks, protect game. Write immediately. Delmar Institute, A-41, Denver, Colorado

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Farm Journal June 1932

Battery House, illustrated in *Farm Journal*, June 1932, p. 14

[71] C. S. Platt, "Battery Brooding," *Farm Journal*, January 1930: 22.
[72] D. Kennard, "A New Deal for Chickens," *Farm Journal*, July 1933, 5.
[73] Platt, "Battery Brooding."

Battery House interior,
Farm Journal, June 1932, p. 14.

The "battery" philosophy soon extended beyond chicks to adult birds. Articles began to appear advocating batteries not only for brooders and layers, but also for broilers. By the 1930s, the free range philosophy was in decline among the agricultural establishment (i.e. in the farm press, among extension agents, and with agribusiness), though on many a farm range practices continued. Farm Journal poultry editor D. C. Kennard wrote in 1932 that "Today the pendulum is swinging toward confinement." Agricultural experiment station testing in Ohio and other states established that confined birds actually did better than those who were raised partly or wholly on free range. An important nutritional discovery -- that cod-liver oil added to the birds' diet helped chicks thrive indoors -- spurred a "revolution in hen-coops." With yards no longer emphasized and numbers of birds rising, multi story laying houses began to appear, and the new philosophy also encouraged

renovations to large barns for poultry.[74] These barn renovations did not necessarily always contain battery cages, but they did illustrate the abandonment of free-range practices.

By the 1950s, the battery technique was modified, because cages stacked above one another had resulted in ventilation and disease problems. Among large producers, cages were retained, but in single rows suspended above a concrete floor, often in a long, low building. Waste pits reduced disease and cleanup problems. Novel construction techniques such as trussed rafters and sheet-metal construction minimized the number of posts and thus created an open, flexible space. Farm magazines also advertised manufactured poultry housing, including conventional shed- or gable roof structures, but also pointed-arch houses. Prefabricated poultry houses were also discussed in the farm press. It is not possible at this time to determine how many farmers in the region took advantage of these technologies.[75] Many continued on a more modest scale and their buildings were correspondingly modest.

Ralston Purina advertisement, *Farm Journal*, 1958. This illustration shows a "cage egg factory." Note the long, low housing.

[74] C. S. Platt, "Four Weeks in Batteries," *Farm Journal* December 1930, 11; on continuation of free range practice, see ads in *Farm Journal*, September 1951, 92; D. C. Kennard, "Revolution in Hen-Coops," *Farm Journal* March 1932, 14; Nathan Koenig, "Henhouses from Left-Overs," *Farm Journal*, June 1930, 31-32.
[75] On new construction techniques, almost any issue of *Farm Journal* for 1958 and 1959 contains ads illustrating them. See also "New pre-fab poultry houses," Buildings column, *Farm Journal*, May 1957.

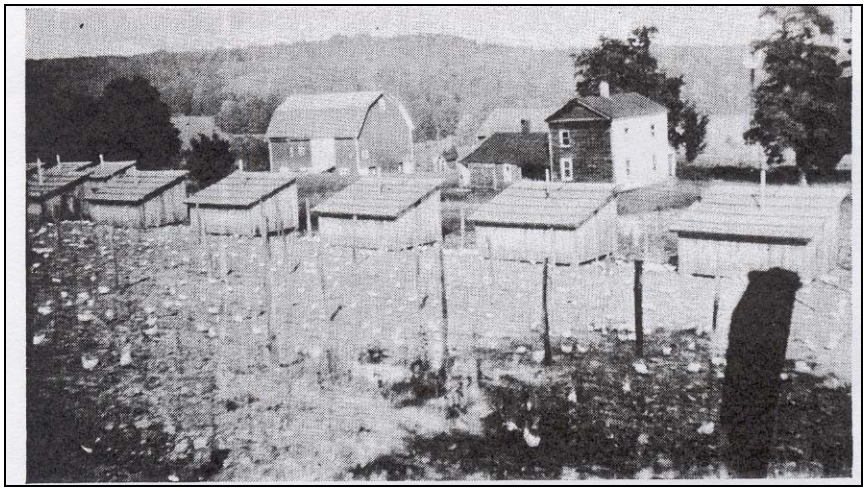
Poultry Housing in the Northern Tier

As poultry keeping assumed a strong second place among Northern Tier farm income producers, it attracted attention from men, most noticeably agricultural extension agents. (Men also became more involved in poultry production on the farm, though poultry labor did not shift over completely to men until after our period. The agricultural extension agent reports refer to "poultrymen," but the photographs in their collections always show women at program events featuring poultry.) The chief result on the landscape was the appearance of more poultry housing, often patterned on advice from agricultural extension agents or in farm publications, also from commercial/cooperative corporations as BradCo.[76] Therefore, as with milk houses, the stamp of the agricultural establishment appeared on the farm.

015-OR-001-12. Side & Front of Poultry House #2, Bradford County.

[76] The Bradford County Agricultural Extension Agent's Report for 1941 mentions BradCo's role in supplying building plans.

The type of housing depended on the purpose. For hatching chicks from eggs, portable brooder houses were made. These would have a stove to keep the "peepies" warm, and they would be relatively small. They were often designed to be portable – kept near the house while the chicks were very young, then moved onto pasture. None of these was positively identified in fieldwork in the Northern Tier. Pullets (female birds under one year old) were sometimes raised to laying age (around 6 months) using a free-range system and portable shelters. While there is photo evidence of significant activity of this type in the Northern Tier, fieldwork did not document any extant free-range shelters. These are ephemeral buildings, particularly since they were designed to be movable.



Chicken range on Coe H. Stearns farm, Susquehanna County, Harford, c 1925. Note the raised basement barn, frame house with one story kitchen ell. Fieldwork did not locate anything resembling this type of range. Source, History of Harford.

When hens reached laying age, laying houses provided roosting perches, open floor space, feed areas, and nesting boxes (individual wall nests, community nests, or nest rooms). The buildings were usually well lighted and ventilated. Depending on the scale of poultry raising, they could be one story, or more. If barns were converted for poultry, it was not unusual to find five or six tiers. It seems that most poultry facilities in this period were for egg production. The agricultural extension publications before 1950 do not seem to differentiate extensively between houses for layers and broilers; the only difference that's mentioned (in Extension Circular # 358, 1950) is that a house of a given size can always accommodate more broilers/fryers than egg layers, presumably because less space is given over to nesting boxes and the like. Overall, the poultry houses of this

period have these frequently seen common features: shed form; banks of windows; frame construction.[77]

This type of poultry house remains on the landscape. The fieldwork (see photos below) suggests that in the study area, the predominant types of poultry housing were one-story shed-roofed frame structures with banks of windows on one eaves side, and also renovated multi-story barns. Few if any long "cage egg factory" poultry buildings dating from before 1960 were surveyed in fieldwork.

117-WE-002-09. Poultry House, Tioga County.

[77] Setups for producing eggs for hatching differed yet again – these were geared to breeding pullets and feeding them up so they would produce healthy hatchable eggs, then selling the fertile eggs to hatcheries, which then hatched them to sell to poultry people. See C. O. Dossin, "Hatching Egg Production in Pennsylvania," *Pennsylvania State College Agricultural Extension Circular #361*, April 1950. This shows the pullets who will lay these eggs on a free range in which they are let out on Ladino or clover range, and have low gable-roof shelters and open air nesting boxes. We found none of these.


117-SU-001-07. Poultry house from e. Tioga County. This is an adapted building.

Privy, 1900-1960

This outbuilding persisted into the twentieth century, as many a Northern Tier farm lacked plumbing.


117-MO-001-20 Outhouse looking W, Tioga County.

Garage, 1900-1960

Of all the new types of machinery that became available in the twentieth century, the automobile was the most popular. Even in 1927 Northern Tier farms had more cars than silos, or radios, or tractors. So, the garage became a feature of the farmstead. Again, this was a new building type, generated not from a regional economy or culture but by a national trend; and garages were not only built with materials of the new industrial age (concrete block, rock face concrete) but often took on a generic look. However, sometimes garages were created by recycling older buildings, too.

117-SU-005. Concrete block, board and batten garage, probably using recycled materials. Tioga County.

Garage, 015-TR-002. This may have been a recycled root cellar. Bradford County.

Machine Shed, 1900-1960

Machine sheds were needed to house the corn binders, mechanical milkers and potato diggers that were used on the Northern Tier farm.78 However, if Pennsylvania State College surveyors are to be believed,[79] only 71% of Bradford County farmers housed all their machinery – much lower than in the other counties surveyed. 43% owned a machinery shed (as opposed to 81 percent in Centre County) and only 25% owned repair shops. Indeed, even as late as 1950, there were fewer milking machines, farm tractors, and tractors than farms in the Northern Tier counties; and quite small numbers of modern hay balers and corn pickers. Nevertheless, machine sheds do remain.

As new manufacturing processes and materials developed, they affected farm buildings. Manufacturers like the Stran-Steel Corporation advertised farm buildings with all steel components, or hybrids that combined wood and steel.[80] The Quonset building, made famous during the war, was now marketed for agricultural uses. An April 1957 advertisement in Farm Journal featured a happy farmer enthusiastically endorsing his Quonset® dairy barn. This building type did not achieve much popularity for animal housing, but fieldwork did document at least one storage building in the survey area.

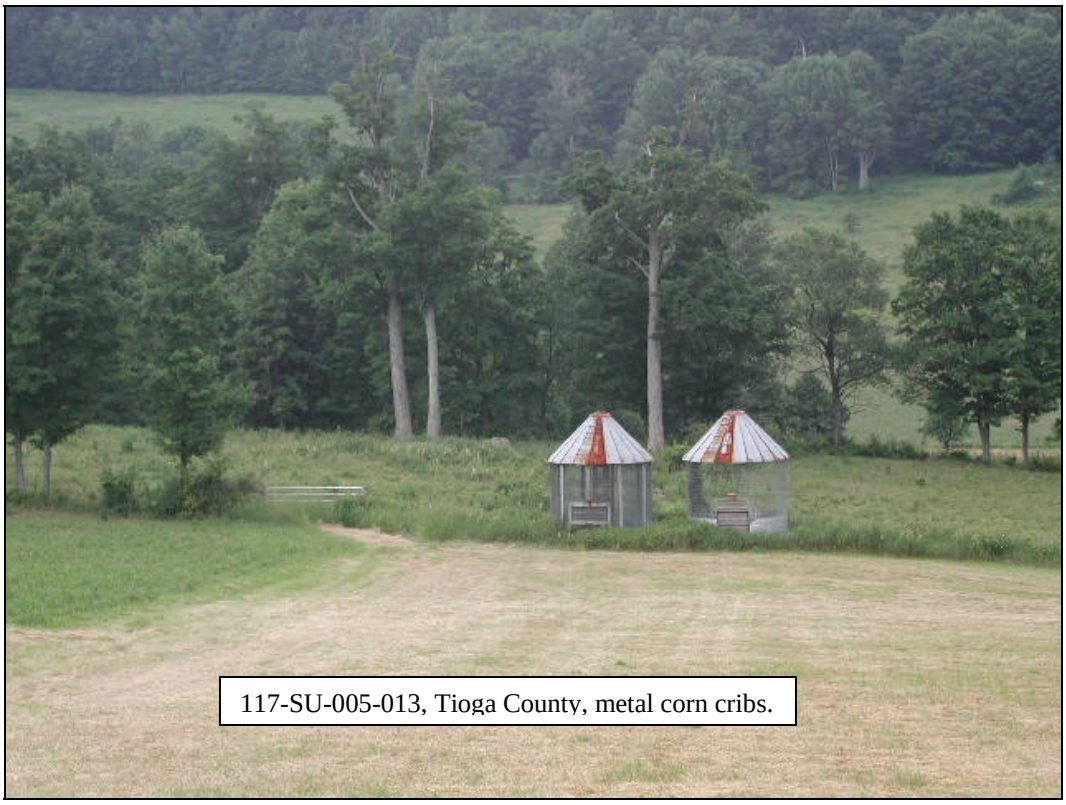
[78] These machines were mentioned in the Simmons, Charles Shaffer, *Soil Survey of Wayne County, Pennsylvania* (Washington, D.C.: The Service, 1938), 10.
[79] H. B. Josephson, et al, "A Farm Machinery Survey of Selected Districts in Pennsylvania," Pennsylvania Agricultural Experiment Station Bulletin #237, 1929.
[80] "Pole-Type Buildings … From STEEL," *Farm Journal*, October 1957. See also "New Frameless Building," *Farm Journal*, April 1959: 76.

015-BU-001-008, Quonset Hut, Bradford County, Burlington Twp, no date

117-SU-006-08. Machine shed from s, Tioga County.

Corncrib, 1900-1960

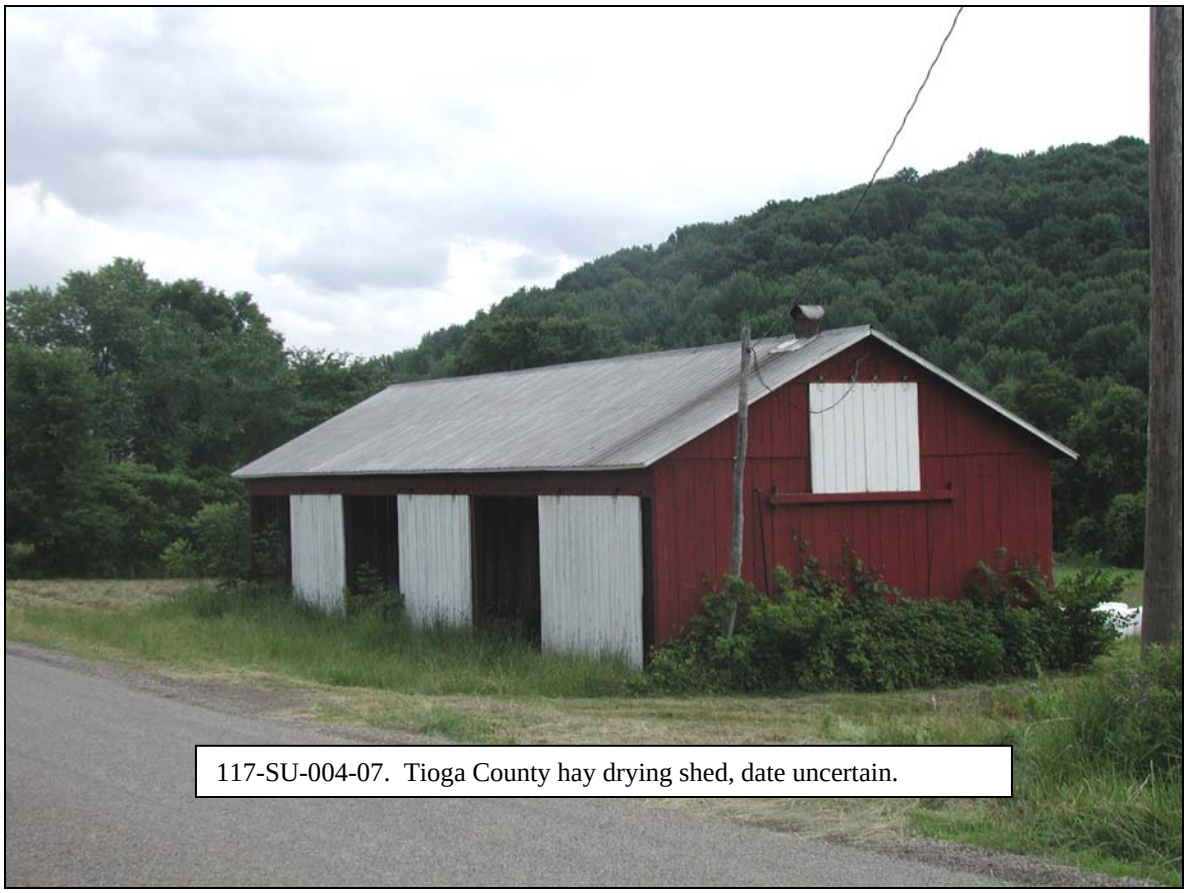
The corncrib continued to be a minor outbuilding on the Northern Tier farm. Wooden corncribs are difficult to date due to their generic appearance. Cylindrical metal corncribs date from the mid-twentieth century onward.



117-SU-005-013, Tioga County, metal corn cribs.

Hay Drying Shed, 1900-1960

A few surveyed properties had hay drying sheds. These gable-end rectangular structures contain large doors for each bay, along both eaves sides. These bays accommodated hay wagons and drying equipment.[81] These buildings may post-date 1960, but the type existed before then.



117-SU-004-07. Tioga County hay drying shed, date uncertain.

[81] For illustration, *Farm Journal*, July 1957.

Landscape Features, 1900-1960

Farm Layout

Geographer Glenn Trewartha's study, 1948, found that a third of farms in the New York-Boston fluid milk area were divided by a highway -- more than in any of the regions he examined. Conversely, it was atypical for the farmstead to be set back from the highway, and the most common setup was for the farmstead to front on the highway. Field observation in 2004 confirmed this as a very common arrangement.

015-BU-001. This shows nicely an example of a farmstead divided by a road. Bradford County.

Orchard

Most farms had orchards, especially apple orchards. They commonly were sited near the house. The photo below shows apple trees in the yard.

015-ST-001-18. Orchard remnant on the house side of the road, looking SW, Bradford County.

117-MO-001-30. Old apples lining field land looking S. Tioga County.

Contour Plowing and Strip Cropping

Contour plowing arranges furrows along contours of slopes, thus reducing runoff. The Farm Journal in August 1935[82] defined strip cropping as "a form of contour farming in which strips of densely-growing, erosion-resistant crops, such as alfalfa, lespedeza, sweet clover, Sudan grass, timothy, and the small grains, are alternated across the slope with strips of cultivated row crops. The strips of erosion-resistant crops check the speed of the runoff, filter out the soil being carried by the water, and cause the land to absorb moisture." The article also noted that strips demanded less labor than square fields and "permit more efficient use of machinery." They also fit well with terraces.

This resulted in longer narrower fields, and destruction of some fencelines. The extension reports for the Northern Tier do not mention this often; in fact, the Susquehanna County agent argued that grassland kept erosion down and so contour plowing was not as important in the Northern Tier as elsewhere. There is some corroborating evidence for this observation in aerial photographs. For example, compare the 1990s aerial photo of the F. X. Homet farm in Bradford County to the 1938 aerial, see below. While fields do seem to have been consolidated, few fields are strip cropped, and many treelines remain.

[82] "Crazy Patch Fields," by Ivy M. Howard, *Farm Journal*, August 1935, 26.

Penn Pilot 1938 aerial accessed 6/21/06, 015-AS-001, FX Homet farm Bradford County

However, in Potter County there were some examples found during fieldwork. It is not clear, though, what their dates are.

Farm Ponds

There is ample documentation for ponds in the Northern Tier in the post World War II period. In 1948 the agricultural extension agent reported that hundreds of ponds have been built "in some communities six or more farm ponds can be seen within sighting distance from one point."[83]

117-DE-005-05. Pond looking W-SW. Tioga County. Not dated, but probably post World War II period.

[83] Potter County Agricultural Extension Agent's Report 1948, 24.

015-LI-001. Bradford County.

Roadside Treelines
In the Northern Tier, the ornamental front-yard treeline is presently a popular landscape element.

Wire Fencing
In general, woven wire replaced barbed wire in the twentieth century. As cattle more commonly were confined closer to the barn, it is possible that fencing became less important.

015-BU-001.

Ornamental Plantings

These would include trees, shrubs, flowering plants, etc. Below see a good example of a farmhouse "guarded" by "sentinel trees."

117-DE-003-07. Farmhouse landscape sentinel trees looking W, Tioga County.

Stone Fences

Stone fences remained here and there, though in recent times they have been "mined" and little is left.

117-DE-004-29. Stone wall-diversion ditches looking NW, Tioga County

Pasture
Pasture was still common in the Northern Tier. Above is a good example of pastureland defined by treelines and stone fences (117-MO-001-32, Tioga County).

117-MO-001-34. Stones in field treeline looking S, Tioga County.

Farm lane remnant, 015-TR-002, Bradford County.

Farm Lanes
Farm lanes linked one farm to another. Traces of them can be found.

Woodlot
The farm woodlot remained an important source of fuel and sometimes also of income through lumbering. The photo below shows several woodlots.

View near Canton, 1936, Farm Security Administration photo. Photo by Paul Carter. Digital ID fsa 8c51736, Library of Congress.

Potter County, 1920s, Honeoye area of Sharon Township, Potter County, showing the Elliott farm and their neighbors, the Genany's farm, Drake farm, and Phoenix farm. http://www.eg.bucknell.edu/~hyde/potter/Honeoye.JPG, accessed 7/11/06.

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