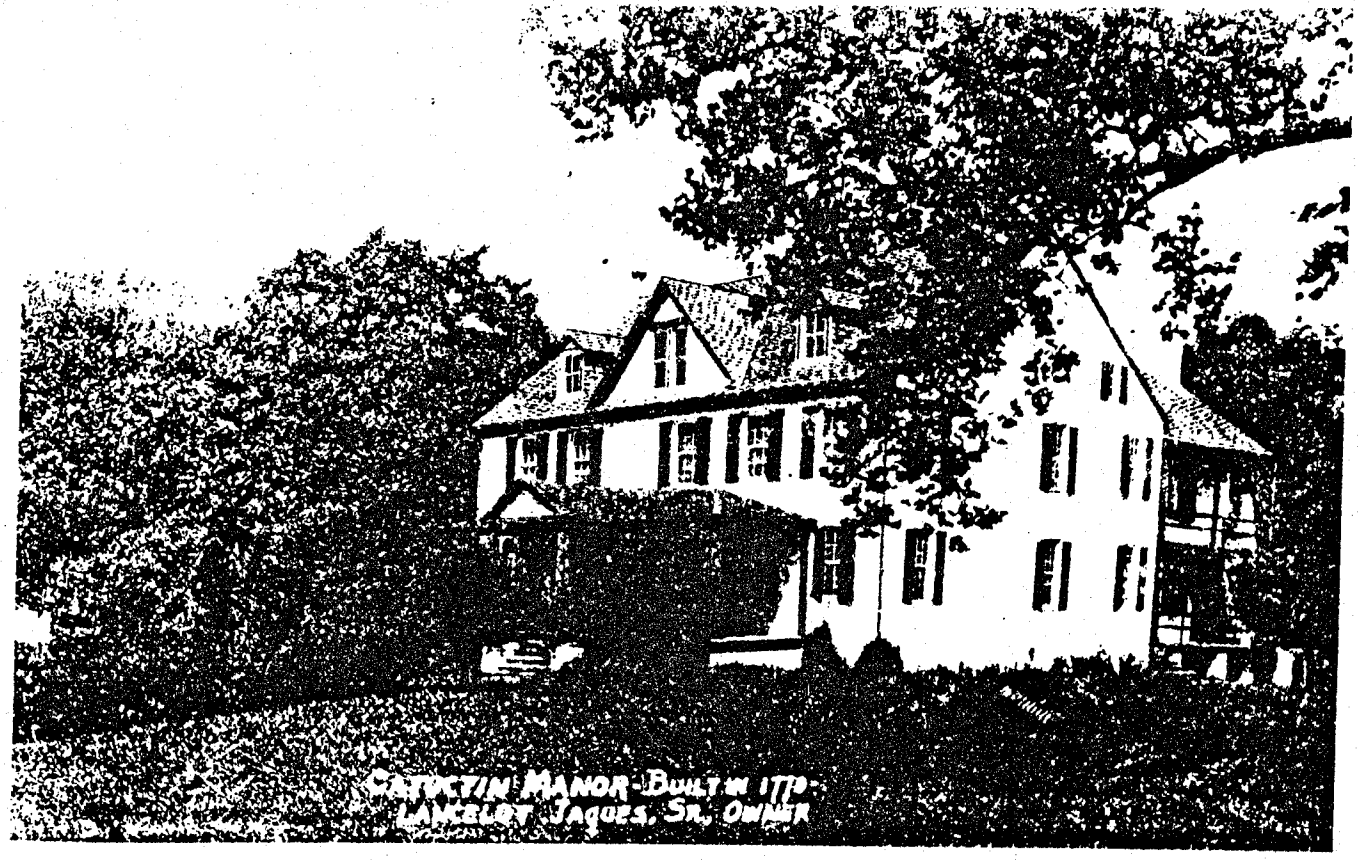
CATOCTIN FURNACE IRON MASTERS HOUSE

A CULTURAL ANALYSIS OF THE STRUCTURE:

AN IDEAL EXPRESSED



By Douglass C. Reed

Frontispiece: South and east elevations of the Catoctin Furnace Iron Master's House.

Courtesy of William Renner

ca. 1937 photograph of the house in the last year the house was occupied. The three bays on the right side are from the 18th century section while the two on the left are from the 19th century section of the house.

CATOCTIN FURNACE IRON MASTER'S HOUSE

A Cultural Analysis of the Structure:

An Ideal Expressed

A Report Prepared For:

Professor John Vlach
Folklife Studies
American Studies Program
George Washington University

By:

Douglass C. Reed

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The production of ideas, of conceptions, of consciousness and the mental intercourse of men is directly related to their material behavior. What men are, they express through their material activity. Men are the producers of their conceptions and ideas and it is particularly evident in their architecture.

Individuals record their lives by the ideas or the material forms of those ideas that they leave behind. In vernacular architecture those ideas are expressed and recorded by the forms that were considered most appropriate for a particular architectural age. Forms were selected mostly on the basis of changing social attitudes and economic conditions and the resulting architecture was a product of men's concepts and ideas and therefore of what they were and what they thought.

Architecture as a repository of past thought revealing far more than stylistic history is invaluable as a research tool for the folklife scholar. A visual cultural record of men long since gone can still be read in their architecture as a statement of social change.

There are many reasons why architecture is an excellant resource for the student of folklife not the least of which is that it deals with complex objects that can be examined inside and out. Structures are generally stationary allowing them to be studied in the context of the landscape original to the building and the builder. Structures are stable in time, the ideas expressed in the building are those of a particular age and reason. Structures tend to be permanent in nature, their longevity holding the record of past culture locked within the walls as long as the walls remain and the space defined. Structures are obviously present

on the landscape which aids in observation and research. Finally, the universal nature of housing as shelter facilitates comparisons with different locales and regions.

A house is a prothetic expression by a builder/owner of architectural space fixed as spacial symbolism manifested at the time of construction. The plan of the house expresses the basic spatial priorities. The walls are permanently stationed defining space.

Beyond the physical aspects of the house, architecture can tell much about the culture of the people who built it. Architecture is the expression of an idea as much as it is an arctifact. A house can be an indicator of behavior, for people have choices and they will often choose because of a cultural consideration rather than a practical one. Stucco can be explained as a technically practical covering for a building, but it also expresses a cultural statement.

The more refined the exterior of a building, the more expressive was the statement to the community. It was one thing to have a stone house, it was quite another to stucco over the rough stone and strike the stucco with a set of lines that made the house appear as though it was built from perfectly cut, uniform size blocks.

Because of the seemingly infinite range of variations within vernacular architecture, the student is often want to explain all the changes. Recently, scholars have turned their attention to the challenges of deciphering how an idea becomes manifest in architecture or, as Dell Upton puts it,"of how architecture is thought.[1]

A growing awareness within the scholarship of folklife research concerns the recognition that people are capable of conceiving of

material culture in their minds as well as on paper and later of manifesting it in the material form. This recognition is based on a belief that material culture is expressed through some sort of a learned grammer or a structured set of rules by which the act of creating a material form captures an ideal.[2]

The tremendous range of variation within vernacular architecture can still be sorted into a relatively small number of groups or types. This is possible because the folk builder is working from a set of rules that constitute the architectural grammer culturally learned.

Several scholars now believe that by studying artifacts and deducing their cultural meanings, a structured language governing the creation of the material objects can be learned. Further, that like any structured language, the grammer for the material culture will have internal structure and meaning and that the codes as defined within the grammer will allow for the variations within the normal patterns that are culturally acceptable.[3]

The following is an attempt to analyze the ideal as recorded in the remaining ruins of the Catoctin Furnace Iron Master's House. The examination will pursue the thoughts and the message that the owners wished to convey through their architecture.

Thus, the examination of the Iron Master's House will go beyond the physical description of the form and technology of the structure and look at the house and the site as part of a larger system much the same as a planner looks at a community. Planners are concerned with whole systems, structural contexts, groups of people and the needs and uses of community as a concept. They are ultimately concerned with humans and the human environment.

Folklife researchers have parallel intentions with planners

except that they are interested in older systems and cultures. Both folklife researchers and planners deal with the three dimentional: objects and houses; the two dimentional: garden, site, land; and, with connectors: railroads, dividers, fences and roads.

The following analysis of the Iron Master's House should not be misconstrued as the end result of a complete and indepth documentary research effort, for it is not. Only a minimal amount of research was done to establish the most pertinent facts of ownership and dates of transfer. Rather, this effort is the by-product of the analysis of the physical remains of the house, the site and its relationship to the furnace complex.

The Catoctin Furnace Iron Master's House is located in the village of Catoctin Furnace three miles south of Thurmont in Frederick County, Maryland. The Catoctin Furnace was built about 1774 by four brothers of the Johnson family, a prominent family in the State of Maryland. Thomas Johnson eventually became governor of Maryland, Baker Johnson was a proprietary lawyer later establishing a private practice in Frederick County. Roger was the first resident iron master and James was a builder concentrating mainly on the construction of iron furnaces.[4]

In 1793, the four brothers dissolved their company and Thomas and Baker Johnson bought out the shares of their two brothers.[5] The physical evidence on the site indicates that the Iron Master's House was built close to the time of the 1793 reorganization of the Johnson family business.

The Initial Performance

The original section of the Iron Master's House was a stone, two story building with a finished attic. It was a three bay house with a side hall, double parlor plan. The main block of the house

measured tweny eight feet across the front by thirty six feet wide. There was a one story stone ell attached to the north side that probably served as a dining room.

The entire house was initially covered with a pale yellow, ocher colored stucco struck with a pattern resembling long rectilinear blocks. The windows were large with nine over nine pane sash. The double bevel oak shingles were supported by a hefty principal rafter framing system.

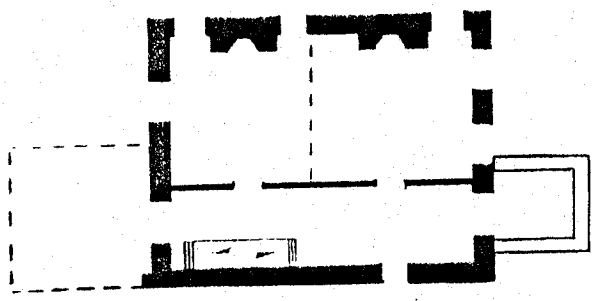
The first and second floors were entirely finished with wood trim, six paneled doors, plastered walls and ceilings and high breasted mantel pieces. The basement had rough cast coated walls and a partial wooden floor and was a full eight feet in height. The doors were of the board and batten type.

The two rooms in the attic were also finished with wood trim matching the simplicity of the trim used in the basement. The walls were plastered and the doors were also of the board and batten style.

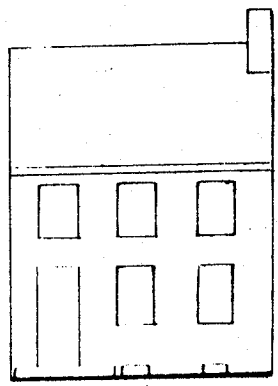
Upon its completion, the Iron Master's House embodied the ordered conception that Glassie and Deetz have termed the Goergian Mind Set. This was a mental ordering of twos and threes capable of manifestation into material form and expressed in the initial construction of the three bay facade. The main entrance was located in the westernmost bay while the two eastern window bays shed light into the south parlor.

At the time of the construction of the Iron Master's House, the three bay, side hall, double parlor plan was the norm, but the size, quality of construction and the stylistic features would have placed it well above the average house of the region. Though this house was not stylistically innovative, it did express status.

18th Century House



FIRST FLOOR PLAN



SOUTH ELEVATION

The Johnson brothers were all well known and industious men. Although they resided in Frederick County, they were born in Anne Arundel County and were well aquainted with Annapolis. The Catoctin Furnace that they founded and operated was profitable. It was considered an important foundary. The Johnson's Furnace received many large contracts for casting cannon, shells, iron pots, etc. for use by the Continental Army during the Revolution.[6] No doubt, the Johnson's brothers familiarity in Annapolis aided them in receiving some of these contracts.

Another important factor that helped to shape the image of the Iron Master's House was the fact that Frederick County was the industrial center of the State of Maryland during the Revolution and remained as such for the rest of the century.[7]

With the prominence of the Johnson family well known and the importance of Catoctin Furnace established and growing, they erected an edifice that clearly articulated their position in the community and the world. The house was large and commodius with nicely appointed rooms. It stood crisp, clean and conceptually organized amid the activity of the industrial complex. The Johnson's understood that architecture "teaches" and that it can help "refine human feeling and perception."[8] Perhaps they felt that the Iron Master's House by standing in stark contrast to the furnace and the nearby worker's housing would be an uplifting appeal to the workers exhorting them to work harder and be frugal.

The positioning of the house in relation to the ore pits, the industrial complex and the main road certainly served a functional convenience. Yet, the proxemics of the house (representing the final authority) to the industrial complex and the outside world reveals a clear social order.

Functionally, the house is at the symbolic center of the furnace. The ore pits and the charcoal hearths were to the north and west, the furnace, support buildings, the worker's housing to the south, and, the "great thoroughfare"[9] leading from Frederick City to Harrisburg bordered the house on the east. The administration of the furnace was facilitated by the location of the house. Also the visitors arriving at the furnace could be received directly off the main road without forcing the traveler to cross the complex.

More important than the functional location of the house was its social location expressing a strong cultural statement. The large house was positioned on a hill gently rising in a northerly direction north of the furnace. The house faced south presenting its clean formal facade and landscaped lawns directly to the furnace complex less than one hundred yards away. With the house slightly above and facing the furnace and the village, it was visible by all those who lived and worked in the village below. The house was north, higher, large, organized in formal appearance and clean sending out a symbolic message of authority, dominance, ownership and leadership. The power resided within the man made space on the hill. Its highly visible position was a constant reminder to those who worked below.

The Johnson's, particularly Thomas the politician and Baker the lawyer, understood the importance of community impressions. The house reveals this awareness of social impressions and status by its positioning above the main road so that all approaching visitors and travelers coming to or passing by the furnace could not mistake the seat of power. As a visitor came up through the village with small stone and log houses lining both sides of the

road and glanced up over the industrial area, the Iron Master's House certainly would have stood out in contrast to the bustling and dirty complex before it.

Architectural space articulates a social order as described above in the macrocosm of the relationship between the village, furnace and the house. However, a readily identifiable social order was culturally recorded in the spatial relationships within the house and on the immediate grounds surrounding the house.

The iron master (who was also often the owner) and his family resided in the house, but the prominence and position of the iron master dictated that he have ample space for business and entertaining purposes as well as a large support staff to serve his needs and those of his family and guests. The Johnsons were aware of these different needs that had to be accommodated within the house and planned accordingly. In fact, even though the house was to more than double in size after their tenure of ownership had ended, the Johnsons had so successfully conceived and manifested the cultural division of space within the house, that it was retained by future owners who expanded the size of the house.

One of the divisions was between the master(private) and his guests(public). The master's main ceremonial space was the first floor. The side hall allowed controlled access to each room seperately as well as access via the stairs from the basement to the attic. The parlors were used for receiving the guests as well as for offices while the one room in the ell entered through a door at the north end of the hall was a dining room. The first floor was trimmed with the most elegant molding to be found in the house. Each room had its own fireplace.

The second floor had two bedrooms. The master claimed the south bedroom for his use. The second floor was also nicely molded and finished and each room had its own fireplace. Whenever guests were accommodated overnight, the children were probably required to move to the third floor so the guests could stay in the north bedroom. The attic had two additional rooms that were completely finished, but with only the simplest of moldings and doors revealing that the third floor rooms were not meant for the public. These rooms were used by the youngest children of the family and for storage.

The division between the public and the private space was symbolized through the subtleties of the finishes. The moldings, doors, paints and papers used on the main floor were more expensive (expressive) than those of the second and subsequently the third floors.

The most obvious division of space was between the master and the servant. The service area within the house was located exclusively in the basement. There was a basement under the entire house. There were three rooms under the main house. The southern half of the basement was one room with a dirt floor and iron bar grilles in the two windows. There was one door in the west wall leading to the exterior west service area.

There were two rooms occupying roughly equal space in the northern half of the basement. The east room had one window and a dirt floor. The west room contained the stairs leading to the first floor hall and had a wooden floor on joists that were laid directly on the ground. None of the basement rooms had plastered ceilings.

The kitchen for the house was located under the dining room in the basement of the north stone ell. Since this addition was almost

totally demolished during a later expansion of the building, little remains to describe. However, the southern door jamb of what was once a door leading from the kitchen to the west service area yet remains indicating that there were at least two points of entry to the basement. As was a customary practice for the time, much of the food preparation for canning and winter storage was done outside of the building. There were also other ancillary activities necessary to maintain the comfort level of the master and his family and all those activities required space. The Johnson's cleverly provided the requisite area, but in such a way that the space and activities did not adversely impact on the visual statement of the house when viewed from the south and east sides.

The house was built into a gently sloping hill that was artificially altered to provide two levels of entrance into the structure. The main formal facades of the south and east walls rose above the ground from just below the first floor level. The ground level was low enough to allow light through the basement windows.

The ground level was lowered by several feet on the north and west sides to provide direct access into the basement and a large stone paved work/service area. At the intersection of the upper south and east and lower west and north levels, there were stone walls approximately three feet high retaining the upper and enclosing the lower level.

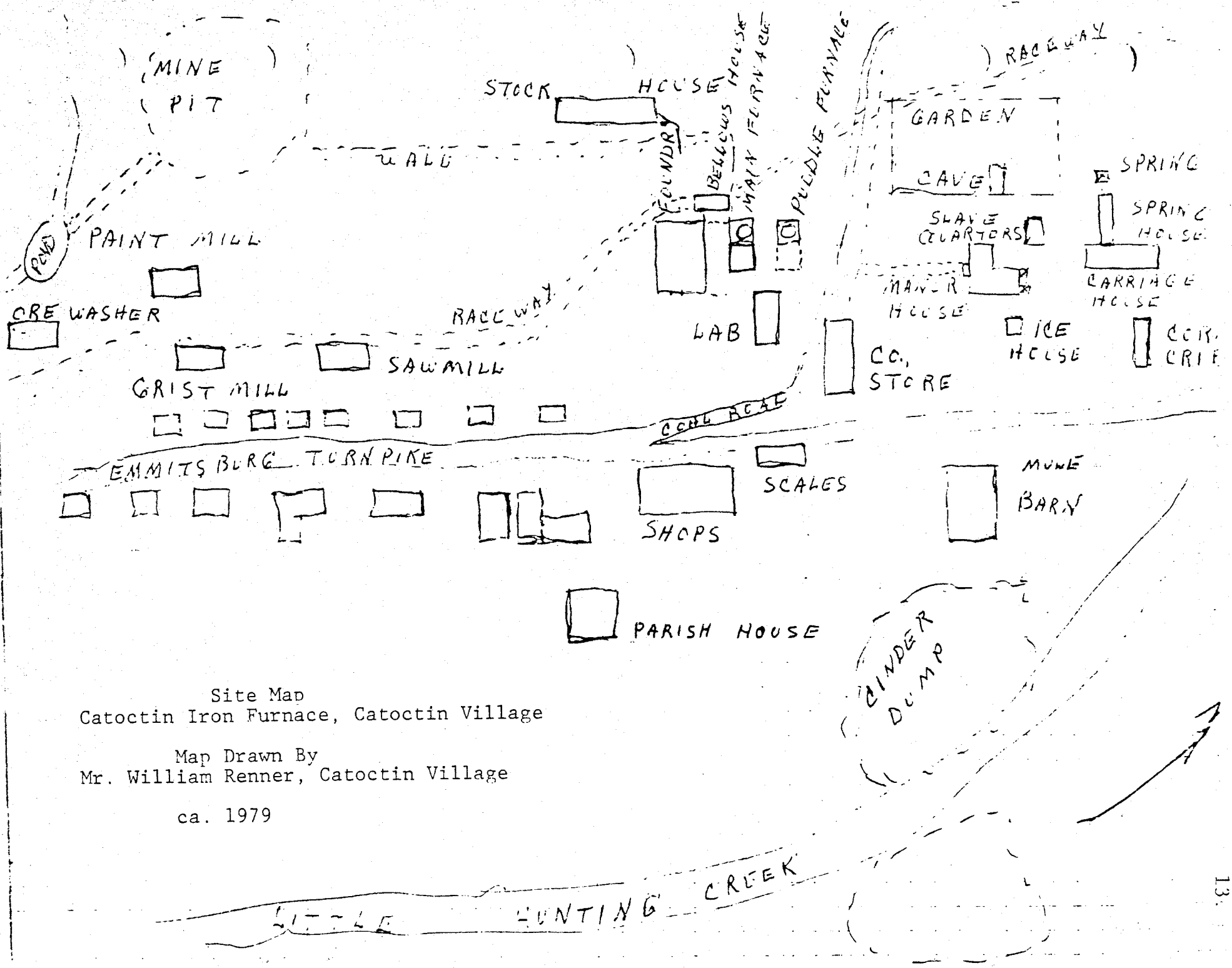
The west service area was bordered on the west by another stone retaining wall that intersected the south retaining wall. Located in the face of the west stone wall was the entrance that descended a few feet into a stone arched vault which was used as a food storage cave. To the west of the wall and above the level of the cave was a large garden area where food used in the master's

house was grown. West of the garden was the race that brought fresh spring fed mountain water down to the furnace to power, among other things, the bellows and the sawmill. Since the house was above the furnace, some of the water was drawn for use in the garden.

To the north of the work/service area were a number of support structures. Two reportedly were housing for the servants, one was a spring house, and another was a corn crib. There were other smaller outbuildings along with a stable.[10]

There was road access to both levels.[11] A short distance north of the house was a lane that intersected the main highway. The lane gently curved toward the house in a southwesterly direction passing two of the stables and a corn crib. At a point several yards north of the house the lane split. The west fork continued on the same level to the lower west service area for access to deliver supplies. The east fork gently rose and turned south ascending to the east side of the house. Once on the upper ground level, guests alighted and entered the house. There were only two small buildings located on the upper level and both were several yards east of the house. One, of course, was the privy. The other was the semi-subterranean ice house. The ice house was covered by a log structure over a stone lined hole in the ground where the ice was stored.

The arrangement of the house with respect to its formal space versus its service areas is indicative of a great deal of thought on the part of the Johnsons. They skillfully provided for all the necessary functions of a large industrial owner's household and ceremonial space and at the same time achieved not only the proper social seperation, but a visual division as well. None of the support buildings, work/service areas or activities could be ob-



Site Map
Catoctin Iron Furnace, Catoctin Village

Map Drawn By
Mr. William Renner, Catoctin Village

ca. 1979

served south or east of the house. The commanding position of the house both in fact and culturally was not compromised for an approaching traveler or visitor on the main road below.

The Johnsons exercised additional control and dominance over their workers by placing the company store that supplied provisions to all who worked at the furnace just to the south east of the house by the main road. This meant that all who traded at the store had to approach it as well as the house that was above and behind it. The store's location also provided a close proximity between the operation of the store and the iron master.

As the fortunes of the Johnsons and the furnace rose, so did the prestige of the owners. Thomas had little to do with the furnace because of his political activities. In 1801 Baker built a new mansion for himself about one half mile west of the furnace. In 1803, he bought out his brother Thomas and became sole owner.

Shortly after this, Baker died and the furnace went through a succession of leases and new owners with the subsequent iron masters continuing to reside in the house. In 1820, the furnace was purchased by John Brien, "who vastly improved the property."[12] The physical evidence uncovered during the historical archaeological investigation clearly supports an 1820's expansion of the Iron Master's House by John Brien.

The Second Performance

John Brien died in 1834 and left behind an estate worth well over $130,000.00. Indicative of his wealth and the prosperous furnace that he owned, Brien more than doubled the size of the 1790s Iron Master's House.

Brien completed the symmetrical mental construct of the formal

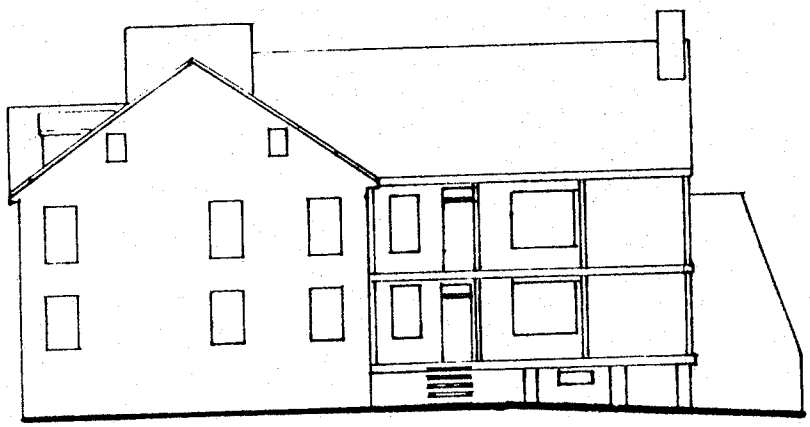
facade and floor plan by adding a twenty two foot addition to the west side of the main house. This was a two bay addition that transformed the side hall into a central passage. Brien moved the original front door west about fourteen inches to place it closer to a central position between the two sets of windows. To unify the front better, he replaced all the south elevation 18th century windows with new six over six sash that were the same size as the new 1820's sash.

The original one bay front porch was torn down and rebuilt to cover the three central bays across the expanded fifty foot front wall. After all the work to the house was completed, the entire exterior was stuccoed covering the new stone work of the addition as well as the older stucco of the initial house. The new layer of stucco was smoother, struck with a more delicate line into a rectilinear block pattern with the blocks measuring about one foot by three feet long.

The west addition contained an additional eight rooms, two rooms on each of four floors. There was a large cooking fireplace in the northwest room with a smaller auxillary cooking fireplace in the southwest room in the basement. The dirt floors were covered with wood laid directly on the ground. The walls and ceilings were plastered and the cavities between the joists were filled with brick and mud for insulation purposes.

The first floor rooms became the new formal parlors, elegantly finished with large double doors that when opened created one large space. The moldings were elaborate and the windows had recessed areas below the sills that were lined with oval reliefed panels. The two bedrooms above were also nicely finished although not as extravagantly as the first floor. The third floor rooms

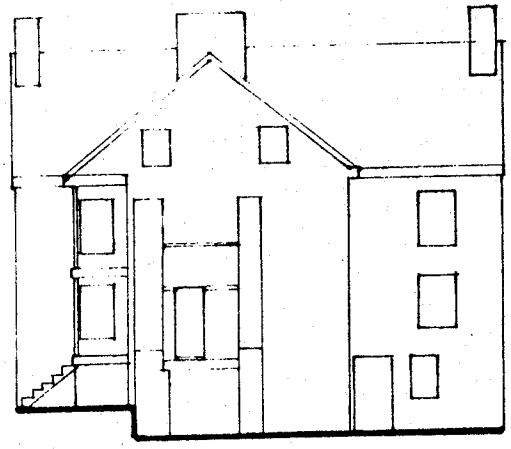
ELEVATIONS



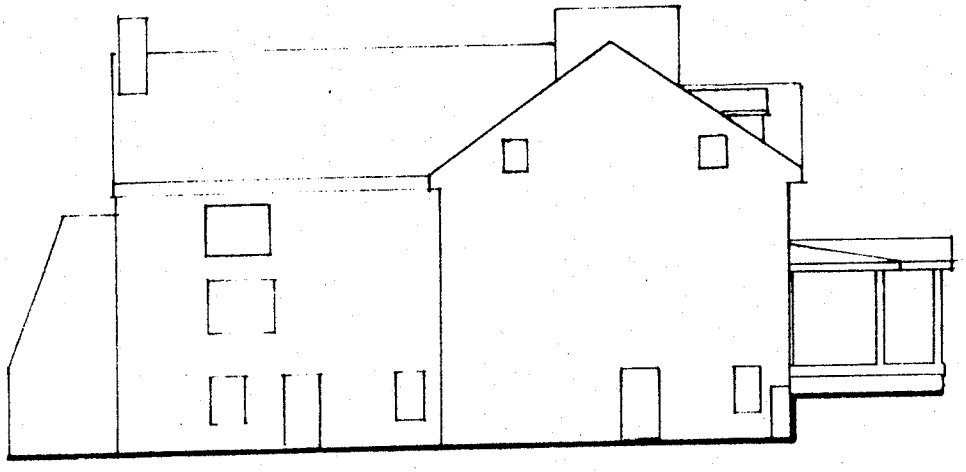
EAST ELEVATION

NORTH ELEVATION

ELEVATIONS

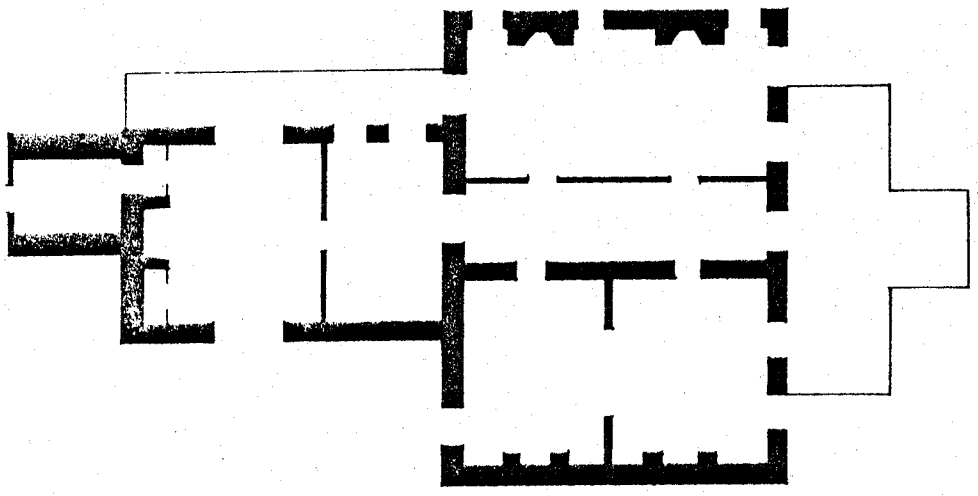


NORTH ELEVATION

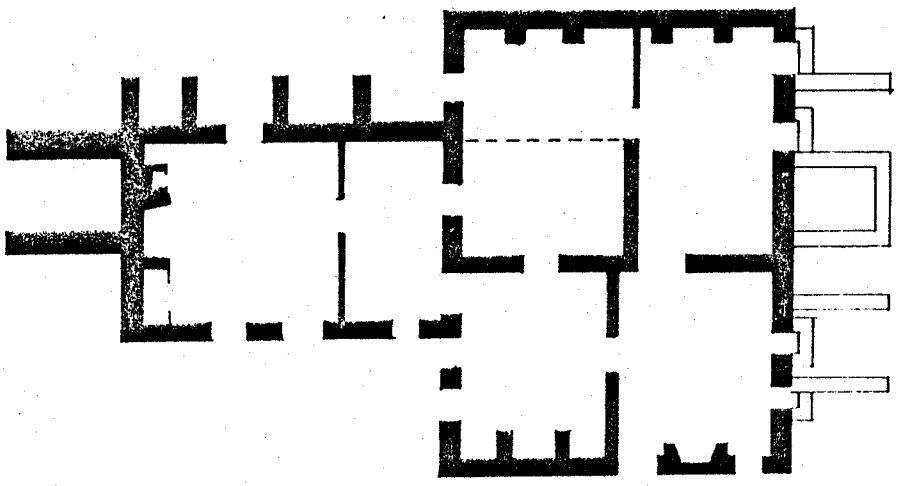


WEST ELEVATION

PLANS

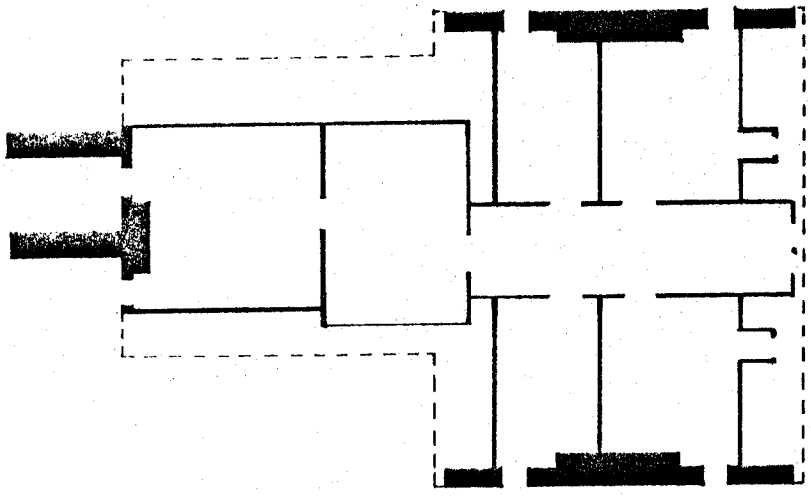


FIRST FLOOR PLANS

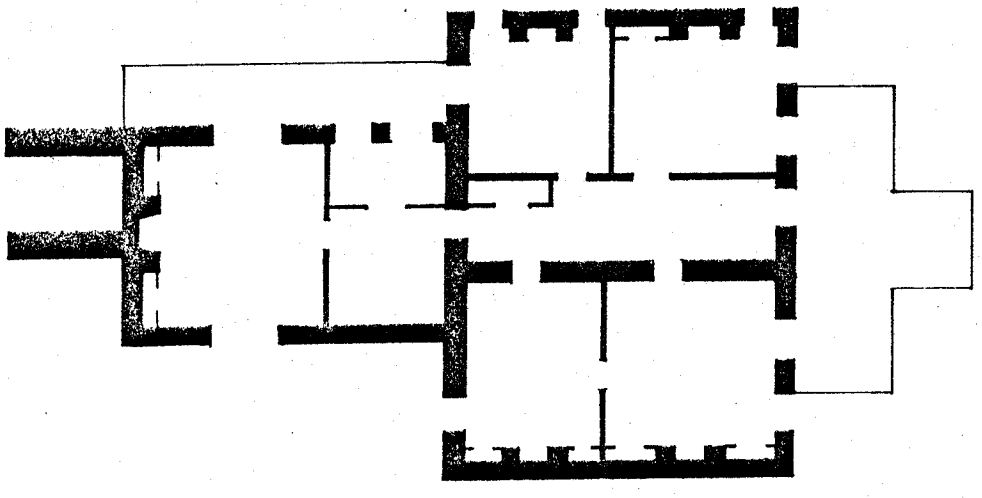


BASEMENT PLANS

PLANS



ATTIC FLOOR PLANS



SECOND FLOOR PLANS

were the same as the other two third floor rooms of the original house. They were finished with the simplest moldings and board and batten doors.

As soon as the west addition was completed, the cooking operations moved into the new basement kitchen and the original one story north stone ell was demolished. Over its foundations was raised a larger twenty three foot by thiry two foot addition. The north addition encompassed a full length, two story porch along the east side. A new main stairs was built into a cross passage that was ten feet wide across the southern end of the north addition. The new stairs also ran from the basement to the attic.

The basement room north of the stair hall became the final kitchen. Into the north wall was built a double flue cooking fireplace with a large brick hearth. Later an oven was added. This became the permanent kitchen with the other two cooking fireplaces built into the west addition continuing in use as auxillary cooking stations.

The first floor dining room was elegant. The woodwork was all nicely molded with matched flanking closets on either side of the central fireplace in the north wall. There were two very unusual windows, one each in the east and west walls of the dining room opposing each other. They were tripartite units composed of two narrow two pane over two pane sash flanking a standard size six over six pane sash. These window units were unusual in the region and expressed an innovativeness and a willingness to try new things.

The bedroom on the second floor of the north addition was nicely finished again with the two closets flanking the fireplace. This room also had the two tripartite windows which were directly

above those on the first floor.

The third floor or attic rooms were modestly finished repeating the same style as the rest of the third floor. It was completely plastered, but trimmed with the simplest of moldings.

The original house also received some renovations to bring that part of the house into a continuity of design and style with the new additions. The original staircase was removed from the hall and the floors and ceilings patched. New moldings to match those of the additions replaced the original moldings in the hall. New first floor doors to match those of the addition replaced the earlier front door and the two parlor doors. The older first floor doors may have been moved to the third floor for use there as would have been the customary practice of the day.

The two original parlors were also modified. The partition that separated them was removed and the two fireplaces were remodeled into matching fireplaces with new mantels, firebox linings and new plaster jambs and headers. The plaster work on the jambs and headers was red in color and struck to resemble brick. This was a most unusual decorative motif for the area.

With the completion of the renovation, Brien had achieved a symmetrically formal facade. His statement embodied all the stylistic features then in polularity, but it also expanded his conceptual control over the furnace, the workers and the world at large. He had completely transformed the original house into a much larger and stylistically updated dwelling, yet he had not altered the cultural divisions of space between master, family, guest and servant. The facilities were only larger and simply made an updated and expanded version of the same statement the Johnsons had achieved with the original architectural expression.

John Brien perhaps did make a larger statement, one that showed he was in the mainstream of the country. The nation was going through a period of tremendous national growth both through expansion of its frontiers and of its industrial capacity. Brien was very much a part of that expansion, for he improved the existing furnace works and expanded its industrial capacity.

The additions and renovations Brien performed on the Iron Master's House indicated his alliance with the national trend of expansionism. The changes to the house placed additional meaning to the continuing statement of power, dominance and control the house had always made over the furnace and to the world.

The furnace continued in operation until the turn of the 20th century. One of the later periods of ownership and productivity was during the time of a John B. Kunkel. He was connected with the furnace from 1858 to 1866 in partnership with his brother. John Kunkel became sole owner in 1866 and remained in control until 1888.

Kunkel continued in the tradition of expanding and modernizing the furnace by building a third furnace with the latest technology. However, he did little to the house. It is believed that during his ownership, two buttresses were added to stabilize the north wall of the north addition. The foundation of the north addition had failed and needed support. These buttresses were entirely functional, leaving behind no apparent cultural statement. Kunkel did live in and utilize the house to good advantage allowing it to make the same statement for him as it did for previous owners. It is reported that Kunkel "dispenses a genial hospitality," no doubt one that

must have been memorable for the impressiveness of the dwelling.

Beyond the Kunkel ownership the house had a myriad of small changes and overlays that maintained contemporary styles and technological features, but that never really changed the house. A large cross gable was added to the third floor, flanked by two small dormers. The three bay front porch was enlarged to cover most of the front of the house. To it was added a set of stairs protected by a projecting pedimented gable roof.

An early internal plumbing system was added late in the 19th century. A mechanical water ram was placed in the race above the house to the west. The ram pushed water through a series of pipes to two basement kitchen rooms and up to a third floor water storage tank. Water from the tank then by gravity flow went to a second floor bath for the purposes of bathing.

Early in the 20th century electricity was installed in the house along with a bell ringing system for summoning servants. A dumbwaiter was built into the northwest closet of the dining room to allow prepared foods to be raised from the basement kitchen. Through the opposite closet in the dining room was cut a passageway that led to a small storage room that was built between the two north wall buttresses.

Numerous as these changes were, they were for the most part not outside the cultural norm. Other people built cross gables and had plumbing and electricity installed in their homes, but because of the position, prominance and relative wealth of the occupants of the Iron Master's House, these additions and alterations were probably in the tasteful forefront of stylistic

change. This was one cultural means of maintaining the image of leadership by improving the house with the latest features.

In some cases the innovative features such as John Brien's tripartite windows and red plaster struck to resemble brick around the two parlor fireplaces may have been changes that bordered on violation of the set of rules established as the normal limits on variational schemes in the regional architecture. The two features mentioned were not in wide use in the region and apparently never were. There are no other examples known to exist in Frederick County, though a few other people may have tried building them into their houses.

The Catoctin Furnace Iron Master's House in its initial construction made a complete statement that incorporated a large range of conceptual choices and awareness. These options were transformed into material reality and express the Johnson ideal of dwelling in relation to seat of power over an industrial complex.

The subsequent expansion and alteration by John Brien and other owners who followed him only reinforced the Johnson ideal. Though the structure was once drastically altered, and later had many lesser alterations over a broad period of time, the original ideal was never really changed.

The initial act of creation and following articulation of stylistic change was recorded in the physical remains of the house. However, much more than the floor plans and technology can be read, the entire fabric of the house is rent with the story of conceptual idealism manifest in material form. The Iron Master's House is a complete record of a broad range of cultural activity within and outside the house and of how social

roles were defined and controlled by the plan. Thus the house is a documentary memory of past thought and knowledge recording for future generations the cultural activity and expressed ideals through time.

Notes

1. Dell Upton, "Ordinary Buildings: A Bibliographical Essay On American Vernacular Architecture," American Studies International (Winter 1981):69.

2. Yi-Fu Tuan, Space and Place: The Perspective of Experience (Minneapolis: University of Minnesota Press, 1979), p.106.

3. Upton, "Ordinary Buildings," p.10.

4. J. Thomas Scharf, History of Western Maryland (Philadelphia: J.B. Lippencott, 1887; reprint ed., Baltimore: Regional Publishing Co., 1968), pp. 453-454.

5. Ibid, p.629.

6. Bernard C. Steiner, Western Maryland In The Revolution Series XX, No. 1 (Baltimore: The Johns Hopkins Press, January, 1902), p. 46.

7. Ibid, p. 47.

8. Tuan, Space and Place, p. 102.

9. Scharf, History of Western Maryland, p. 629.

10. William Renner, "Site Plan: Catoctin Furnace Iron Works," (unpublished ink drawing, ca. 1979).

11. The description of the road access is based on the remaining physical evidence as it applies to the 1820s renovated structure. It is assumed that there was similar access for the 18th century structure.

12. Scharf, History of Western Maryland, p. 629; and, William Renner, "How Catoctin Came About" (unpublished paper, ca. 1979), p. 15.

13. Scharf, History of Western Maryland, p. 630.

Bibliography

Renner, William. "How Catoctin Came About." Unpublished paper, ca. 1979.

Scharf, J. Thomas. History of Western Maryland. Philadelphia: J.B. Lippencott, 1887; reprint ed., Baltimore: Regional Publishing Co., 1968.

Steiner, Bernard C. Western Maryland In The Revolution Series XX, No. 1. Baltimore: The Johns Hopkins Press, January, 1902.

Tuan, Yi-Fu. Space and Place: The Perspective of Experience. Minneapolis: The University of Minnesota Press, 1979.

Upton, Dell. "Ordinary Buildings: A Bibliographical Essay On American Vernacular Architecture." American Studies International (Winter 1981):60-74.