APPENDIXES

HISTORIC STRUCTURE REPORT
Architectural Data Section

LINDENWALD
MARTIN VAN BUREN NATIONAL HISTORIC SITE
Kinderhook, New York

by
William W. Howell

U.S. Department of the Interior / National Park Service
# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A:</td>
<td>Historical Photographs</td>
<td>1</td>
</tr>
<tr>
<td>B:</td>
<td>Inspection Photographs</td>
<td>85</td>
</tr>
<tr>
<td>C:</td>
<td>Upjohn Specification</td>
<td>165</td>
</tr>
<tr>
<td>D:</td>
<td>Upjohn Plan Book</td>
<td>169</td>
</tr>
<tr>
<td>E:</td>
<td>Site Plan</td>
<td>173</td>
</tr>
<tr>
<td>F:</td>
<td>1938 Measured Drawings</td>
<td>175</td>
</tr>
<tr>
<td>G:</td>
<td>Evolution Sketches</td>
<td>179</td>
</tr>
<tr>
<td>H:</td>
<td>Proposed Work</td>
<td>231</td>
</tr>
<tr>
<td>I:</td>
<td>Smith Thompson Van Buren-Richard Upjohn</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Correspondence</td>
<td>261</td>
</tr>
<tr>
<td>J:</td>
<td>1977 Waite Report</td>
<td>277</td>
</tr>
<tr>
<td>K:</td>
<td>Paint Study Worksheets and Photographs</td>
<td>285</td>
</tr>
<tr>
<td>L:</td>
<td>Wallpaper Study Worksheets</td>
<td>287</td>
</tr>
<tr>
<td>M:</td>
<td>Coffin Handpainted Walls Study</td>
<td>309</td>
</tr>
<tr>
<td>N:</td>
<td>Man Labs Report</td>
<td>329</td>
</tr>
<tr>
<td>O:</td>
<td>Mortar and Plaster Samples</td>
<td>339</td>
</tr>
</tbody>
</table>
APPENDIX A: HISTORICAL PHOTOGRAPHS

Included in this group of historical photographs are four images of Lindenwald in other graphic media. This is not intended to be an exhaustive presentation of all the images of Lindenwald produced over the years. It is, rather, a selective presentation of the images that because of their clarity, point of view, or date provide the most information for this report.
HP1. Survey Map of Property
HP2. "Residence of Martin Van Buren." This print shows Lindenwald as it might have appeared prior to the ca. 1850 addition. According to Nan Rickey, the style of clothing shown indicates a date in the range ca. 1854 to ca. 1860. Obviously, an artist could have executed the work after ca. 1860 with the intent of representing an earlier time, but it could not have been done before ca. 1854. Therefore, the image of the house must be based on an earlier image and not a recent visit to the site. That earlier image may have been the same one from which HP3 was derived. There are certainly sufficient similarities between the two (especially the inaccuracies) to indicate such a relationship. The inaccuracies are discussed in section III of this report. A copy of this print was found at the Boston Athenaeum with the notation "Acquired at the A.S. Mason Sale, November 10, 1905."
HP3. "From a print about 1847." The caption suggests that this print is a derivative of an earlier one. The print shows a narrower view of Lindenwald, lacks the foreground figures, and is less clearly delineated than HP2. It may be derivative of HP2; however, given that HP2 does not predate ca. 1854, it seems more likely that both HP2 and HP3 are derived from another image. This print was found at Lindenwald by NPS staff, but there is no other information about its source. The 1847 date of the prototype is consistent with our documentary evidence that Lindenwald had wings prior to October 1843 which were demolished in order to build the ca. 1849 addition.
From a print about 1847
HP4. Ca. 1849 Watercolor Rendering of Lindenwald by Richard Upjohn and Co. The original is located at Avery Library, Columbia University.
HP5. Lindenwald, ca. 1890-1900. This photograph of the south and east sides is dated ca. 1890-1900 on the basis of recollections of the donor, Hazel Whitbeck, a long-time resident in the vicinity. The following details should be noted:

The chimney base and cap are a dark tone—either dark paint or unpainted brick.

There is a return at the south end of the south dormer sill box.

Boards cover the east balustrade on the tower.

The southeast corner of the foundation appears to have been repointed.

Lightning rods are present.

The brick flat arches over ca. 1797 windows are painted dark.

The roof covering on the ca. 1797 part of the house is wood shingles.

There is a bell pull knob on the south architrave of the front door.

The basement windows on the east side are the present size and are painted a light color.

There is no chimney over room II2.

Visible lawn furniture consists of a cast iron-bench, a rustic chair, a tripod trellis, and a hitching post.

The small tree in the foreground (directly in front of the trellis) is considerably smaller here than in HP6.
HP6. Lindenwald, ca. 1900. The date of this photograph is approximate because it is based on the growth of the small tree in the foreground compared to its size in HP5. The following details should be noted:

The dormer sill return is missing.

There is no tie rod on the porch.

Boards still cover the tower balustrade.

There is no chimney over room 112.

The south chimney seems to be painted to match the body of the house.

The brick flat arches over ca. 1797 windows are painted to match the surrounding brickwork.

Lightning rods are present.

A rustic chair on the front porch, a glider, and a hitching post constitute the visible items of lawn furniture. The tripod trellis seen in HP5 may be hidden behind the small tree in the foreground.

There is a row of small bushes or ferns along the cheek of the front porch (not present in HP5).

Basement window frames are painted a dark tone.
HP7. The Wagoners in Front of Lindenwald. This photograph probably predates 1917 because the subjects are Mr. and Mrs. Wagoner. Note the detail of the cast-iron bench and the expanse of lawn.
HP8. Lindenwald, ca. 1910-1917. This photograph is dated ca. 1910-1917 on the basis of the growth of the small foreground tree compared to HP6 and the presence of lightning rods compared to HP18. Note also the following details:

The foundation has been painted so that repointing at the southeast corner is no longer visible. The shutters, window frames, porch, and foundation are a dark tone. The bricks and cornice are painted a lighter tone.

The roof is wood shingle. Lightning rods are present.

A tie rod has been installed on the front porch.

Hydrangeas have been planted in front of the piers between windows 001 and 002 and between windows 005 and 006.

The tower balustrade is no longer covered by boards.

Lawn furniture consists of the cast-iron bench, the glider, flower pots, a new ladder-type trellis, and the hitching post, now with weathered paint.

Some of the bricks are loose in the flat arch over window 127.
HP9. Lindenwald, ca. 1910-1917. The assigned date is based on similarities with HP8. The following details are noteworthy:

The foundation, window frames, shutters, and front porch seem to be painted a dark tone. The bricks and cornice are painted a lighter tone.

Lightning rods are present.

There is a tie rod across the front porch.

Hydrangeas seem slightly larger than in HP8.

The cast-iron bench and flower pots are the only visible items of lawn furniture.

There are ferns planted along the north foundation wall.

Stone corbels can be seen in the northeast and northwest chimneys.

Five risers can be seen leading to the north porch.
HP10. Lindenwald, East Elevation, ca. 1913. This photograph is from the New York State Archives, glass plate number 82, negative number 10643. The glass plate is dated 1913. The print presented here is an enlargement of the central part of the glass plate. Landscape features visible on the glass plate, but not included in this print, are the farm office, partially visible at the extreme left (south) side, an adjacent fence, the hitching post, the glider, a cauldron (cast iron?) at the base of the south pine tree, another cast-iron bench near the south pine tree, an outbuilding northwest of the house, and an extensive lawn with trees and shrubs. Within the area of this print, the following details should be noted:

Lightning rods and conductors are present.

There is a tie rod on the front porch.

There are two rustic chairs on the porch and a cast-iron bench under the north pine tree.

The north hydrangea appears to be 6' to 7' tall and the south one 4' to 5' tall.

The foundation, window frames, shutters, and front porch seem to be painted a dark tone. Sash, bricks, and cornice appear to be painted a lighter tone.

The dark area at the base of the north foundation may be the ferns present in HP9.

The south dormer sill box is askew. The north end of the north dormer sill box is detached.

Sheet-metal gutters have been added to the level eaves of the south dormer.
HP11. Lindenwald, East Elevation, ca. 1913-1917. This date is based on similarities with HP10, the fact that the hydrangeas are slightly larger, the state of deterioration of the dormer sill boxes, the continued presence of lightning rods, and the wood shingle roof. The following details should be noted:

The foundation window frames, shutters, and front porch appear to be painted a darker tone. Sash, bricks, and cornice appear to be painted a lighter tone.

The tie rod seems to have been removed from the front porch. This statement cannot be made with certainty because of the deep shadow in that area.

The north hydrangea is 7' to 8' tall and the south one 4' to 5' tall. Two rustic chairs and a wicker rocker can be seen on the front porch. Two cast-iron benches are placed in the shade of the north and south pine trees. A row of potted plants lines a path or drive parallel to the front of the house. A cluster of similar potted plants is to the east of this line and on axis with the front door. What may be a cast-iron cauldron appears in the left foreground under the south pine tree.

There is a rainwater diverter at the east end of the north gable capping board.
HP12. Mrs. Bascom Birney at Lindenwald, after 1917. This photograph was probably taken after the Birneys' acquisition of Lindenwald in 1917. The following details should be noted:

The foundation and trim appear to be painted a dark tone. Brickwork has been painted a light tone but is now quite weathered. Window frames are painted a lighter color.

The replacement cornice on the door pediment is in place.

The steps to the back door (door 112) consist of a large landing stone at grade and one stone step leading up to the door sill.

The downspout appears to be a replacement consisting of lengths of stock corrugated pipe and a wooden board and trough to direct rainwater away from the foundation.

There is a grate over window well 011.
HP13. Interior of Room 105, Looking West, ca. 1917-1924. This photograph was donated to the National Park Service by the DeProesse family and is considered to date from 1917 or later. They state that it was taken early in the period of their ownership. On the basis of a comparison with HP16 and HP17, this photograph is considered to predate 1924. The comparative features are the wire along the south wall, which is not present in HP16, and the floor heater, present in HP17 but not present in this photograph. The following details are worthy of note:

historic carpeting
chandelier with frosted glass shades and clear chimneys
bell hanger in casing of door 130 and possibly a wire leading to it
wallpaper patch at south end of west wall at elevation of ca. 1797
door entablature
scenic wallpaper
apparent absence of grille for floor heater
HP14. West Slope of ca. 1797 Roof, ca. 1918-1920. This photograph shows Dr. Bascom Birney removing wood shingles in preparation for the slate roof. Family tradition dates this event to the early years of their ownership of Lindenwald, probably before 1920. Note the following details:

- condition of sheathing boards
- missing and broken plaster keys over room 307
- square-butt ed shingles
- valley flashing
- sheet-metal ridge roll
HP15. This photograph again shows Dr. Bascom Birney in the process of removing shingles from the west slope of the ca. 1797 roof. Note the roofing bracket near the top right corner of the photograph.
HP16. South Wall of Room 105, ca. 1924. This photograph was published in 1924 in Historic Wallpapers from their Inception to the Introduction of Machinery, by Nancy V. McClelland. Note particularly the glass shades on the kerosene chandelier and the absence of the bell pull wire that appears in HP13.
PAYSAGE À CHASSE, PRINTED BY ZUBER IN 1831

Landscape paper in the hall of Lindenwald, the house of Martin Van Buren, at Kinderhook, New York. A feature of the paper is the printed balustrade that runs the length of the hall.
HP17. North Wall of Room 105, ca. 1924. This photograph was published opposite HP16 in Nancy V. McClelland's *Historic Wallpapers from their Inception to the Introduction of Machinery*. Note the corner of the grille for the floor heater and the circular control box on the baseboard. Also note the wallpaper in room 101.
HP18. South and East Facades of Lindenwald, ca. 1917-1925. This photograph is considered to postdate 1917 because the lightning rods are missing from the front of the house and because roofing brackets and a plank are still attached to the roof (indicating that roofing work is still in progress). It is considered to predate 1925 because the tie rod is still in place on the front porch, and shutters are still in place on the Venetian window (see HP22). This photograph was taken by Rowles Studios. The following details should be noted:

There is new flashing over south gable capping board and on the south chimney.

There is a chimney over room 112 (the earliest photographic evidence).

The return for the sill at the north dormer is missing.

Brickwork, oriel window, and cornice seem to be painted a light tone. Window frames, shutters, foundations, and front porch seem to be painted a dark tone. On the addition, window frames are a light tone and hoods and roof are a dark tone.

Bricks are loose in the flat arch over window 127.

Hydrangea north of front porch is 8' to 9' tall. Ferns are growing along the north and south cheeks of the front porch. Small trees are present in the ell south of the ca. 1797 house. A rustic chair and a rocking chair are on the front porch. A cast-iron bench is under the south pine tree.

Eight balusters are present on east side of belvedere.

Sheet-metal gutters have been added to the south dormer.
HP19. This photograph is a detail of HP18.
HP20. Lindenwald, ca. 1917-1925. Because of the absence of front lightning rods and the presence of roofing brackets and planks, the tie rod on the front porch, and the shutters on the Venetian window, this photograph is associated with HP18 and assigned the same range of dates. The following details should be noted:

The front board of the sill box under the south dormer is missing.

There are eight balusters on the east side of the belvedere.

The brickwork, cornice, and sash seem to be painted a lighter tone. Window frames, foundation, and front porch are painted a darker tone. Shutters seem to be painted an even darker tone.

Sheet-metal gutters have been added to the south dormer.

The hydrangeas are in bloom and the one north of the porch is approximately the same size as in HP18. Ferns are growing along the north and south cheeks of the front porch. The cast-iron bench may be present in the shadows southeast of the porch. There is a clump of vegetation in the foreground on axis with the front door. The hydrangea blooms indicate a different time of year from HP18, but the similarity of size suggests the same year or one within two or three years.

A small rainwater diverter has been installed on the porch roof at the juncture of the gable with the south level eave section.
HP21. Clementine Birney and William DeProosse in Room 104, 1925. This photograph was taken at the time of their wedding in 1925. The background is the south wall of the room and door 102. Note the white-painted woodwork, the historic Brussels carpeting, the historic wallpaper, and the bed.
HP22. East Elevation of Lindenwald, 1925. This photograph was taken on the occasion of the Birney-DeProsse wedding. The following details should be noted:

There are no shutters on the Venetian window.

The tie rod is not present on the front porch.

The northeast lightning rod is missing.

Brickwork, cornice, sash, and window frame reveals are painted a light tone. Foundations, front porch, and exterior faces of window frames are painted a dark tone. Shutters are painted an even darker tone.

Large blocks of wood have been wedged under the sheet-metal roof of the porch at the south juncture of the gable and the level eave to divert rainwater into the gutter.

There is a white-painted wooden screen door.

Ferns are growing along both sides of the front porch. The south hydrangea is about 6' tall and the north one is 8' to 9' tall (comparable to HP18).
HP23. South and East Sides of Lindenwald, 1936. This photograph was taken by Melvin Weig, National Park Service historian, on August 3, 1936. This date is documented in the captions of all the photographs in his report "Lindenwald," the President Martin Van Buren Homestead, near Kinderhook, New York" dated November 3, 1936. The following details should be noted:

Some bricks are missing from the cap of the south chimney.

Both hydrangeas are about 9' tall, and the ferns beside the front porch are about 2' high. A vine is growing up to the cornice on the south side of the porch.

The light paint on the brickwork is very weathered and most brick courses on the south elevation can be seen. Sash has also been painted a light tone, but now the cornice appears to be a dark tone. Foundations, window frames, and the front porch are painted a dark tone. Shutters appear to be painted an even darker tone.

There is a lightning rod on the tower.
HP24. Lindenwald, East Elevation, 1936. This photograph was taken on August 3, 1936, by Melvin Weig. This date is also documented in his report, "Lindenwald," the President Martin Van Buren Homestead, near Kinderhook, New York." The following details should be noted:

Some bricks are missing from the cap of the south chimney.

Both hydrangeas are about 9' tall and the ferns beside the front porch are about 2' high. A vine is growing up to the cornice on the south side of the porch.

The light paint on the brickwork is very weathered, and most brick courses on the east elevation are discernible. Sash has also been painted a light tone, but now the cornice appears to be a dark tone. Foundations, window frames, and the front porch are painted a dark tone. Shutters appear to be painted an even darker tone.

A lightning rod can be seen on the tower.

The plumbing vent can be seen between the north dormer and chimney.

An electrical service wire crosses the field of view from top center to middle left side.

A rainwater diverter is present on the east end of the north raking cornice.
HP25. Ca. 1850 Front Porch, 1936. This photograph was taken by Melvin Weig on August 3, 1936. The following details should be noted:

- pattern of seams in sheet-metal roofing
- shims under sheet metal at juncture of level and raking eaves
- "drip-catcher" at north corner
- separation of treads from south stringer
- rustic chairs
- vine on south side of porch
HP26. North Side of Lindenwald, 1936. This photograph was taken by Melvin Weig on August 3, 1936. The following details should be noted:

There is new flashing on the north gable capping board and a rainwater diverter at east end.

There is a splashblock(?) at base of northeast downspout.

The paint scheme is the same as that observed in HP23.

There is a plumbing vent pipe near the ridge at the north end of the east roof slope.

The brick coursing on northeast and northwest chimneys above the stone water table consists of five courses to the tops of the stone corbels (ledges), twelve straight courses, and a five-course corbeled cap.

The ferns adjacent to the north wall are 3' to 3' 6" high.
HP27. West End of the North Elevation of Lindenwald, 1936. This photograph was taken by Melvin Weig on August 3, 1936. The following details should be noted:

There is a white-painted screen door at door 109.

There is a rainwater diverter at the end of the cornice capping board.

The belvedere windows are missing lights.

The lower section of the downspout is stock corrugated sheet metal (replacement).
HP28. Lindenwald, West Elevation, 1936. This photograph was taken by Melvin Weig on August 3, 1936. The following details should be noted:

An early 20th century porch is attached to rooms 112 and 114.

There are stock corrugated sheet-metal downspouts with bell and spigot drain pipe at the base of the south downspout (compare full-length north downspout with HPI2).

The bulkhead has no cover except for the overhang of the porch roof.

The paint is very weathered, and the paint scheme corresponds with other photographs of this date.

There are modillions on the skylight cornice.

There are steps at door 112.
HP29. Lindenwald from the Southwest, 1936. This view was taken by Melvin Weig on August 3, 1936. The following details should be noted:

- outbuilding in deep shade at left side of photograph
- chimneys, gutters, and roof surfaces
- paint scheme and condition
- farming equipment at right side of photograph
- clothes-drying rack
HP30. East Wall of Room 106, 1936. This photograph was taken by Melvin Weig on August 3, 1936. The following details should be noted:

- Brussels carpeting
- pier mirror
- wallpaper
- draperies
- woodwork
- astragal on wall above ogee arch
- furniture
- condition of plaster ceiling
HP31. Fireplace and Part of the South Wall of Room 106, 1936. This photograph was taken by Melvin Weig on August 3, 1936. The following details should be noted:

Brussels carpeting
marble hearth and mantel
woodwork
wallpaper
draperies
furniture
HP32. Fireplace and Part of South Wall of Room 209, 1936. This photograph was taken on August 3, 1936, by Melvin Weig. The following details should be noted:

The wallpaper is probably not historic.

The fireboard has a stag hunt scene with a foliate border.

The floor covering seems to consist of oriental rugs.
HP33. Lindenwald, 1937. This and the three following photographs were taken by Historic American Buildings Survey photographer Nelson E. Baldwin in January 1937. The following details should be noted:

electrical wire (separated from insulator on tree trunk)
trellis (compare HP8)
8' hydrangeas
paint scheme and condition (comparable to Melvin Weig's photographs)
slate roof and sheet-metal ridge roll
loose bricks over window 127
half screens on windows 124, 215, 216, and 217
lack of shutters on Venetian window
twelve brick courses above the stone water table on the south chimney and a five-course corbeled cap
HP34. Lindenwald, East Elevation, 1937. This photograph was taken by Nelson Baldwin in January 1937. The following details should be noted:

There are a slate roof and sheet-metal ridge rolls, new flashing on gable capping boards, and a rainwater diverter on the north capping board.

Half-round sheet-metal gutters have been added to the dormers.

There are half screens on windows 105, 201, 203, 205, 206, and 207.

The northeast chimney brick coursing above the stone water table consists of five courses to the tops of the corbels (ledges), then thirteen courses and a corbeled cap of five courses.

The main cornice crown molding is deteriorating at the joints.

There are rustic chairs on the front porch.

The porch roofing is wedged up on both sides at the junction of the front gable, with level eaves. A jerry-built "drip-catcher" redirects errant rainwater.

There is a plumbing vent stack near the ridge at the north end of the east slope.
HP35. Front Door of Lindenwald (Door 101), 1937. This photograph was taken by Nelson Baldwin in January 1937. The following details should be noted:

The sash are painted a lighter tone than the brickwork. Door and window trim and the porch elements are painted a darker tone. The front door is painted an even darker tone. The porch rafters and ceiling (sheathing boards) appear to match the brickwork.

Light is passing through the joint between the porch roof and brick wall.

There are rustic chairs on the porch.

There is a door knocker.

There are stuccoed areas over windows 103 and 104.

Vines are growing on the south side of the porch.
HP36. North Elevation of Lindenwald, 1937. This photograph was taken by Nelson Baldwin in January 1937. The following details should be noted:

The paint scheme is the same as in HP33.

Half screens are present at windows 109, 113, 208, and 209. There is a screen door at door 109.

Brick coursing on the northeast chimney appears to consist of five courses from the top of the bluestone water table to the top of the brownstone corbels (ledges), then thirteen courses and a five-course corbeled cap. Brick coursing on the northwest chimney appears to consist of five courses from the top of the bluestone water table to the top of the brownstone corbels (ledges), then twelve courses and a five-course corbeled cap.

There are modillions on the skylight cornice.

Remnants of ferns are present at the east end of the north foundation wall.

There is a cover over window 007.
HP37. North and East Facades of Lindenwald, ca. 1942-1946. This photograph is from the Rowles Studio Collection. There is no documented date for the photograph so we must assign an approximate date based on comparisons with other photographs. The presence of an electrical supply wire, faintly visible at the left side, definitively dates the photograph after 1936. The size of the bush in the middle of the north wall suggests that the photograph was made at least 3 to 5 years after HP36 (therefore suggesting a date of ca. 1942). The hydrangea must have been pruned after 1937 and before this photograph. The advancing deterioration of several wooden elements confirms that this photograph postdates HP36 and predates HP41. The wire (probably a radio antenna) stretched between the south chimney and the north chimney in this photograph and in HP41, but not in HP34 or HP36, provides further evidence of this sequence. HP41 is conclusively dated after HP37 by the new paint on window and door frames and by the absence of dormer scrolls. DeProse family recollections date this repainting to 1946 (W.N. Jackson, "Oral History Report," September 5, 1979). Thus, a date of ca. 1942-1946 is assigned. The evidence for the latter date is discussed in conjunction with HP41.

The following details should also be noted:

The chimney brick coursing matches that described in HP36.

There is a splashblock at the northeast corner.
HP38. Room 104, ca. 1936-1957. This photograph and the two that follow may have been taken at the same time. All three were donated to the National Park Service by the DeProsse family. All are color photographs taken with flash. The DeProsse family association means these photographs predate the sale of Lindenwald to Ken Campbell in 1957. The identical positions of the black object (statuette) and chairs in HP39 and HP40 suggest that they were taken during the same session and, by extension, suggests that HP38 was also taken at the same time. The presence of an electrical convenience outlet in HP40 and an electric lamp in HP39 positively dates the photographs after the installation of electricity, ca. 1936. DeProsse family recollections date these photographs to the 1930s. The following details should be noted:

- wallpaper
- woodwork
- marble mantel and hearth
- fireboard
- carpeting (Red-orange color is reported by DeProsse family to be incorrect rendition—true color is green.)
HP39. Room 106, ca. 1936-1957. This photograph is associated with HP38 and HP40 and assigned a date of ca. 1936-1957 on the basis of circumstantial evidence presented with HP38. The following details should be noted:

- pier mirror
- woodwork
- draperies
- wallpaper
- carpeting
- furniture
- electric lamp
HP40. Room 106, ca. 1936-1957. This photograph is associated with HP38 and HP39 and assigned a date of ca. 1936-1957 on the basis of circumstantial evidence presented with HP38. The following details should be noted:

- wallpaper
- carpeting
- woodwork
- astragal molding on wall above ogee arch
- electrical convenience outlet adjacent to card table
HP41. Lindenwald, ca. 1946-1950. This color photograph of the south and east facades of Lindenwald was donated to the National Park Service by the DeProsse family. It has been assigned a date between ca. 1946 and ca. 1950 on the basis of two DeProsse family recollections (W.N. Jackson, "Oral History Report," September 5, 1979). The painting of windows and doors is reported to have been done in 1946. The front porch is reported to have been removed in 1950. The following details should be noted:

- Repairs to tower roof
- Tumbledown cap of south chimney
- Sheet-metal coping on roof between south chimney and dormer
- Excavation to south of house
- Half screens on windows 106, 203, 205, 206, 215, 216, and 217; screen on ground below window 128
- Missing scrolls on north dormer
- Condition of porch roof
- Vines at southeast corner
- North hydrangea (6' to 7' tall)
- Radio antenna stretched between south chimney and northeast chimney
- Trellis (matches one in HP8)
APPENDIX B: INSPECTION PHOTOGRAPHS

IP003, N039-01. Main roof, northwest corner looking northwest. Note hatch infill in foreground.

IP004, N039-07. Main roof, northwest corner looking northeast. Note shingle shims.

IP006 (microfilm card). Elevation of typical truss-like configuration of ca. 1797 roof rafters.
IP007, N039-14. Gable sheathing.

IP008, N-44026. Dormer windows for C.H. Russell's House, Newport, Rhode Island. Richard Upjohn and Co., Architects.
IP009, N004-19. Exterior view of door 010, probable entrance to cold storage area.

IP012, N012-08. Window 127, typical ca. 1797 window with ca. 1840 sash and shutter blinds.
IP014, N012-05. Window 124, typical ca. 1850 sash.
IP015, N052-02. Front door knocker.
IP016. Gutter liner, rake capping board, and downspout at northwest corner, main roof.
IP017, N014-17. Monitor skylight.

IP018, N008-37. Unidentified feature in floor of room 002.
IP019, N011-14. Room 003A, west wall, south end, window 026.

IP020, N010-19. Room 004, window 002 with iron bars.
IP021, N007-30. Room 004, northeast corner. Note barrels on rack and porch pieces on floor.

IP022, N009-12. Room 007, fireplace.
IP023, N___. "W. & B. Douglas" force pump mounted on grained plank.
IP024, N016-08. Room 013 looking west to door 010.

IP026, N022-29. Room 104, south wall and door 102. Note register opening in southwest corner.
IP027, N017-32. Former basement stair opening in floor of room 105.
IP029, N022-12. Door 130 ca. 1849 alteration to room 105. Note patch in west wall about 8" above bracket.

IP031, N023-37. Room 106, west wall, door 133 and ogee arch.

IP032, N044-19. "Bookcase for Mrs. Packer's Library June 12th, 1853. Richard Upjohn Arch't, Trinity Building, N.Y."

IP034, N023-29. Room 111, south wall, windows 122 and 123. Note arched window heads.
IP035, N025-35.
Room 113, north wall.
Note board partition and
door 121.

IP036, N025-33.
Room 113, southwest corner.
IP037, N021-01. Room 114, southeast corner, fireplace. Note mantel and oculus window (W131).

IP039, N021-14.
Room 119, looking north to door 109.

IP040, N021-15.
Room 119, looking south to door 118, door 115 to the right and door 108 to the left. Note skylight opening above.
IP041, N023-02. Room 121. Note similarity to water closet (IP034).

IP042, N030-37. Room 201 west wall. Note shelves in former window opening.
IP043, N030-31. Room 205, south and west walls. Note outline of former door opening (door 219) on south wall and ventilation opening above.

IP044, N030-23. Room 208, northwest corner. Note faint outline of former door opening (door 219) on north wall below ventilation opening and patch of chair rail across door opening.

IP046, N030-03. Room 206, looking east into rooms 207 and 208 through doors 218 and 202. Note vertical line at former location of south wall near right edge.

IP048, N030-28. Room 208, east wall, windows 205, 204, and 203 (from left to right).
IP049, N030-29. Room 208, west wall, door 202.

IP050, N030-17. Room 209 north and east walls, door 201 and window 202.
IP051, N029-34. Rooms 206 and 110, looking west down stair.

IP053, N030-10. Room 210, east and south walls, door 216, and windows 215 and 216.

IP054, N031-12. Room 211, looking south.
IP055, N031-17. Room 212, detail of tower stairs.
IP056, N031-24. Room 213, looking southeast, with monitor skylight framing on left, brick tower on right, and east roof truss across view.

IP058, N031-27. Brownstone splashblock reused in tower masonry at floor level of room 213.

IP059, N006-32. Room 301, looking north to plastered gable end, with knee braces to the left. Note T-head wrought nails in nearest knee brace.
IP060, N008-08. Room 302, looking north past door 305 on the right and 306 on the left to window 305. The faint outline of the former stair opening can be seen near door 305. Note also the floor register and the hatch opening to the ridge space.

IP061, N008-11. Room 303, looking north. Curve at left was made to provide light from window 305 to room 302. Faint outline of former window 304 can be seen on north wall.
1P062, N008-15. Room 303 eastward dormer extension and window 303.

1P063, N008-17. Room 304, looking east into gable extension and window 302.
IP064, N032-6. Room 307, looking south past door 309 to window 315.

IP065, N032-09. Room 307, looking east up stairs to door 307.
IP066, N006-08. Room 311, looking northwest. Note reused lengths of fluted moldings and discarded remnant of grass matting (now in park collection).

IP068, N032-02. Room 501, balusters in belvedere railing.

IP069, N002-07. Rafter ends room 301.

IP071, N031-08. Room 201/203 floor framing and notched joists.
IP072, N028-35. Window 011. Note water penetration and dislodged masonry at lower left corner.

IP073, N041-12. Typical condition of cantilever joist wedged into masonry pocket.
IP074, N041-05. Tower stair construction at a landing, looking up and slightly south. Note that joist running across photograph is continuous between two brick walls of tower. Stub joist to support stair stringer is vertical member mortised through main joist and pulled tight by wedge.

IP075, N041-06. Same area as IP069 (above), looking northwest and slightly up. Note stair stringers at top of picture. Horizontal joist is cantilevered from east wall. Tenon of previously mentioned stub joist appears at west end of cantilever above stair stringer.
IP076, N015-16. Exterior cover for fresh-air intake duct.

IP077, N015-17. Exterior cover in open position.
IP078, N023-19. Fireplace, room 109, with part of fresh-air heating apparatus in place.

IP079, N023-21. Detail of IP073 (above) showing horizontal heat distribution duct and inlet from heating chamber.
IP080, N018-06. East wall of furnace enclosure.

IP081, N010-05. North wall of furnace enclosure. Note inscription on door.
IP082, N010-07. Boynton's patent cast-iron furnace.
IP083, N010-04. Cast-iron fuel door with patent data.

IP084, N010-10. Cast-iron ash cleanout door.
IP085, N022-22. Culver's patent register and marble frame, room 105, north wall.

1P087, N017-22. Cook stove, room 006, north wall.

1P088, N017-23. Manufacturers label on hood over cook stove.

IP091, N038-01. Probable water supply to force pump, room 006, southwest corner at floor level.

IP092, N001-08. Laundry room, room 007, sink.
IP093, N001-09. Hand pump for laundry sink, room 007. Note hole in wall for drain.

IP094, N018-17. Water tank, room 115, filler and overflow pipes.

IP097, N018-20. Room 115 water closet and enclosure.

IP098, N036-03. Water closet with top removed.

IP100, N009-18. Room 009, brick platform at southeast corner and stovepipe hole above.
IP101, N009-20. Room 009, northeast corner. Note remains of wooden pipe chase.

IP102, N031-36. Copper point attached to spiral fluted iron lightning rod.
IP103, N050-12. Detail of iron lightning rod.

IP104, N034-9. Detail of more recent sheet copper spiral fluted rod with brass connectors marked "RHCO."
IP105, N037-24. Plate-type stock lock on door 301.


IP109, N037-07. Lock 217.

IP110, N037-10. Lock 217.
IP111, N038-08. Lock 217.


IP114, N037-04. Lock 206.

IP116, N036-17. Lock 105.
IP117, N027-31. Lock 121.


IP123, N037-33. Lock 136, with tumbler removed.

IP125, N016-21. Lock 133, with cover removed.

IP126, N026-34. Lock 113.
IP127, N027-25. Wrought-iron strap hinge typical for ca. 1797 basement board-and-batten doors.

IP128, N036-36. Wrought-iron H hinge for ca. 1797 interior shutters.
IP129, N030-06. Door 210, typical mounting of HL hinges on ca. 1797 door.

IP130, N037-28. 4" by 4" five-knuckle, eight-hole cast-iron butt hinge.
IP131, N037-27. 5" by 3" five-knuckle, ten-hole cast-iron butt hinge.


IP137, N034-04. Wrought-iron pintle for exterior shutter blinds.

IP138, N033-17. Fastener for exterior shutter blinds.

IP141, N034-03. Propeller-type shutter holdback.

IP142, N036-31. Ring pull for ca. 1797 interior shutters.
IP143, N036-34. Bar hardware for ca. 1797 interior shutters.

IP144, N036-32. Detail of catch for shutter bar.
APPENDIX C: UPJOHN SPECIFICATION
Specifications of Carpenter's work to be executed in the addition proposed to be built to Ex President Van Buren's house Kinderhook.

The floor timbers to be as follows for the wash room. Kitchen lower passages and all other places that is not floored with brick paving to have sleepers of locust cedar or Chesnut wood hewn on the upper side. Straight and sufficiently smooth to lay a floor well upon them - placed 20 inches from centres - to average 5 inches diameter.

Floor timbers of the first floor to be 2 in thick 12 inches from centres & 12 in deep - or 3 in thick 14 in from centres and 12 in deep, hewing have bridging well nailed and fitted to be fixed to all the naked floors - This floor to be deafened [dentened] perfectly.

Floor over the new library whole of the new buff.
The floor of the wine stores to be of joists of the above sizes placed 4 inches farther apart, all hung to the rafters each joist to each rafter and well nailed.

All necessary cutting away fixing for stairways passages & from the new part of the old building to be done all the trimmers repaired or any other timber work in the old building in each and every room thereof.

The floors to be good 1 1/4 in pine matched well and double nailed no two heading joists to be together. The floors to be well cleaned up and laid close to the brick work.

Grounds for plastering fixed throughout. And strips nailed to receive the base and the plastering to the floor.

Rafters to be 4x5 a purline 6x8 and studs and braces over the partition to support the flat or roof also to support the purline on the slope of the same.

The finish of the different rooms door ways windows stairs Chimney pieces &c to [ ] made according to the several plans and designs therefor of the best materials and workmanship.

The roof to be covered with 1 1/4 in matched plk well laid and the outer covering to be IX leaded tin and the slope of the roof to be ribbed with 1 1/4 x 1 3/4 pine ribs rounded thus and placed 2.0 ft from centres. The gutters to be lined with tin the whole to be made tight and well painted 3 coats of such color as shall be directed by the architect.
If there are any doors architraves in the wings of the at present building that the owner thinks may be used they may be placed in the basement.

Leaders from the different roofs to be placed where necessary to carry off the water. A cistern to be made and fixed in a suitable place for water.
May 30. S T Van Buren

[p. 68] Taken by Barney Maguire [sic]

Ground Plan 2nd and attic stories also basement N E S & West Elevations 1/8 Section through ash pit Ground and basement plans stairway from tower to attic plans and sections Section of flues to 1/2 in Skylight, Dormer Windows, plan, elevation and section 2nd story bay window, plan Inside and outside elevation 2 sections Double window of bed room, Plan inside, and outside, elevations and sections, Small windows in tower, Plan inside and outside elevations, and sections, Bay window in Library inside and outside elevations, section, and return of cornice, Single windows of Library etc inside and outside elevation Plan, and section, Window E & W Gables outside elevation, section plan, Plans and elevations of all chimneys [sic], Back porch, plan, elevation and section, Inside door Elevation, and section Entrance door N Side plan, Elevation, and section, all to size of new building, Cornices of hall, nursery bed room and bath room Details of dormer window " 2nd story bay window " skylight window,

[p. 69] jamb, sill, base and architrave of rooms Window cap and bracket Details of back porch and north door all full size
July 25 S T Van Buren
[p. 73]
Plan hall stairway 1/2 in scale and Bracket to support architrave full size

Sept 3rd Smith T
Van Buren
[p. 76]
Plan of Mr Van Burens house viz
Library door jamb of tower doors to l in scale and full size

October
19 Smith T
Van Buren
[p. 78]
Plan of door to l in scale and full size

November
13 T B Van Slyck
[p. 80]
A newell for Tower also baluster full bracket full size

January 1850
7 Martin Van Buren
[p. 83]
Plan for Bath Case to l in scale and Detail full size

July
22 S T Van Buren
Albany
[p. 96]
Plans of front porch 1/2 in scale 2 elevations, 2 plan 3 sections, & all the details full size

Insert in above:

August [1849]
10 Barney McGuire
[p. 74]
4 Elevations of Martin Van Buren's house sent by the barge Wyoming
APPENDIX G: EVOLUTION SKETCHES
NORTH ELEVATION

EAST ELEVATION

SOUTH ELEVATION

WEST ELEVATION
APPENDIX H: PROPOSED WORK
LINDENWALD
UPJOHN PORCH
RESTORATION
LIST OF SMITH T. VAN BUREN CORRESPONDENCE

BETWEEN 1839-1850

As Transcribed by Historian William N. Jackson

July 31, 1839 - STVB (New York) to MVB Jr. (Washington)

"The (old) man has just gone to Schenectady and intends to bring up at the United States Hotel, Saratoga, tomorrow...We had a very pleasant time since I last wrote you. At Kinderhook we spent a day and dined at the Van Ness place--(Kleirood) no more! We had a capital dinner of fricassee and him, washed down with champagne. We tried hard to get up a good name; but it is very tough work. The present favorite is "The Locusts" of which there are a great number about. The only objection is that the same name is used by Cooper in the "Spy" for one of his places. Among the distinguished guests were (James?) John from Albany and Aunt Catherine from Ghent. Here we have been feasted most sumptuously by the Judge young Patroon and Gov. Marcy..."

July 21, 1841 - STVB (Lindenwald)

I received your obliging letter here. I don't know whether you will be able to recognize the place by its new name, but you will understand that it is the retreat of a certain Ex-P, and a charming retreat it is two--infinitely preferable, I should say, with its shade and breezes, its quiet and its independence, to the White House, or the dusty Metropolis in which you are luxuriating.
Your representation of affairs at Washington correspond with all the appearances at this instance, and still more nearly with all that we had a right to expect from the motley gathering at the extraordinary reception. I begin to to think that there is a special providence in the confusion (work?) confoundes which attend the building of the new _and which I trust may prevent its completion. If it does the advent of whiggery to power may ultimately prove to have been a good thing. A visitation carrying with it the sweet uses of adversity—teaching patience, wisdom, patriotism, virtue to the mass, purifying the moral atmosphere of politics, and in point of fact advancing the cause of equal rights.

Have you read prof. Cowen's paper? We here in New York think it a great affair, quite refreshing, in the way of state papers, since the era of roman-nobled inaugurals and federal homilies on the duty of obedience to Great Britain.

Nothing is more generally noticed, or more gratifying to our friend, than the infinite superiority of our representation, over the agents of the speculators in Congress. The best that can be said of both sides is that each is respectively worthy of its cause, and that is (multin-is parvo).

I have not yet heard from Dimitry—unless his letter may be in New York—where I shall go in a day or two. I see by the debates that Preston has been lecturing your honorable board. He says that you expire officially in September: I thought it was December. Can you let me know which is right; and whether claims presented by or before the 10th of August will be in time for consideration. The delay arises from the translators. My father desires to be remembered to you and to me. Mr. and Mrs. Wright and Blair and Marcy.
April 13, 1849 - STVB (Albany)

I shall not be able to get to New York on Saturday! If you expect to leave town, on Tuesday you can write me a line which I will receive Sunday morning, I will, then be down Monday morning: If I don't hear from you I shall be down Tuesday morning.

April 20, 1850 - STVB (Lindenowlad)

Not knowing Barney's address, I enclose his letter to you. By reading it you will understand all that I have to say except that I promised him to say to you that the wash-room flue is at length cured having experienced the reverse of the natural rule, viz, being smoked before it was cured and well smoked it was. You will take his receipt on giving him the check. You see what I say about the chimneys on the north side. I think these will have to be opened at the top also, by and by. Pray hurry on the library and handrail. Did I understand that they were to be done by the same hand? I saw a library designed for Mr. Barnard in Albany which pleased me and only cost $200. It was black walnut and plain but was much prettier than Mr. _____'s (in 14th st.) as Kelly's was before Barnards. Let me hear from you whenever you have come to any conclusion.
May 13, 1850 - STVB (Lindenwald)

Will you please send me immediate answers to these questions: (as the carpenters stand with their tools in their hands, waiting the word).
1. Are the caps and base of the baluster which you sent me square or round? They have been turned round—which is thought by one of the workmen (the only one good for anything to be wrong.
2. Is there to be wainscoting inside the tower or behind the balusters as appears to be the intention by the drawing of this section! This is claimed to be the case by the carpenters but I do not think it can be so. There does not seem to be any necessity for enclosing the place anymore than would be done by the balusters and it seems to me that the wainscoting would destroy the effect of the balusters, as seem from outside and that the expense of the wainscoting might be avoided, unless there is a necessity for it. Please decide these points.

The estimates for the library differ so much that I must submit the matter to your discretion. If you know and can rely upon the person who offers to do the work for $300, of course you will give it to him. Please let me know in your reply, whether you have so determined. The sooner it is completed the better, altho I suppose the contraction will have sufficient inducement for despath on his account. My father complains: that I have made his hall dark, by my improvements. For this reason I should like to get the glass door made as soon as possible, before he gets the idea so fastened that he will not give it up after the remedy is applied. There is a good workman here who claims to be able to make the door well if he had the drawing.
P.S. How many feet of wire work did you say? I can not make out your figure. Please tell me also if you can find out about what the glass for the glass door will cost.
May 17, 1850 - STVB (Lindenwald)

I have ___ on the 14th. The balusters are up. I got so tired of the
carpenter that I told them to put up the work, and I would take it
down if it was not right. The wainscoting it not on. What you say of
the library is alright: I have no doubt the contractor will answer, and
be somewhat puzzled by the explanation of you letter, referring to the
comparison as the cost of my and your work. To know whether preparation
and calculations on the subject will agree with your own or not. The
only way however to ascertain, is to tell you frankly what mine have been
and are, and to ask you to do the same by me in return.

When I first spoke to you on the subject I mentioned the sum which I
wished to expend in the proposed improvements of $5000: and with the
understanding the plans were offered to masonry and carpentry for
estimates. The offer of Barney's, at $2492; for the mason work was
accepted, which sufficiently established that part of the work.

The estimate of the carpentry (I figured their cost at $2850: and
considered the cost favorable, and also have been accepted, but for an
___ on my part that I could get the work cheaper by employing Van
Slyck to do the work. When I deecided to make this trial, I remarked to
you that my aim (as I expected it to be), by this arrangement ought not
be and should not by your cost, but that as between us we could take
the estimates above referred to as if they had been both accepted.

Of course I have considered this equity as mutual in its operation, and
have not supposed that because my expectation have been satisfied and
the work has cost more than the estimate, instead of less that I should

267
incur a perportionate increase of expense for the supervision. I state
all the detail here, because I cannot infer from the terms of your letter
how much of it conforms to your own views, or the reverse, and because
it would take me some time to get at the sum of Van Slyck accounts,
if that should prove to be necessary. Of course the work for which
drawings have been made since the main plan was settled, such as the porch
and library, and which are the subjects of separate contracts do not
come within the application of the arrangement which I understood to
have been made except for the original drawings and _____.

If I am correct in assuming these views as the basis of our account,
you will find it stated on the other side, as correctly as the nature of
the case will admit. Please let me hear from you as soon as possible
on the subject as is reflected to both, as it is my wish. It is desireable to dispose of and satisfactorily. I enclose a check for the bal.
I've given as a statement.

<table>
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<th>Description</th>
<th>Amount</th>
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<tr>
<td>Estimate of mason's work</td>
<td>$2,492</td>
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<tr>
<td>Carpenter</td>
<td>2,850</td>
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<tr>
<td>Library (including wire work)</td>
<td>340</td>
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<tr>
<td>Porch</td>
<td>500</td>
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<tr>
<td>Supposed cost of handrail to be made by the</td>
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</table>
To this should be added the black walnut door and the caps for tower chimney, the latter cost about $15. The former I do not know. I have added on the check $75.00 being 5% of it.

May 5, 1850 - STVB (Lindenwald)

I rec'd yours of the 25th of April at Albany, only yesterday. Please direct to me hereafter under cover to my father, at Kinderhook, where I shall be the greater part of the time. The plans etc enclosed are all right. As to the library you seem to have forgotten our arrangement: which was that you should have the plan (when completed), estimated upon by one or two competent persons at New York and then let me know the result, and that the person taking that Job might also put up the handrail on the tower stairs: and include that in his estimate.

The estimate should be for the whole expense including expenses of traveling, freight and board while here (which is $8/ per week and everything else ____ no extra charge whatever: and should be for completing everything as described or drawn in the plans; and perhaps a limit might be agreed upon as to time, altho if the workman pays his own board and time, I suppose there will be no unnecessary delay.

Will you oblige me by sending me the estimate as soon as possible. I am going to providence on to visit to Mr. Duncan, the last week of this month May, say the 25th and he will probably return for a few days with me, say about the 1st of June, and I should like him to have the library finished at that time--if it is practicable. You may send me at your
convenience also the drawings you mentioned, for a glass door leading from the old hall to the new. You will bear in mind that it should be constructed with a view to the assaults of children as high up as they can reach, while yet in their years of indiscretion. The dimensions of the doorway, or rather of the present door are as follows: height 7 ft. 11 inches width 3 ft. 8 7/8 inches. The wall being about _____ inches thick. You can judge of the depth of the Jambs.
June 6, 1850 - STVB (Lindenwald) to ?

I enclose the letter for Wisngham, which please forward to him as soon as practicable. I found that the plan for the porch had been delivered in Albany to the place where I have usually received communication from your father.

June 20, 1850 - STVB (Lindenwald)

I have had a visit from Mr. Hanrenbeck, who promised to be here with his book-case about the 15th of July. I wish you would let me have the drawings for the porch, complete large and small with much specification as may be necessary to have the work estimated on at that date; July 15th. I mean to get an estimate from Mr. H. when he comes, and would like to have them a day or so before.

If you have the drawing for the glass door you may sent it to me, and I will get it made.

I wish you would say to Barney McGuire that his bill for extra-work includes two charges which require to be reconsidered at cost.

1. The charge of $15. for iron work over the area. These area's with the iron grating was laid down in the original plan: but his could not cost $15.

2. The cistern your father wrote me that the change (sixty odd dollars) was high and that the price of making a cistern 8' by 8' was between $30 or $40: but that Barney thought mine was 8' by 13". I have had it measured, and it is 8' by 9'10".
Its capacity however, (that is the space below the waste pipe) is
just about 8' by 8' you will see that measures to the top, however, it
is over 3' less than his recollection of it.

His work although, in the main well done enough, that in some respects
given me constant trouble. In altering the top of the chimney-stock his
men left so much mortar and rubbish on the roof that the leader, from
the gutters became closed, and some of them had to be taken down and
new ones instituted. The laundry flue continue to smoke as badly as
ever--rendering the use of the room impossible. Frequently, and always
more or less uncomfortable: and I have had a major fire almost all the
time finishing up some of his rough work, and tinkering on the flue.
Under these circumstances a charge of extra-work is not very palatable,
but I am willing nevertheless to pay his bill when it is corrected in
respect to the two items I have mentioned.

July 29, 1850 - STVB (Lindenwald)

I enclose Barney's account with the deduction for area, included in the
original estimate. I have also enclosed a check payable to his order
for the balance due him. Tell him I have received his letter and
although there is a good deal to be said in answer to some things men-
tioned by him, yet I prefer to have no further discussion, and I'm
willing to consider our business closed to our mutual satisfaction and
will always say so at his request.

I enclose the check to you as I wish to remind you that the library man
will be here on Monday, and that I am without the porch plan, on which
I wished to have his estimate. I have retained the plan for the door also for his examination. I think an ordinary door case (painted white like the other wood work in the hall instead of black walnut will answer, with the glass of white plate containing 4 large panes and a border only such as you have drawn of stained glass. What do you think of that. Please let me hear about the porch immediately, as I do not know whether Mr. Hollenbeck will be here over a day or two.

November 22, 1850 - STVB (Lindenwald)

Mr. Van Slyck, requests us to say that he will be ready for McGuire the last of next week. I have also to say that he omitted to make the change at the foot of the tower stair-case by my advice. When I saw you in Albany a month or six weeks ago I understood that the first flight would be taken down at once and at the expense of the carpenter, to make it accord with the plan. The next time I came here I found that they had not been done; although it was to be attended to. There being work enough to do to get the house enclosed and to make it habitable, I at once determined that I would suffer the inconvenience of a barron space at the foot of the stairs, rather than give even to slight an increase for further delay, and that nothing ahead completed than to be distributed. I told him therefore to despence with a part, and to carry the handrail around the top of the lower step as it was.

If you had been here since McGuire left I am sure you would have seen enough to satisfy you of the Justice of my complaint. The flue from the wash-room: bedroom and bathroom have smoked so badly that the walls are intirely black, and the ceiling also of the bedroom destroyed. If
the mantel pieces should have arrived, according to promise, I'm not able to decide whether in the present condition of the flues and walls they ought to be put up. I am at a lose to account for his course. He promised me to cut holes through the walls for the plumber, and yet they tell me that he decided it as no part of his business, and left them to cut for themselves, at the risk also of breaking into the flues, the location of which no one but himself understood. The window on the back side at the attic and one which you directed to be made longer, to light the passage next to my brother's bedroom, have been left, although there was time enough to have done all these small things while he was waiting for the flagging. I said also, on digging around the cess-pool to mount pipes, that the walls of it are round paving stones, of single thickness, depending upon sand walls outside to hold them up. The plumber thinks it will fall down as soon as water gets to it--if not therefore, and crush the lead pipe which empties into it. It is moreover covered with plank, and we no longer would have let a horse or an ox into it.

I need not repeat to you that all these things, coupled with intolerable ___ of the carpenter have disappointed us all very much. We have been obliged to give up the idea of living in the house this winter, and shall be obliged to stop all the work, when it maybe in for tonight, from yesterdays report. If anything is to be sent up from N.Y. it should be done immediately, especially some plan to close the top of the tower against the weather should be determined on and put in hand. There are some little things omitted by McGuire which I have not mentioned because I suppose he intended to bring them along on his return; such as cement
for the cistern, and iron-bars for the area and windows. But how are
the flues to be repaired, and all the damage they have caused?
I return to Albany tonight, where I should be glad to hear from you.
AN EVALUATION OF THE CONDITION AND PRESERVATION POTENTIAL OF
THE TIN PLATE ROOF AT LINDENWALD, KINDERHOOK, NEW YORK

On May 4, 1977, I inspected the tin plate roof and related
areas at Lindenwald with Douglas Clinton and members of the
site staff. The inspection was made at the request of the
architectural staff of the North Atlantic Regional Office of
the National Park Service. The tin plate roof, over the one
story rear wing of the house, is believed to be original to
the 1849 alterations designed by architect Richard Upjohn.
During the inspection, the entire surface of the tin plate
roof was examined as was the roof framing and sheathing which
was visible in the attic below. The following observations
and recommendations are the result of the inspection.

OBSERVATIONS

BATTEN ROOF

Description

The batten roof consists of nine sloping sections of tin plate
roofing. Each section is made of tin or tin and lead (terne)
plated iron sheets, 14 x 20 inches, fastened together with
flat lock seams. An unusual feature of the roof is the use
of wood battens every 24 inches to give a vertical emphasis to
the roof and to help control expansion and contraction. The
battens were covered with the tin roofing. The tin plate
roofing pans were most likely imported from England, as this
was a common practice during the nineteenth century. Although
most early nineteenth century tin roofs consisted of 10 x 14
inch pans, technological changes in the manufacture of tin
plate during the 1830's permitted the use of 14 x 20 inch pans.
by the 1870's a third size, 20 x 26 inches, was widely used.

The nine sections of batten roofing contain three valleys,
four hips, and two ridges. Two chimneys penetrate the sloping
roofs and there are intersections with the flat roof and the brick walls of the house. Around the perimeter of the sloping roofs, except for the two gables, is a built-in wood cornice gutter with a tin plate liner. All of the connections between the batten roofing sections and flashings, flat roof, and gutter liners are made with flat lock seams.

Condition

Much of the batten roofing is in remarkably good condition. In the five sections at the west end, there are approximately 35 punctures caused by slate and brick falling from the tower onto the tin roofs. These punctures have been patched with liberal amounts of asphalt roofing cement. In some places the tin plate roofing has split along the battens. In other areas the tin over the battens is badly corroded. The tin gutter liners have all deteriorated and much of the wood cornice has rotted out along with some of the tail rafters. All of the flashings have deteriorated and have been patched with excessive amounts of asphalt cement.

The flashing between the batten roofing and the brick walls consists of tin plate brought up and over a wood batten located along the brick wall. The upper part of the tin plate is let into a reglet in the wall to form a base flashing. There is no cap flashing.

The surface of the roof contains many coatings including what appears to be tinner's red paint, coal tar roofing compound and asphalt cement.

The valleys have apparently leaked over the years and have been patched with asphalt coatings. Part of the deterioration of the valleys may have been caused by scouring from particles of slate from the upper roofs which have washed down over the tin plate.

The use of asphalt and tar roofing compounds is especially unfortunate because they have accelerated the deterioration of the tin plated iron pans by forming sulphuric acid when combined with moisture. This acid has attacked the metal pans.

Conclusions

From all indications, based on available historical research and physical evidence, the existing tin plate roof is original to the 1849 Upjohn modifications of Lindenwald. For this reason, and because it is one of the few known remaining
mid-nineteenth century batten tin plate roofs in the United States, the roof is of great cultural significance. Its associations with Martin Van Buren and Richard Upjohn make its preservation highly desirable, if technically possible.

The present condition of the roofing pans indicates that it is still possible to preserve and stabilize all of the sections of batten roofing, if proper conservation measures are applied immediately. The flashings, valleys, ridges, and some of the batten areas require repair. All of the asphalt and tar compounds must be removed.

FLAT ROOF

Description

Like the sloping batten roof sections, the flat roof consists of 14 x 20 inch tin plate pans with flat lock seams. However, there are no battens and the entire roof is almost level.

There are approximately 52 linear feet of flashing between the flat roof and the brick walls of the house and tower. In the center of the flat roof, along the brick wall of the house, is a wood skylight enclosure with approximately 25 linear feet of flashing with the flat roof.

Condition

Unlike the batten roof sections, the flat roof is seriously deteriorated. The surface has been mopped repeatedly with asphalt roofing cement, which has deteriorated and become separated from the tin plate pans because of the different rates of expansion and contraction between the two materials. The decayed roofing compound has acted as a sponge trapping water against the tin plate. This water, as well as the sulphuric acid formed by the asphalt, has badly corroded the tin plated iron to the extent that much of it has completely rusted through. There are several active leaks in the flat roof.

The flashings along the brick walls and skylight were constructed without cap flashings. The flashings have failed and have been coated with excessive amounts of asphalt cement. There is a serious active leak at the west corner of the tower between the flashing and the masonry wall.

280
Conclusions

The flat roof area is badly deteriorated. In places, the tin plate has completely corroded through. Much of the corrosion appears to have occurred from the underside. Unfortunately, there appears to be no alternative other than the complete replacement of the flat section. Perhaps if the roof were properly treated twenty years ago before the asphalt coatings were applied, it would still be salvageable.

SHEATHING AND FRAMING

The sheathing and roof framing are remarkably sound, considering the number of leaks that have occurred in the roof over the years. Although the sheathing and framing are water-stained, there is little evidence of serious decay. Around the skylight enclosure and at the west end of the tower, there is localized rotting of the sheathing. The valley rafter, located southwest of the tower, has rotted at the bottom and dropped approximately 1¼ inches. However both the sheathing and rafter can be stabilized, in situ.

SKYLIGHT ROOF AND FLASHINGS

The skylight roof is also of flat seam tin plate pans. Although it is corroded, it appears that it can be salvaged. The original flashings have been replaced with higher, terne plate sheets. These have deteriorated and have pulled away from the wall.

MAIN ROOF

The main roof of the house consists of slate installed during the twentieth century. Both the original quality of the material and the workmanship were inferior with the result that pieces of slate are continuously breaking loose and falling on the tin plate roof below. The flashings and ridges have also deteriorated.
TOWER ROOF

The original tower roof reportedly was composed of batten sections of tin plate. The present roof is slate similar to the main roof. This roof is also deteriorated and pieces of slate from it are also falling on the tin plate roof.

RECOMMENDATIONS

GENERAL

As stated above, the batten roof sections are salvageable and of great cultural significance. They should be preserved and stabilized in situ. Unfortunately the flat section has deteriorated to the point where it is no longer salvageable and must be replaced.

IMPLEMENTATION OF RESTORATION

Because of the unique significance of the roof and the unusual techniques required for its stabilization, it is recommended that a negotiated contract be let for the restoration of the entire tin plate roof. This contract should be a complete package and consist of both architectural and construction components. Because of the cultural value of the roof, all work should be carefully recorded. The architectural work should be carried out in close coordination with the construction work. Some of the investigation will have to occur as the restoration occurs and plans and specifications drafted accordingly. A performance specification should be prepared for the work based on the items listed below.

The construction work requires the services of experienced building conservation specialists. In my opinion, ordinary roofing contractors would not have sufficient experience or historic preservation aptitude to execute the specialized
work required to stabilize and restore this roof. The actual preservation work is more of a conservation problem than a roof construction job. The craftsmen must use the most modern preservation theory and technology available. Naturally, they must have had previous experience preserving as well as restoring historic metal roofs. They must also be conversant with contemporary preservation objectives as well as historic construction processes.

The following components should be included in the roof restoration contract. It must be noted that the following listings form a scope of the work to be included and are **not** technical specifications.

1. **Architectural Component**
   a. Correcting, updating and supplementing the existing measured drawings to include sections, framing details, framing plans, sheathing plans, and roof covering plans.
   b. Preparation of mini historic structure report on the roof.
   c. Restoration plans and technical specifications.
   d. Inspection of construction work.
   e. Preparation of maintenance manual.

2. **Construction Component**
   a. **Batten Roofs**
      1. Remove all coatings.
      2. Repair all punctures.
      3. Repair and consolidate tin plate over and adjacent to battens and in valleys.
      4. Treat tin plate with approved rust inhibitor.
      5. Replace rotted wood cornices and rafter tails. Replace missing bricks behind cornice.
      6. Install new tin plate gutter liners and leaders.
      7. Install new flashings around chimneys and adjacent to masonry walls including cap and base flashings.
      8. Paint all tin plate with approved paint.
      9. Repair rotted sheathing and framing.
   b. **Flat Roof**
      1. Carefully remove and salvage flat section so that it can be reassembled in study collection.
2. Install new tin plate pans matching exactly configuration, pattern and composition of original.
3. Replace flashings as above.
4. Repair rotted sheathing and framing.

c. Skylight and Window Hood Roofs
These roofs should be conserved in place using same techniques as used for batten roofs. The wood skylight structure should be restored.

d. Main and Tower Roofs
The slate roofs are badly deteriorated and should be replaced with historically accurate roofs. Much of the physical evidence for earlier roofs undoubtedly exists beneath the slate. The slate roofs pose a distinct threat to the tin plate roof. If it is not possible to replace the slate before the tin plate roofs are restored, the newly restored tin plate roofs should be protected by plywood until the upper roofs are restored.

John G. Waite
May 5, 1977
APPENDIX K: PAINT STUDY WORKSHEETS AND PHOTOGRAPHS

There are two sets of originals of this material. One is on file at the Denver Service Center, Technical Information Center, and one is at the North Atlantic Historic Preservation Center. It was not cost-effective to reproduce these pages for publication. Interested readers may consult the originals in one of the two repositories cited above.
Physical Characteristics          Wallpaper          Border

Pattern and Date:             Floral stripe,   
                               ca. 1840?

Sample Size:                  Full wall

Principal Colors:             Orange and green on  
                               a white background

Paper Type:                   Rag

Paint Type:                   Distemper

Method of Paper Manufacture:  Machine

Paper Texture:                Smooth

Printing Technique:            Probably machine--paper  
                               is too badly deteriorated  
                               to positively identify

Comments: This wallpaper hangs in the servants' dining room. It was  
the only wallpaper found in the basement. The moisture of the basement  
has caused the paper to deteriorate significantly so that it crumbles when  
an attempt is made to remove it from the walls.
<table>
<thead>
<tr>
<th>Physical Characteristics</th>
<th>Wallpaper</th>
<th>Border</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern and Date:</td>
<td>Geometric, ca. 1840</td>
<td>No border</td>
</tr>
<tr>
<td>Sample Size:</td>
<td>3&quot; x 4&quot;</td>
<td></td>
</tr>
<tr>
<td>Principal Colors:</td>
<td>Green on white ground</td>
<td></td>
</tr>
<tr>
<td>Paper Type:</td>
<td>Rag</td>
<td></td>
</tr>
<tr>
<td>Paint Type:</td>
<td>Distemper</td>
<td></td>
</tr>
<tr>
<td>Method of Paper Manufacture:</td>
<td>Machine</td>
<td></td>
</tr>
<tr>
<td>Paper Texture:</td>
<td>Smooth</td>
<td></td>
</tr>
<tr>
<td>Printing Technique:</td>
<td>Block</td>
<td></td>
</tr>
</tbody>
</table>

Comments: This paper was used as a lining paper throughout the ca. 1797 rooms of Lindenwald when Van Buren redecorated the house in 1843. It lined all of Room 105 where the Zuber scenic wallpaper was hung. In the other rooms it was used to line the areas where the chair rail was removed. It was also used to cover one of the fireboards.
Physical Characteristics | Wallpaper | Border
--- | --- | ---
Pattern and Date: | Star, ca. 1840 | No border found--may have had the same border as on the fireboards; in the 1936 Weig report this black star wallpaper is described as having a green border
Sample Size: | 2" x 3" | 
Principal Colors: | Gray, black | 
Paper Type: | Rag | 
Paint Type: | Distemper | 
Method of Paper Manufacture: | Machine | 
Paper Texture: | Smooth | 
Printing Technique: | Block | 

Comments: A full panel of this wallpaper was found on the east wall of room 104 when the pier mirror between the windows were removed. The wallpaper is lined with the green print lining paper used in room 105.
Physical Characteristics | Wallpaper | Border
---|---|---
Pattern and Date: | Floral, ca. 1797 | Swag and garland
Sample Size: | 2" x 3" | 2" x 5"
Principal Colors: | Red, blue, green, black, white | Blue, black, pink, white
Paper Type: | Rag | Rag
Paint Type: | Distemper | Distemper
Method of Paper Manufacture: | Hand | Hand
Paper Texture: | Smooth | Smooth
Printing Technique: | Block | Block

Comments: This paper was found on the east wall of room 106, behind the pier mirror that hung between the windows. It was covered by two later layers of wallpaper before the pier mirror was hung. The wallpaper does not extend across the chair rail area. The border ran down the sides of the windows as well as at the cornice. The paper has horizontal seams, indicating that it was handmade. A portion of this wallpaper is still on the walls and should be conserved.
Sample No: MAVA 01 WP 005
Location: Room 106 (east wall)
Substrate: Plaster

Physical Characteristics
Pattern and Date: Floral, ca. 1810
Sample Size: 8" x 3"
Principal Colors: Light gray, dark gray, white
Paper Type: Rag
Paint Type: Distemper
Method of Paper Manufacture: Hand
Paper Texture: Smooth
Printing Technique: Block

Border
No border

Comments: This is the second layer of wallpaper (counting up from the plaster) found under the pier mirror in room 106. It does not extend across the area from which the chair rail was removed, indicating that it predates Van Buren. Part of a strip of this wallpaper is still on the walls and should be conserved.
### Physical Characteristics

<table>
<thead>
<tr>
<th>Pattern and Date:</th>
<th>Striped with floral background, ca. 1840</th>
<th>Geometric, ca. 1840</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Size:</td>
<td>10&quot; x 12&quot;</td>
<td>1-3/4&quot; x 4&quot;</td>
</tr>
<tr>
<td>Principal Colors:</td>
<td>Gold and gray on a white ground</td>
<td>Brown, black, and gold on a white ground</td>
</tr>
<tr>
<td>Paper Type:</td>
<td>Rag</td>
<td>Rag</td>
</tr>
<tr>
<td>Paint Type:</td>
<td>Distemper--gold stripe is not water-soluble</td>
<td>Flocked--varnish and rag distemper</td>
</tr>
<tr>
<td>Method of Paper Manufacture:</td>
<td>Machine</td>
<td>Machine</td>
</tr>
<tr>
<td>Paper Texture:</td>
<td>Rough, diamond-shaped, waffled</td>
<td>Smooth</td>
</tr>
<tr>
<td>Printing Technique:</td>
<td>Block</td>
<td>Block and flock</td>
</tr>
</tbody>
</table>

**Comments:** This is the third layer of wallpaper (counting up from the plaster) found under the pier mirror in room 106. It extends across the area from which the chair rail was removed. It is directly on top of the green lining paper that was placed over the chair rail area, indicating that it is very likely a Van Buren wallpaper. Nearly a full panel of this wallpaper still hangs in room 106. It should be removed from the walls and conserved. The border is the same border found on the fireboard of room 109.
<table>
<thead>
<tr>
<th>Physical Characteristics</th>
<th>Wallpaper</th>
<th>Border</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern and Date:</td>
<td>Rococo, ca. 1860-70</td>
<td>Rococo, ca. 1860-70</td>
</tr>
<tr>
<td>Sample Size:</td>
<td>4&quot; x 6½&quot;</td>
<td>4½&quot; x 5½&quot;</td>
</tr>
<tr>
<td>Principal Colors:</td>
<td>Brown, gray, gold</td>
<td>Brown, green, gold, black</td>
</tr>
<tr>
<td>Paper Type:</td>
<td>Rag</td>
<td>Rag</td>
</tr>
<tr>
<td>Paint Type:</td>
<td>Distemper--very</td>
<td>Flocked, varnish and sheared</td>
</tr>
<tr>
<td></td>
<td>small areas of flock</td>
<td></td>
</tr>
<tr>
<td>Method of Paper Manufacture:</td>
<td>Machine</td>
<td>Machine</td>
</tr>
<tr>
<td>Paper Texture:</td>
<td>Smooth</td>
<td>Smooth</td>
</tr>
<tr>
<td>Printing Technique:</td>
<td>Machine</td>
<td>Flocked</td>
</tr>
</tbody>
</table>

Comments: This is probably the 4th wallpaper and border hung in room 106.
<table>
<thead>
<tr>
<th>Physical Characteristics</th>
<th>Wallpaper</th>
<th>Border</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern and Date:</td>
<td>Floral, AWP MA 14C7, ca. 1890</td>
<td>Floral, ca. 1890</td>
</tr>
<tr>
<td>Sample Size:</td>
<td>9&quot; x 12&quot;</td>
<td>5&quot; x 5&quot;</td>
</tr>
<tr>
<td>Principal Colors:</td>
<td>Gold, beige, cream</td>
<td>Brown, gold, green</td>
</tr>
<tr>
<td>Paper Type:</td>
<td>Chemical wood</td>
<td>Chemical wood</td>
</tr>
<tr>
<td>Paint Type:</td>
<td>gold ground, oil; remaining colors distemper</td>
<td>Distemper</td>
</tr>
</tbody>
</table>

Method of Paper Manufacture: Machine  Machine

Paper Texture: Smooth  Smooth

Printing Technique: Machine  Machine

Comments: This is probably the fifth wallpaper to be used in this room. The paper was also used to cover the scenic fireboard. A sample of this wallpaper is in the Cooper-Hewitt Collection, #1970-26-4BG.
<table>
<thead>
<tr>
<th>Physical Characteristics</th>
<th>Wallpaper</th>
<th>Border</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern and Date:</td>
<td>Geometric (Eastlake?), ca. 1840</td>
<td>No border - may be the same border as on the fireboard</td>
</tr>
<tr>
<td>Sample Size:</td>
<td>1&quot; x 3&quot;</td>
<td></td>
</tr>
<tr>
<td>Principal Colors:</td>
<td>Brown, yellow, black</td>
<td></td>
</tr>
<tr>
<td>Paper Type:</td>
<td>Rag</td>
<td></td>
</tr>
<tr>
<td>Paint Type:</td>
<td>Distemper</td>
<td></td>
</tr>
<tr>
<td>Method of Paper Manufacture:</td>
<td>Machine</td>
<td></td>
</tr>
<tr>
<td>Paper Texture:</td>
<td>Smooth</td>
<td></td>
</tr>
<tr>
<td>Printing Technique:</td>
<td>Block</td>
<td></td>
</tr>
</tbody>
</table>

Comments: This sample was found under the stair platform of room 109. It was loose and therefore cannot be positively identified as having come from this room. The fragment is too small to be used as the basis for a reproduction wallpaper.
Sample too small to photograph.

<table>
<thead>
<tr>
<th>Physical Characteristics</th>
<th>Wallpaper</th>
<th>Border</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern and Date:</td>
<td>Geometric, ca. 1870?</td>
<td>No border</td>
</tr>
<tr>
<td>Sample Size:</td>
<td>1/2&quot; x 3&quot;</td>
<td></td>
</tr>
<tr>
<td>Principal Colors:</td>
<td>Green, black, maroon</td>
<td></td>
</tr>
<tr>
<td>Paper Type:</td>
<td>Rag</td>
<td></td>
</tr>
<tr>
<td>Paint Type:</td>
<td>Distemper</td>
<td></td>
</tr>
<tr>
<td>Method of Paper</td>
<td>Machine</td>
<td></td>
</tr>
<tr>
<td>Manufacture:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper Texture:</td>
<td>Smooth</td>
<td></td>
</tr>
<tr>
<td>Printing Technique:</td>
<td>Machine?</td>
<td></td>
</tr>
</tbody>
</table>

Comments: This small fragment was found behind the casing of door 117. It was on top of the brown layer of paint on the plaster walls. Physical evidence--paint, moldings--suggests that the alterations to this door were made during Van Buren's residency (see full description of room 111). This wallpaper may therefore date to Van Buren. The fragment is too small to be used as the basis for a reproduction wallpaper.
<table>
<thead>
<tr>
<th>Physical Characteristics</th>
<th>Wallpaper</th>
<th>Border</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern and Date:</td>
<td>Striped, ca. 1850</td>
<td>No border</td>
</tr>
<tr>
<td>Sample Size:</td>
<td>5&quot; x 26&quot;</td>
<td></td>
</tr>
<tr>
<td>Principal Colors:</td>
<td>Beige and pink stripes on a white ground</td>
<td></td>
</tr>
<tr>
<td>Paper Type:</td>
<td>Rag</td>
<td></td>
</tr>
<tr>
<td>Paint Type:</td>
<td>Distemper</td>
<td></td>
</tr>
<tr>
<td>Method of Paper Manufacture:</td>
<td>Machine</td>
<td></td>
</tr>
<tr>
<td>Paper Texture:</td>
<td>Smooth</td>
<td></td>
</tr>
<tr>
<td>Printing Technique:</td>
<td>Machine</td>
<td></td>
</tr>
</tbody>
</table>

Comments: This sample is the first layer of wallpaper (counting up from the plaster) found under the casing of door 124. It is most likely the first wallpaper that Van Buren had hung in this room.
<table>
<thead>
<tr>
<th>Physical Characteristics</th>
<th>Wallpaper</th>
<th>Border</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern and Date:</td>
<td>Floral with diamond-shaped background,</td>
<td>no border</td>
</tr>
<tr>
<td></td>
<td>ca. 1860-1870</td>
<td></td>
</tr>
<tr>
<td>Sample Size:</td>
<td>5&quot; x 25&quot;</td>
<td></td>
</tr>
<tr>
<td>Principal Colors:</td>
<td>Blue, white</td>
<td></td>
</tr>
<tr>
<td>Paper Type:</td>
<td>Rag</td>
<td></td>
</tr>
<tr>
<td>Paint Type:</td>
<td>Distemper</td>
<td></td>
</tr>
<tr>
<td>Method of Paper Manufacture:</td>
<td>Machine</td>
<td></td>
</tr>
<tr>
<td>Paper Texture:</td>
<td>Smooth</td>
<td></td>
</tr>
<tr>
<td>Printing Technique:</td>
<td>Machine</td>
<td></td>
</tr>
</tbody>
</table>

Comments: This sample is the second layer of wallpaper (counting up from the plaster) found under the casing of door 124.
### Physical Characteristics

<table>
<thead>
<tr>
<th>Pattern and Date:</th>
<th>Wallpaper</th>
<th>Border</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Size:</td>
<td>Striped rococo, ca. 1880</td>
<td></td>
</tr>
<tr>
<td>Principal Colors:</td>
<td>Green, gold, tan, brown</td>
<td></td>
</tr>
<tr>
<td>Paper Type:</td>
<td>Rag</td>
<td></td>
</tr>
<tr>
<td>Paint Type:</td>
<td>Distemper</td>
<td></td>
</tr>
<tr>
<td>Method of Paper Manufacture:</td>
<td>Machine</td>
<td></td>
</tr>
<tr>
<td>Paper Texture:</td>
<td>Smooth</td>
<td></td>
</tr>
<tr>
<td>Printing Technique:</td>
<td>Machine</td>
<td></td>
</tr>
</tbody>
</table>

**Comments:** This sample is the third layer of wallpaper (counting up from the plaster) found under the casing of door 124.
<table>
<thead>
<tr>
<th>Physical Characteristics</th>
<th>Wallpaper</th>
<th>Border</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern and Date:</td>
<td>Diamond, ca. 1850</td>
<td></td>
</tr>
<tr>
<td>Sample Size:</td>
<td>3&quot; x 11&quot;</td>
<td></td>
</tr>
<tr>
<td>Principal Colors:</td>
<td>Blue, gold, green, pink</td>
<td></td>
</tr>
<tr>
<td>Paper Type:</td>
<td>Rag</td>
<td></td>
</tr>
<tr>
<td>Paint Type:</td>
<td>Distemper</td>
<td></td>
</tr>
<tr>
<td>Method of Paper Manufacture:</td>
<td>Machine</td>
<td></td>
</tr>
<tr>
<td>Paper Texture:</td>
<td>Smooth</td>
<td></td>
</tr>
<tr>
<td>Printing Technique:</td>
<td>Machine</td>
<td></td>
</tr>
</tbody>
</table>

Comments: This wallpaper sample was found under the casing of door 116. Physical evidence found in rooms 114 and 118 indicate that this alteration was made in the latter part of the 19th century.
<table>
<thead>
<tr>
<th>Physical Characteristics</th>
<th>Wallpaper</th>
<th>Border</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern and Date:</td>
<td>Diamond and striped, ca. 1840</td>
<td>No border</td>
</tr>
<tr>
<td>Sample Size:</td>
<td>8&quot; x 12&quot;</td>
<td></td>
</tr>
<tr>
<td>Principal Colors:</td>
<td>Yellow, green, red on white ground</td>
<td></td>
</tr>
<tr>
<td>Paper Type:</td>
<td>Rag</td>
<td></td>
</tr>
<tr>
<td>Paint Type:</td>
<td>Distemper</td>
<td></td>
</tr>
<tr>
<td>Method of Paper Manufacture:</td>
<td>Machine</td>
<td></td>
</tr>
<tr>
<td>Paper Texture:</td>
<td>Smooth</td>
<td></td>
</tr>
<tr>
<td>Printing Technique:</td>
<td>Machine</td>
<td></td>
</tr>
</tbody>
</table>

Comments: This wallpaper was found on the north wall of room 206. It has also been found in rooms 108, 207, and 208. It is the first layer of wallpaper (counting up from the plaster) in these rooms. Prior to this papering these rooms appear to have been painted. This wallpaper has been dated to Van Buren ca. 1843.
<table>
<thead>
<tr>
<th>Physical Characteristics</th>
<th>Wallpaper</th>
<th>Border</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern and Date:</td>
<td>Japanese, ca. 1880</td>
<td>No border</td>
</tr>
<tr>
<td>Sample Size:</td>
<td>3&quot; x 9&quot;</td>
<td></td>
</tr>
<tr>
<td>Principal Colors:</td>
<td>Yellow, maroon, brown</td>
<td></td>
</tr>
<tr>
<td>Paper Type:</td>
<td>Rag</td>
<td></td>
</tr>
<tr>
<td>Paint Type:</td>
<td>Distemper</td>
<td></td>
</tr>
<tr>
<td>Method of Paper Manufacture:</td>
<td>Machine</td>
<td></td>
</tr>
<tr>
<td>Paper Texture:</td>
<td>Smooth</td>
<td></td>
</tr>
<tr>
<td>Printing Technique:</td>
<td>Machine</td>
<td></td>
</tr>
</tbody>
</table>

Comments: This wallpaper sample was taken from behind a casing near door 209 in room 206. It has also been found in rooms 108, 207, and 208. It is the second layer of wallpaper (counting from the plaster up) in these rooms.
Physical Characteristics | Wallpaper | Border
---|---|---
Pattern and Date: | Floral, ca. 1840 | Floral--flocked, ca. 1840
Sample Size: | (Taken from fireboard--full repeat) | 4" wide (full repeat)
Principal Colors: | Pink, yellow, gray on a white ground | Gray, blue, pink, green
Paper Type: | Rag | Rag
Paint Type: | Distemper | Distemper, varnish for flock
Method of Paper Manufacture: | Machine | Machine
Paper Texture: | Smooth | Smooth
Printing Technique: | Machine | Machine

Comments: A small fragment of this wallpaper was found under the casing of the cupboard that has been built into window 212 in room 201. This sample confirmed that the wallpaper had been used on the walls as well as on the fireboard. The photo above is taken from the fireboard.
Physical Characteristics

Wallpaper

Border

Pattern and Date: Floral

Floral

Sample Size: 3½" x 10"

Principal Colors: Yellow, green, brown on a white ground

Green, blue

Paper Type: Rag

Rag

Paint Type: Distemper

Distemper

Method of Paper Manufacture: Machine

Machine

Paper Texture: Smooth

Smooth

Printing Technique: Block

Flock and block

Comments: This sample was found behind the casing of door 206 in room 205. This door was moved roughly 2' to the north of its original location ca. 1850 (see description of room 205). A second sample of this paper was found in room 105, sandwiched between the green lining paper and the Zuber scenic. The Zuber scenic was hung in 1841.
<table>
<thead>
<tr>
<th>Physical Characteristics</th>
<th>Wallpaper</th>
<th>Border</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern and Date:</td>
<td>Geometric, ca. 1840</td>
<td>Greek key, ca. 1840</td>
</tr>
<tr>
<td>Sample Size:</td>
<td>3&quot; x 4&quot;</td>
<td></td>
</tr>
<tr>
<td>Principal Colors:</td>
<td>Green on white ground</td>
<td>Gray, black</td>
</tr>
<tr>
<td>Paper Type:</td>
<td>Rag</td>
<td>Rag</td>
</tr>
<tr>
<td>Paint Type:</td>
<td>Distemper</td>
<td>Distemper</td>
</tr>
<tr>
<td>Method of Paper Manufacture:</td>
<td>Machine</td>
<td>Machine</td>
</tr>
<tr>
<td>Paper Texture:</td>
<td>Smooth</td>
<td>Smooth</td>
</tr>
<tr>
<td>Printing Technique:</td>
<td>Block</td>
<td>Block</td>
</tr>
</tbody>
</table>

Comments: This wallpaper and border are on the fireboard from room 209.
<table>
<thead>
<tr>
<th>Physical Characteristics</th>
<th>Wallpaper</th>
<th>Border</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern and Date:</td>
<td>Floral, ca. 1840</td>
<td>Geometric</td>
</tr>
<tr>
<td>Sample Size:</td>
<td>Full firescreen</td>
<td>2-3/4&quot; wide x 4&quot;</td>
</tr>
<tr>
<td>Principal Colors:</td>
<td>Green and white on white ground</td>
<td>Green and black on white ground</td>
</tr>
<tr>
<td>Paper Type:</td>
<td>Rag</td>
<td>Rag</td>
</tr>
<tr>
<td>Paint Type:</td>
<td>Distemper</td>
<td>Varnish and sheared rag</td>
</tr>
<tr>
<td>Method of Paper Manufacture:</td>
<td>Machine</td>
<td>Machine</td>
</tr>
<tr>
<td>Paper Texture:</td>
<td>Smooth</td>
<td>Smooth</td>
</tr>
<tr>
<td>Printing Technique:</td>
<td>Block</td>
<td>Flock</td>
</tr>
</tbody>
</table>

Comments: It has been assumed that the wallpaper found on the fireboard in this room was also used on the walls, as was the case in room 201.
Study of Freehand Painted Walls
Martin Van Buren Historic Site:
Comparisons-Attribution
Margaret Coffin
Places Involved in Study of Freehand-Painted Walls

1. MVBS - Home of Peter Van Ness - 1797
2. Van Alstyne House - Mid 1700's
3. Schermerhorn Huyn House - Mid 1700's
4. Nicholas Kittles House - 1760
5. Turner House - Late 1700's
6. John E. Van Alen House - 1770
7. Jacob Van Worter House - 1780's - 90's
8. Dwelling place of Jessup's cousin - 9 Home of James Jessup circa 1800
I have seen free-hand painted walls in five houses in this vicinity and have photographs from a sixth beside the walls at Martin Van Buren Historic Site. I am sure that the walls in four of the houses were painted by the MVBS paint. Others quite possibly were. There is similar painting in houses in western Massachusetts and in southwestern Vermont.

Margaret Coffin

VAN ALSTYNE HOUSE now owned by the Harold Rothes, just south of Kinderhook Village on Rte. 9. There is painting on unpainted plaster in a cellarway which was once part of the front hall. Black, white and vermilion brush-stroke motifs spaced at random in an all-over pattern are almost identical with Design D at MVBS. A scroll design at the bottom of the wall is like that at Stratton Tavern in Northfield, Massachusetts. The Rothes date their house as earlier than 1790.
JOHN E. VAN ALEN HOUSE now owned by the Sam Swansons is in DeFreestville, N.Y.

Painting was discovered when a large mantel was removed to uncover an earlier mantel. Paint has now been scraped to find additional design throughout this second floor bedroom. The wall has a brown paint background. Designs uncovered are borders; one resembles MVBH Design B although painting does not look as professional. The second design, a brush-stroke border, for some reason appears technically better, and resembles brush-stroke borders at MVBH.
This home was built circa 1770.

ZULLO HOUSE (Owners, the William Zullos) Turner Hill Road, Hoos's Corners, N.Y.

Wall painting is in an upper hall. Background paint is light grey. The pattern is intricate and reaches from ceiling to chair rail. There are white curving stems covered with brush-stroke leaves and flowers in great variety. Over-strokes give shape and add realism to flowers. There are borders of black and white brush strokes, some identical with those at MVBH. There is an additional stylized flower border. All-over pattern is cleverly adapted to available space. The frieze, made up of festoons, was partially covered when the ceiling was lowered. Colors are the familiar black, white and vermillion. This house was built during the last half of the 18th century.
NICHOLAS KITTLE HOUSE, Millbrook, N.Y. now owned by Mrs. Doris Culver. Wall painting is in a parlor. This is an all-over brush-stroke pattern, with motifs placed at random on a blue background; this resembles Design D, MVBHS. The brush-stroke border around lines of construction is black and white and like MVBHS borders. This house was built in the mid-18th century by Nicholas Kittle who died in 1781 leaving the home to his son Johannes who resided there until his death in 1826.

SCHERMERHORN/PRUYN HOUSE, Kinderhook, is now owned by Roderick Blackburn. A remnant of plaster from an early chimney breast which shows painting has been preserved. The background paint is brown, the shade used in the Van Alen house. The portion which has been saved is a frieze largely made up of brush-stroke motifs in the same colors as those at MVBHS with the additional use of light brown. A flower somewhat like the shell-like flower in Design A, MVBHS, is a part of a central motif. A brush-stroke border is the same as the one which is a part of Design P, MVBHS. The house was probably built in the mid-1700's.
JACOB VAN WORMER HOUSE, West Port Ann, N.Y. (This site is furthest away, above Glens Falls.) The building has been taken down and may be purchased by New York State to be reerected in the State Museum. Painting here was found in two rooms on the main floor. In one room diamonds have been marked off with brush-stroke borders. Each diamond has a different motif in its center, often a flower or a spray of leaves. There is a brush-stroke border and a frieze with festoons and tassels. The background was off-white and is today quite yellowed from the residue of wallpaper paste. In the parlor the background is blue-green paint. The pattern there combines elements from MVHS Design D with the design used at the Zullo home. A frieze has stylized tulips. Jacob Van Wormer was a Revolutionary War soldier who migrated to Washington County and built his house soon after the war.
STRATTON TAVERN, Northfield, Massachusetts. (Present owner is Old Sturbridge Village, Inc. The building eventually will be moved.) An upper chamber here has a well-preserved wall with brush-stroke motifs within diamonds like the Van Wormer house; brush-stroke borders; a scroll design on the lower wall, and a frieze with brush-stroke swags. The scroll design is like that at the Van Alstyne House. The workmanship is excellent and obviously the hand of the MVHS painter. The tavern was built in the early 1760's.

Freehand walls exist or are known to have existed in Maine, Massachusetts, Connecticut, Vermont, and on Long Island as well as along the eastern boundary of New York State. (Philip Farr, from Cazenovia in western New York, who for years has collected stenciled wall patterns and studied early wall decoration in central and western New York, says that he has found no evidence of freehand painting before the Victorian period in that area.)

One of the few names of freehand painters that is known is that of Jared Jessup. Early 19th century wall painting in Massachusetts and Connecticut has been attributed to this artisan. Photographs of work attributed to him have led me to appraise his work as less expert than the work of the MVHS painter. However, I begin to wonder if our local walls should be attributed to him since discovering that for the period when such wall painting appears to have been done, Jared Jessup resided in Richmond, Massachusetts, a little community between Quechee Lake and Lenox, only a few miles from here. I have, to date, no proof that Jessup was the MVHS decorator or that Jessup was not the MVHS decorator. My attempt to prove attribution will be ongoing. I hope to be able to add to this portion of the report.
STUDY OF Freehand-Painted Walls
MARTIN VAN BUREN NAT'L HISTORIC SITE
March 1981
Margaret Coffin

Scale: 4 inch = 1 foot

--- partition apparently added
--- partition apparently removed
--- chair-rail removed
<table>
<thead>
<tr>
<th>Room</th>
<th>Walls</th>
<th>Woodwork</th>
<th>Ceiling and Cornice</th>
<th>Floors</th>
</tr>
</thead>
<tbody>
<tr>
<td>001 and 015</td>
<td>Whitewashed</td>
<td>Unfinished</td>
<td>Unfinished</td>
<td>Unfinished</td>
</tr>
<tr>
<td>002, 002A, 003, 003A, 004</td>
<td>Whitewashed</td>
<td>Unfinished</td>
<td>Whitewashed</td>
<td>Unfinished</td>
</tr>
<tr>
<td>007, 008, 009, 010, 011, 012, 013</td>
<td>Whitewashed</td>
<td>Munsell 5Y 9/2</td>
<td>Whitewashed</td>
<td>Unfinished</td>
</tr>
<tr>
<td>005</td>
<td>Wallpaper WP001</td>
<td>Munsell 5Y 9/2</td>
<td>Whitewashed</td>
<td>Unfinished</td>
</tr>
<tr>
<td>006</td>
<td>Whitewashed</td>
<td>Munsell 10YR 8/2</td>
<td>Whitewashed</td>
<td>Unfinished</td>
</tr>
<tr>
<td>101</td>
<td>To be determined during restoration</td>
<td>Munsell 5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td>102 and 103</td>
<td>Whitewashed</td>
<td>Munsell 5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td>104</td>
<td>Wallpaper WP003 Border from fireboard 002</td>
<td>Munsell 5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td>105</td>
<td>Zuber scenic and balustrade</td>
<td>Munsell 5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td>106</td>
<td>Wallpaper WP006 and its border</td>
<td>Munsell 5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td>107 and 108</td>
<td>Whitewashed?</td>
<td>Munsell 5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td>109</td>
<td>To be determined during restoration</td>
<td>Munsell 5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td>110</td>
<td>Wallpaper WP015 No border</td>
<td>Munsell 5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td>111</td>
<td>Munsell 10YR 6/4 Benjamin Moore CB-9</td>
<td>Munsell 10YR 8/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td>112</td>
<td>Wallpaper WP011 No border</td>
<td>Munsell 10YR 8/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td>113</td>
<td>To be determined during restoration</td>
<td>Munsell 10YR 8/2</td>
<td>Calcimine</td>
<td>Floor unfinished</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stair treads and risers Munsell 10YR 6/2, Benjamin Moore E1-45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room</td>
<td>Walls</td>
<td>Woodwork</td>
<td>Ceiling and Cornice</td>
<td>Floors</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------</td>
<td>---------------------------</td>
<td>---------------------</td>
<td>----------</td>
</tr>
<tr>
<td>114, 115, 116</td>
<td>Closest to 5Y 9/1</td>
<td>Will require a special</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td>with dispersed blue</td>
<td>match</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>pigment particles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Benjamin Moore OW-68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>117</td>
<td>To be determined</td>
<td>Munsell 10YR 8/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td>during restoration</td>
<td>Benjamin Moore CB-46</td>
<td></td>
<td></td>
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<tr>
<td>118</td>
<td>Wallpaper WP014</td>
<td>Munsell 2.5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td>No border</td>
<td>Benjamin Moore GB-30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>119</td>
<td>To be determined</td>
<td>Munsell 2.5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td>during restoration</td>
<td>Benjamin Moore GB-30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>Whitewashed</td>
<td>Munsell 2.5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benjamin Moore GB-30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>121</td>
<td>Whitewashed</td>
<td>Munsell 2.5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benjamin Moore GB-30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>122</td>
<td>Whitewashed</td>
<td>Munsell 10YR 8/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benjamin Moore GB-30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>123</td>
<td>To be determined</td>
<td>Munsell 10YR 8/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td>during restoration</td>
<td>Benjamin Moore CB-35</td>
<td></td>
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<tr>
<td>201</td>
<td>Wallpaper WP017</td>
<td>Munsell 5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td>Border fireboard 005</td>
<td>Benjamin Moore GB-60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>202, 203, 204</td>
<td>Whitewashed</td>
<td>Munsell 5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benjamin Moore GB-60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>205</td>
<td>To be determined</td>
<td>Munsell 10YR 9/1</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td>during restoration</td>
<td>Benjamin Moore OW-68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>206, 207, 208</td>
<td>Wallpaper WP015</td>
<td>Munsell 5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td>No border</td>
<td>Benjamin Moore GB-60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>209</td>
<td>To be determined</td>
<td>Munsell 5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td>during restoration</td>
<td>Benjamin Moore GB-60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>210</td>
<td>Wallpaper WP019</td>
<td>Munsell 5Y 9/2</td>
<td>Calcimine</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td>and its geometric border</td>
<td>Benjamin Moore GB-60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>211</td>
<td>Whitewashed</td>
<td>Munsell 10YR 8/2</td>
<td>Whitewashed</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benjamin Moore CB-46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>302, 303, 304, 305</td>
<td>Whitewashed</td>
<td>Munsell 5YR 6/1</td>
<td>Whitewashed</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benjamin Moore GN-33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>307, 308, and tower stairs</td>
<td>Plaster, unfinished</td>
<td>Munsell 10YR 8/2</td>
<td>No finish</td>
<td>Unfinished</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benjamin Moore CB-46</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Lindenwald
Finish Scheduled - Exterior

<table>
<thead>
<tr>
<th>Element to be Painted</th>
<th>Color Notation</th>
<th>Paint Type</th>
<th>Paint Sample for Color Matching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brick body</td>
<td>Munsell 10YR 8/4</td>
<td>PVA latex</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Benjamin Moore GB-4</td>
<td>Benjamin Moore's &quot;Moorgard&quot;</td>
<td></td>
</tr>
<tr>
<td>Window blinds</td>
<td></td>
<td>Long oil alkyd</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;Moore's House Paint&quot;</td>
<td></td>
</tr>
<tr>
<td>Wood trim</td>
<td>Munsell 2.5YR 4/2</td>
<td>Long oil alkyd</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Benjamin Moore GN-49</td>
<td>&quot;Moore's House Paint&quot;</td>
<td></td>
</tr>
<tr>
<td>Foundation and Upjohn porch</td>
<td>Munsell 2.5Y 9/2</td>
<td>PVA latex</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Benjamin Moore GW-14</td>
<td>Benjamin Moore's &quot;Moorgard&quot;*</td>
<td></td>
</tr>
<tr>
<td>Window sash</td>
<td></td>
<td>Long oil alkyd</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;Moore's House Paint&quot;</td>
<td></td>
</tr>
<tr>
<td>Metal roof</td>
<td>Munsell 7.5YR 5/2</td>
<td>Primer - Moore's Ironclad</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Benjamin Moore 30-54</td>
<td>15400 zinc chromate primer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(old numbering system)</td>
<td>Finish - alkyd Moore's</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;Impervo High Gloss Enamel&quot;</td>
<td></td>
</tr>
</tbody>
</table>

*This paint will require special mixing to get the correct sand-finish.*
North Atlantic Historic Preservation Center
Charlestown Navy Yard, Bldg. 28
Boston, Mass. 02129

Attn: M. Fadar
Re: P.O. PX 16000-9-0297

SERVICE REPORT

A large metal plate marked "TOP #3, Sep. 27 '78" was received with one surface covered with tar and grit while the opposite side was weathered but relatively clean. Sections of the plate were then washed in trichlorethylene, dried and examined in a SEM with an attached EDAX detector. The only sample preparation was a slight polish on the cut edge to remove the obvious lead smear across that edge.

A typical region was examined using the SEM mode of the instrument and then an EDAX spectrum obtained from that area. The spectra were obtained from three types of regions of the plate:

51979: 001 and 002 These data are from the edge of the plate.
51979: 101 and 102 These data are from the top or weathered surface of the plate.
51979: 201 and 202 These data are from the under or tar coated surface of the plate. It was also noted that this surface contained regions covered with rust.
51979: 301 and 302 These data are from a 60% Lead-40% Tin solder used as the standard for the comparisons.
51979: 401 and 402 These data are from a sample of 1024 cold rolled steel plate used as a standard. The small amount of manganese, phosphorous and sulfur in such steel is not detected under these conditions. The carbon is beyond the range of this EDAX detector.

The data have been obtained using 20KV, 75 microamps, a 40° tilt and an 18 mm working distance with a spot size of 6 and a magnification of 900X. All spectra have been taken using
a 100 second time period with the area being examined held
constant by adjustment of a cursor field in the SEM scope.
The EDAX spectrum analyzer was pre-set so that the following
elements would be detected in pre-set channels:

<table>
<thead>
<tr>
<th>#</th>
<th>Energy</th>
<th>Element</th>
<th>Line</th>
</tr>
</thead>
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<td>Lα</td>
</tr>
<tr>
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</tr>
<tr>
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<td>700</td>
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<td>M</td>
</tr>
<tr>
<td>#4</td>
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<td>Lα</td>
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<td>#5</td>
<td>1750</td>
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<td>M</td>
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<tr>
<td>#7</td>
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<td>Chromium</td>
<td>Kα</td>
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<td>#8</td>
<td>1300</td>
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<tr>
<td>#9</td>
<td>6400</td>
<td>Iron</td>
<td>Kα</td>
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(Pre-set windows not used)

The data obtained from the various regions of the plate and
the standards used for comparison are summarized in Table I.

The information presented in the table show that the center core
within the plate is most likely a low carbon steel. The average
counts obtained for iron from the core are within experimental
error of the counts obtained from a specimen of cold-rolled
steel. Thus the core is about 97-98% iron.

The under surface of the plate shows some tin and lead coating
but the coating is covered with a significant layer of rust.
It is difficult to estimate the composition of the coating
on the surface that had been in contact with the tar and hence
most likely the surface attached to the roof support members.

The top surface of the sample is mostly tin and lead with some
possible traces of silicon, aluminum and magnesium. The compo-
sition of the coating, obtained by a comparison to a 60-40
Lead-Tin solder is about 60% lead and 17-18% tin.

E.P. Warekois
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<tr>
<th>Chan. #</th>
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APPENDIX O: MORTAR AND PLASTER SAMPLES

The original sheets for this appendix consist of labeled squares of sand, fines, and fiber binder (if any) from all of the tested mortar and plaster samples. Since it is not possible to reproduce this material, two original sets are on file at the Denver Service Center, Technical Information Center, and the North Atlantic Historic Preservation Center.
As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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