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# HISTORIC STRUCTURE REPORT:
# THE BARTOW-PELL STABLE

prepared for

International Garden Club, Inc.
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New York State Parks and Recreation
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# BARTOW-PELL STABLE: HISTORIC STRUCTURE REPORT

## A. HISTORICAL DATA

### 1. History of Site and Building

Construction of the Bartow-Pell stable is thought to relate in point of time to the construction of the main house. Historical data for the house may be found in Lockwood Barr's Ancient Town of Pelham (Pelham Manor, New York, 1946) under the chapter heading "Sir John Pell's Manor House," where it is related that the present structure is in all likelihood the third "manor" house constructed on or near the site.[1] The first was that of Sir John Pell, 2nd Lord of the Manor of Pelham, which is said to have burned during the Revolutionary War. The second house was that of John Bartow, whose second wife (Ann) was the daughter of Joseph Pell, the 4th Lord. Bartow acquired the land in 1790 and 1792; he was a man of considerable means and is presumed to have constructed a substantial dwelling to replace the one lost in the war.

The estate passed into the LeRoy family between 1813 and 1836, when it was repurchased by Robert Bartow, John Bartow's grandson. Robert Bartow built the present house between 1836 and 1842, which is also the time period assigned the stylistically similar stable.[2] (NB: Certain aspects of the stable which appear to be characteristic of earlier construction -- the elliptical archway,[3] for example, and the raised-panel shutters -- are of less consequence in dating the building than its structural components, which indicate a mid-century date of con- 1

struction.)

The stable was sited at a distance from the main house since it served a more barn-like function than that of simply sheltering the horses and carriages. The main floor, of course, is divided into three areas: carriage room, harness room, and horse stalls. (See: Architectural Drawings Plan). The loft appears to have been undivided and used for storing hay and grain for the animals quartered below. The cellar contains two unconnected areas divided by a masonry wall and a cistern measuring about 10' square in the southwest corner. Cattle and sheep may have been kept in the cellar pens, access to which is carefully designed to be separate from the business of stabling the horses and carriages.

The hillside site -- popular in the period[5] -- was not natural. A drystone wall on line with the south facade projects from the building to create an embankment which rises gradually in front to the main stable floor. The grade (which has probably risen a foot or more in the intervening century) drops off gradually along the north, east (rear), and south sides. Thus the stable appears to be compact but is, in fact, nearly three full stories in height. The artificial site gave the builder the opportunity to enclose several uses in a building of simple design and unobtrusive scale.

The internal arrangement of the main floor succeeded in separating the carriage and harness rooms (clean areas) from

the horse stalls, which were notoriously dusty.[6] The harness room may have also quartered a stablehand, and heat was provided by a stove whose flue pipe was connected to a stub chimney constructed on the loft floor directly over head.[7] A hole in the harness room floor indicates the practicality of locating the cistern in the cellar beneath; water was handy to the harness room's occupant for a variety of purposes.[8]

It would appear that the only interior access to the loft was a built-in ladder located against the center partition in the stall area.[9] (A newer stairway in the northwest corner of the carriage room is constructed of two recycled, nineteenth century planks but held together with wire nails.[10]) The location is logical, since access to the hay loft was a function of feeding the horses. Period sources warn against an opening to such a loft from the carriage room because of the consequent dirt and debris which sift down to the main floor.[11]

The horse stalls were constructed to give the horses a minimum of space in which to maneuver. They measure 5' in width which, according to A. J. Downing's The Architecture of Country Houses (1850), should be another ½' wide, since "only a small horse can lie down comfortably in such a stall -- and shame to him who builds a stall in which his horse is forced to sleep standing."[12]

An amenity provided in the Bartow-Pell arrangement which is also mentioned in Downing's work is a gutter which carries

off "moisture" from the stalls.[13] Like the gutters attached to roof eaves of the period to collect rain water, these are fashioned out of solid logs but are level with the flooring at the rear of the stalls. Holes at one end of each of the two gutters drew the urine away from the stalls where it presumable poured into a tank positioned for the purpose in the cellar below. Contemporary sources suggest such a design as an effective method of keeping the floors dry.[14]

The actual appearance of the stalls and their accoutrements has not been reconstructed here in detail from the physical evidence thus far recorded, but a close approximation of their probable arrangement is illustrated in a contemporary American Agriculturist (June, 1845).[15] Under the title "Stalls of Mr. Pell," a brief article and perspective view provide numerous details which are remarkably consistent with surviving evidence in the Bartow-Pell stable: e.g., the width of the stalls, direction of the flooring and overhead beam, and type and size of partition posts. The illustration would provide invaluable details for reconstruction drawings if the interior is ever restored to its early appearance. 9,10

Another missing feature, but one of such necessity that its precise dimension and form rather than its probable installation in the building is cause for debate, is a device for ventilating the hay loft. The roof framing and surviving board sheathing seam to rule out a large, raised opening in the

center of the roof such as those suggested in contemporary sources.[16] Other, patented devices such as "Espy's Patent Conical Ventilator"[17] or Mr. Frederick Emerson's "Injecting" and "Ejecting" ventilators[18] are equally unlikely but serve to illustrate concern for the subject. As one contemporary source points out:

> Of all the arrangements of the stable, with a view to the comfort and health of the horse, none are so important as those which have in view a proper ventilation. On the purity of the air of the stable depends the health of the horse and his power to do his work; and the object of ventilation is to secure a full supply of pure air to answer the demand arising from consumption. [19]

Close examination of the deteriorated rafters removed from the center of the hipped roof in 1978 (See: Section A, Part 2) indicates that a small cupola measuring approximately 4' square may have been attached to the center of the roof framing. Such a cupola relates stylistically to the main house and if it were fitted with louvers would have served the purpose. A ventilating cupola of this type survives on a much larger barn built in Greenport, Long Island, in 1857. (The Italianate house, built of ashlar granite for David Gelston Floyd, is similar in scale to the Bartow-Pell house, although its round-headed gable windows and bracketed eaves point to the later style.[20]) The barn's cupola is constructed of four corner studs which are spiked into the rafters, leaving one rafter between. The evidence indicates that a very similar device was probably installed on the Bartow-

Bell stable roof during its original construction.

Additional ventilation may have been provided by the air spaces between the blocks of wood which support the roof plate. 13 As A. J. Downing suggests:

> The builder or architect must exercise his ingenuity so to introduce the openings for fresh air as not to be seen, or if seen, so as not to be unsightly.
>
> A very easy mode of doing this, in a projecting roof, is to form apertures in the ceiling of the under side of the overhanging eaves. [21]

Thus ventilated, the loft could be loaded with hay and grain as long as space was allowed for the air to circulate. While some physical evidence and contemporary documentation survives to illustrate the way in which the hay and grain were lowered into the stalls,[22] little survives to substantiate the way in which it was lifted to the loft. Interior access seems unlikely; the narrow hatchway above the stalls would have provided insufficient space and the carriage room stairway has proved to be of more recent installation.

The solution is found in the framing below the northwest 6 loft opening where paired tenons are all that survive of three beams which were originally cantilevered to support an exterior platform. Of the four loft openings, this is the closest to grade and thus the most accessible for off-loading hay and grain. It is likely that an exterior staircase of open treads connected the platform with the ground, although nineteenth century views

show the way in which hay could be forked from a wagon into the second story loft.[23] (A drop in the grade beneath the loft opening suggests the likelihood of an actual staircase. Archeological investigation of the area may reveal a stone footing for the bottom of the stringers.) Preliminary investigation of contemporary sources reveals numerous designs for loft openings but only one that suggests that "a simple platform over the door is perhaps best to unload on, and to ascend to the loft by."[24] This reference refers of course to a loft opening placed directly above the center door as so many contemporary designs illustrate.

Another feature of the Bartow-Pell stable, the cistern, has little supporting documentation in contemporary stable literature. It is undoubtedly original to the structure, since it is an integral part of the ground floor masonry (See: Section B, MASONRY). Some sources cite that water can be pumped from a distance, as in Downing, who makes reference to an "Hydraulic ram" which he describes as:

> the most perfect little water engine known -- is used to supply barn-yards and farmeries with water. Wherever there is a perpetual spring or stream, within a few hundred feet of the barns, the overflow of which will fill a pipe of 1¼ inches bore, a hydraulic ram may be set up, at about the cost of digging a well of moderate depth, which will convey a constant supply of water to the house or farm-yard, or both. [25]

Cisterns, of course are well documented in the period, but their location within a barn or stable has few references

in the sources thus far consulted.[26] In general, it was recommended that the cistern be constructed or lined with brick and surfaced with hydraulic cement; one source recommends that "hard-burned bricks are the best for cisterns, as they do not soften on the outside by moisture."[27]

A simpler method is described in the American Agriculturist in January, 1846:

> Many farmers might conveniently, and with great advantage, furnish themselves economically with an extensive and permanent supply of water, when otherwise deficient, by constructing cisterns. Where they have compact clay land, no further preparation is necessary for ordinary use for stock, than to excavate to a sufficient size; and to keep up the banks on every side, place two frames of single joice around it near the top and bottom, between which and the banks, heavy boards or plank may be set in an upright position, reaching from top to bottom. . . This should be made near the buildings; and the rains, carefully conducted by the eaves-troughs and pipes from an extensive range, will afford an ample supply. [28]

In the case of the Bartow-Pell stable, where the cistern is contained within the building, it is most likely that water was collected from the roof in "eaves-troughs" (gutters) and conducted directly into the cistern. The only evidence for such a point of entry is a cement-lined hole in the masonry of the south facade (which may in fact be an overflow rather than intake). In the absence of other evidence, however, it seems likely that gutters were originally attached to the eaves and that a leader brought rainwater off the roof, down the south facade and into the cistern. The water could then be pumped

up inside the stable into the harness room where a large hole still exists in the flooring. Further exploration of this cistern may reveal evidence of the "alternate layers of gravel, sand, and charcoal" which were recommended to render "the purest water in the world."[29]

2. Construction History and Morphology

After the stable's original construction in 1836-42, it appears from the physical evidence to have undergone a significant interior alteration only once. Other changes to the building -- interior and exterior -- pertain only to its deterioration and repair.

The alteration is the east-west partition which separates 8
the carriage and harness rooms. Its narrow, vertical tongue-and-groove boarding appears to be of late nineteenth century vintage, which agrees in time with the only transfer of the property's ownership.[30] (NB: It has yet to be determined whether the partition was entirely new to the building or whether it replaced an original in the same position. Period sources indicate the universal separation of the carriage room from the harness or saddle room.) The flooring in the harness room is of identical, narrow boards which were presumably installed at the same time. The flooring in other areas of the main floor, like that in the stall area, also appears to be a later application, perhaps to strengthen or replace worn areas.

The carriage room stairway is of twentieth century, wire

nail fabrication. It may replace an earlier one in the same location, but close examination of the area indicates that no such stairway was included in the original scheme. Although the heavy plank stringers appear to be of nineteenth century vintage, they bear little trace of any other use and are not believed to have been recycled from the exterior stairway. Construction of the stairway inside the stable disregards the need for loading the hay loft as well as keeping the carriages clean; therefore, it is in all likelihood a post-1888 modification. 2,4

The lack of original, interior fabric -- wall sheathing, stalls, windows, shutters, doors, and the like -- results from a long period of neglect rather than any intentional alteration of the building. Sufficient evidence survives, however, to indicate that the original fabric was probably never replaced with newer equivalents (except for the east-west partition, as noted) but simply used and eventually discarded. Minor repairs such as the heavy planks nailed on the floor to cover holes are stop-gap repairs.

In contrast to the lack of documentation for the stable's original construction and late nineteenth century alteration, its most recent and most extensive consolidation by the National Trust's Restoration Workshop is of course thoroughly recorded.[31] With matching funding from the New York State Division for Historic Preservation, the International Garden Club, Inc., retained the Restoration Workshop to stabilize the roof structure,

repair the masonry around windows, infill and ventilate the window and door openings, and install shoring under the first and second floors.[32] The roof as it is now rebuilt is essentially as constructed in 1836-42; much of the original fabric was conserved, in fact, and only severely rotted beams and boards replaced with equivalent elements.[34] These have been conserved in the structure for future investigation and were photographed in place prior to their removal. 13

The stabilization program succeeded in delaying the stable's deterioration and protected the interior fabric analyzed in this report. Additional stabilization is now required, however, to ensure preservation of the masonry and interior wooden fabric (See: Section C).

## 3. Notes and Sources

1/ Barr, Lockwood, compiler, Ancient Town of Pelham, privately printed, 1946, pp. 38-47. A reliable synopsis of the three houses, their builders and occupants appears on pp. 44-45.

2/ There are several points of similarity between the stable stonework and that of the main house wing and rear facade cellar stonework. More important is the hipped roof and glazed and/or louvered cupolas.

3/ Few stables of the early nineteenth century still stand intact, but significant examples have been published, notably those of Samuel McIntire which appeared in Fiske Kimball's Mr. Samuel McIntire, Carver The Architect of Salem (1940). An elliptical or round-headed arched opening is typical of McIntire's designs, which date from the 1790-1810 period. (See: Fig. A, Crowninshield Stable, ca. 1804-1806, and Fig. B, Derby Barn, after 1800.)

4/ Shutters of the type relate to fielded paneling used throughout the eighteenth century. They are not employed in the main house, but were suitable for a stable interior where style was apparently not the prevailing criterion. 14

5/ The American Agriculturist, Vol. XVII, No. 9, (September, 1858) gives designs for "the bank, or side-hill barn" and asserts:

> We cannot say that under all circumstances, even with a good site, we would prefer a side-hill barn; but if so, we should take extraordinary precaution to secure it from frost and wet, by the most thorough filling, embankment, and drainage.

Another design, specifically for a side-hill stable, but of a slightly later period, is given in Geo. E. Harney's Stables, Outbuildings and Fences (1870). Harney provides a perspective view, basement and principal floor plans (Fig. C) which bear many similarities to the Bartow-Pell stable.

6/ A.J. Downing describes the situation in his The Architecture of Country Houses (1850), in which the author includes an entire chapter on the subject of "Hints for Cottage and Farm Stables":

> It is a common practice, even in stables of large size, to place the flight of steps to the hay-loft in the carriage-house, or space where the vehicles are kept; but as this always effectually prevents the possibility of keeping either wagon, carriage, or harness clean, since the dust of the hay will find its way down the opening of the stairway, we would always place the access to the hay-loft, if it be only by a ladder, in a passage by itself, separated by a door from the room where vehicles are kept. (pp. 213-214)

7/ The bricks from the chimney which was now entirely collapsed are conserved inside the structure. Harney (Stables. . ., Plate No. 3) gives a similar arrangement and writes that "the chimney starts from the harness room, where there is a hole for a stove-pipe."

8/ Downing's illustration of a Mr. William Sayer's barn ("one of the best and most complete examples of this kind of barn and stable within our observation") describes the carriage house as follows:

> At the side of the door, on entering his apartment, is the pump, c, a large cistern, which takes all the water from this side of the roof, being built under the floor here. There is a spout running through the wall and another through the stable, to convey water both into the cattle-yard and the stables. (pp. 221-222)

Evidence for a similar arrangement may be discovered in the surviving fabric of the Bartow-Pell stable, although the entire roof (and consequently the gutter) has been removed and rebuilt.

9/ Considerable wear on the rungs suggests that the apparatus has been in use for a long period of time.

10/ It is unlikely that the planks were recycled from a stairway on the exterior wall, where it seems more likely that a simple ladder provided access to the hay-loading platform now known to have been projected from the upper story window.

11/ See: Note 6.

12/ Downing, Op. cit., p. 216.

13/ Ibid, pp. 216-217. Downing describes the ideal stable floor as follows:

> . . . the floor of the stall, upon which the horse stands, should incline about 1½ inches till it reaches the end of this partition,

behind which should be a depression or gutter, to carry off all the moisture.

14/ The American Agriculturist, Vol. VI, No. 1, (January, 1847) indicates that:

> One of the greatest defects still existing throughout the country, in the farmer's stables, is the want of tight floors, and a channel in them for the purpose of carrying off the urine of the stock into tanks for its preservation, to be applied at a future day to the grass and clover crops. We advise all who have not their stables thus formed, to remedy the defect as soon as possible. . . (p. 13)

15/ The view is remarkably like that of what was once installed in the Bartow-Pell stable, although the owner has been identified as Robert Livingston Pell, a resident of Ulster Co. in the 1850 census. (Fig. D)

16/ The American Agriculturist, Vol. IV, No. 11 (November, 1845) devotes an entire article to the subject of stable ventilation and provides a design for an open light well with windows that:

> admit the escape of the ascending warm air, charged with carbonic acid. They are attached by hinges, and may be opened and shut wholly or in part, at pleasure. This method has a double advantage; it ventilates and brings the light into the stables from above. (Fig. E)

17/ Illustrated in the American Agriculturist, Vol. II, No. 5 (August, 1843), pp. 151-152. (Fig. F)

18/ Downing, Op. cit., pp. 190-194.

19/ See: Note 16.

20/ Similar windows are employed in the barn, whose

framing proves it to be of about the date of the main house.

21/ See: Note 18. The louvered cupola is represented in many illustrations of nineteenth century stables and is certainly the typical solution to the ventilation problem. Two of the earlier period are shown in Figs. A and B, while Harney's designs (ca. 1870) all specify such a device.

22/ Quarter-round holes cut through the flooring above each of the stalls were undoubtedly the openings made to pitch hay down from the loft. Chutes may have been attached to these openings but traces of these and related fittings have not been observed and recorded in this report. 12

23/ See, for example, the cover illustration of the American Agriculturist, Vol. XXXIX, No. 8 (August, 1880). (Fig. G)

24/ The Cultivator, Vol. I (New Series), No. 12 (December, 1844), p. 385.

25/ Downing, Op. cit., pp. 225-226.

26/ Harney's plan for a brick stable for two horses (Stables . . . ) suggests:

> Under or near this stable should be a large cistern, receiving its supply of water from the roof, and supplying the mixing-trough and water-trough by pumps, so that at all times and in all weather there may be water for the horses always at hand. (Fig. H)

27/ Hodgson, Fred. T., Plaster and Plastering. Mortars and Cements, How to Make, and How to Use., New York, 1883, p. 64.

28/ American Agriculturist, Vol. V, No. 1, p. 10.

29/ Ibid.

30/ Barr, Op. cit., p. 41. The estate exchanged hands in 1888 when the City of New York acquired it for park-land. It has been suggested that the City did use the stable at an early period, which may explain the interior alteration at this time.

31/ Reconstruction drawings and contract documents are appended to this report.

32/ See: "Contract for Restoration Work" (excerpt), Appendix 5.

33/ See: Architectural Drawings, Appendices 1 - 4.

## B. ARCHITECTURAL DATA

### 1. Description: Exterior

#### a. Masonry

The Bartow-Pell stable is a relatively small masonry structure measuring approximately 38 feet by 34 feet in plan. The exterior load-bearing walls are 24 inches thick and are constructed of coarsed cut rubble--roughly squared and of random dimension, laid in a flush tooled hydraulic mortar. The majority of the stone appears to be local schist, gneiss, and granite (found as outcroppings in the area); however, isolated blocks of marble, limestone, and sandstone are also evident. Although the building appears to be utilitarian and devoid of ornamentation, subtle details exist which are similar and, in some cases, identical to the more finely dressed stonework of the main house. This is particularly evident in the use of brick quoined enframements around the stable window openings and the main house cellar windows. Fine brick detailing also exists in the wide elliptical arch opening on the west facade.

In comparison to the coarsed cut rubble of random dimension used for the construction of the stable walls, larger blocks of roughly squared stone have been employed as quoins for the four principal corners and the west entrance and as sills and lintels for the window and door openings. Although there appears to be little, if any, regular pattern in the

coarsing of the exterior stone rubble, a difference can be observed in the smaller, less carefully laid stonework of the interior cellar and cistern walls and interior faces of the exterior walls. Surviving finishes indicate that these interior surfaces were once whitewashed (where exposed) for sanitary and waterproofing purposes.

b. Roof

The stable retains its original shallow hip roof which was once capped at the apex with a wooden louvered ventilator. (See elevations). Although much of the roof was extensively repaired in 1977, several surviving sheathing boards, left in place, exhibit neither nails nor nail holes, suggesting that the roofing material was a soldered sheet metal covering. It is not possible at this time to pinpoint exactly which metal roofing system was in use since tinplate, sheet zinc, and galvanized iron were all popular by the mid-nineteenth century.

2. Description: Interior

a. Framing

The framing for the floors and roof of the stable is characteristic of mid-nineteenth century work. The traditional, heavy frame mortise-and-tenon technique of joining the principal beams has been abandoned in favor of nailing the members together in most instances. Although this is a masonry structure, and lacks such primary wooden components as posts, sills, and

The north-south partition on the main floor is composed of wide vertical studs which carry a 3" x 10" beam set on edge and notched on its under surface enough to key it in place. This "girt" appears to be scarfed above the wide door opening to the stall area (removal of the door trim would confirm this observation) where, for further strength (three joists are carried above the door), a secondary beam of identical proportion is spiked to its west side for reinforcement. A similar interior partition stands in the loft above and provides intermediate support for the hipped roof framing. 7

The three most apparent exceptions to the mid-century preference for nailing the beams in "balloon frame" fashion occur in areas where structural solidity was critical. One instance is the area above the front elliptical archway where the brickwork rises to the height of the masonry where the joists are typically seated. In order to leave the arch undisturbed, a north-south beam in tenoned into the joists which are keyed into the masonry on either side, and this in turn receives the ends of the joists above the entryway. Additional solidity is assured by three iron tie bars: one at each end and one in the middle, which anchor the secondary beam into the stonework. The tenons are paired at each end of the beam (or, rather, they are paired at the south end; the beam has rotted away at the north end where only the mortises in the east-west joist remain). 4

Similar tenons protrude through the end joist in the area below the second story's northwest opening. The tenons and fragments of beams set in the wall are all that remain of the structural support for a deck or landing which once projected to the outside (thought to be a platform which may have secured the top of an exterior flight of steps). Since the three joists were cantilevered through the masonry and may have carried considerable weight, they were each tenoned into the interior floor joist for added stability. 6

The third instance of the traditional mortise-and-tenon joints occurs in the roof framing. The frame is made up of primary rafters of similar dimension to the floor joists supplemented with smaller intermediate sticks. The rafters are bird-mouthed to a 3" x 10" plate which is laid flat around the perimeter of the masonry wall (the plate is supported above the masonry by short lengths of wood which are keyed into narrow sticks set into the inner and outer edges of the stonework). At their upper end, the rafters are nailed to four beams which break the roof slope and define the 10' x 14' rectangular area at the center of the hipped roof. 13

A significant exception to the prevailing technique of spiking the rafters together occurs on the two longer (east-west) of these inner beams. They are mortised to receive the five rafters which span the center roof area. (Each of these

rafters is sawn at an angle from a center point to give the roof a gentle pitch.) Like the other instances for employing mortise-and-tenon joints, it would seem that the builder anticipated the need for additional stability in this area which he expressed in terms of the more conservative framing technique. Aside from the function of keying the entire frame together, these five rafters support a relatively flat roof section which also contained the additional weight of a ventilating device: two reasons for ensuring the load-bearing capacity of these center rafters. (See Section A, Part 2 for a description of the work done to repair the extensive deterioration of the roof framing in 1978.)

An integral part of the interior framing--the bridging between the joists--appears original to the building. The short lengths of board are reciprocally sawn like the joists and secured with cut nails of the ca. 1830-50 type. Another stabilizing device anchors each corner of the two tiers of floor joists into the masonry, effectively preventing any eventual shift in the stonework from causing sudden damage to the structure. The device is a length of board measuring approximately 5' which is let into notches made in the first three joists beginning with that closest to the masonry wall. The boards themselves are notched to prevent them from moving sideways and they are tied to the stonework with iron bars (thus

keying the first and second floors into the north and south walls as well as the east and west where the joists themselves are seated). The floor and roof planking (1" boards) provide the final stabilizing effect.

While not strictly an aspect of the framing, two beams in the stall area in the rear of the main floor are nevertheless original to the building and fashioned in the way that exterior gutters were often made in the early nineteenth century. The beams are very rotted and have fallen partially into the cellar, but enough of them survives to show that they were once set on a level with the flooring at the rear (i.e., inside end) of the stalls. Like gutters, they are troughs whittled out of solid beams and were designed to carry urine away from the stalls. A hole was drilled through one end which allowed the urine to drain into the cellar (See: Section A, Part 1).

b. Wall Sheathing and Finishes

The masonry walls were constructed in such a way that the interior of the principal floor could be sheathed with vertical boards. This fact is deduced from the consistent use of 1" sticks laid horizontally in the masonry to which interior sheathing could be nailed. The sticks occur at all places -- at the top, center, and bottom of the walls, above window openings and the like -- that such sheathing would require fastening. Some of the vertical boarding survives intact, but other

2, 3

9

areas of the masonry walls appear to have never been covered.

Vertical, 1" thick boards cover the two exterior walls in the so-called "tack room" in the southwest corner of the main floor. The boards are not tongue-and-groove, beveled, or beaded on their edges, but simply butted. The boards on the south wall are interrupted by a pegboard which retains its original cut nails and pegs, evidently intended to support considerable weight as it is keyed directly to the wall. 8

Vertical sheathing also survives on the three walls in the rear, stall area, where the horizontal sticks set into the masonry clearly define a particular pattern for the boards. Typical of horse stalls of this period, the sheathing is meant to protect the walls from their occupants; thus, the boarding is lower for the hind quarters, higher for the head. The sticks set into the east (rear) masonry wall are placed to receive boarding in this configuration, as the vertical sheathing on the south side of this wall clearly demonstrates. The north and south walls which contain the small windows were entirely covered, whereas the interior partition was boarded horizontally in the same configuration as the east wall (NB: the south side of the stall area adjacent the partition appears to have contained the access to the loft and was not, in fact, a stall; thus, the partition in this area was not boarded). 9, 10

The north-south partition separated the carriage room and related harness room from the stall area. It is horizontally 7

boarded on the west (front) side, the boards being carried up to the second story flooring, thus preventing dust and debris from penetrating the front rooms. The east-west partition (See: Section A, Part 2) probably replaces the original of this location; its narrow horizontal boards appear to be of late nineteenth century vintage, but its function is essential to the interior organization of the structure.

The largest of the three principal spaces -- the carriage room -- lacks vertical sheathing on its north and west (exterior) walls, and evidence suggests that none was ever attached to the stonework. The nailing strips have little evidence of previous nailing and the stones are thickly encrusted in places with whitewash. The recessed window cheeks are sheathed in a manner consistent with the other windows (See: Description: Windows and Doors), however, and the boards project about 1" beyond the masonry surface as if to lie flush with the interior wall-boarding. At present, there is no explanation for the lack of interior finish in this area. 2,4 3

The under surface of the loft flooring is exposed and appears to have never been covered, except for the harness room, where a later application of boarding on the ceiling may replace an earlier, identical treatment. The harness room, which was kept heated (See: Section A, Part 1) and clean, required more complete interior sheathing than the other stable areas for these reasons. 8

The other two stories of the stable -- the loft and the cellar -- retain no evidence of interior boarding. Instead, their masonry surfaces were whitewashed or left untreated. And like the two tiers of flooring below, the under surface of the roof framing appears to have also been left exposed. 13, 15

c. Windows and Doors

The symmetrical placement of windows and doors in the Bartow-Pell stable is a direct expression of its interior room use (See: Section A, Part 1). Each of the openings is now fitted with temporary boarding to prevent intrusion, but many of these openings retain sufficient evidence of their original appearance.

Plywood infill now replaces the two heavy plank doors which hung until recently (1978) in the arched opening to the main floor. The rectangular doors are now stored inside the structure. Their long iron strap hinges (which terminate in pintles rather than eyes in order to engage the iron eyes set into the masonry) and cut nail fabrication indicate nineteenth century construction, although they may not be the originals. Examination of the masonry on the inner surface of the archway indicates that a wooden jamb had been affixed to receive such doors, and that the actual arch was in all likelihood filled with a wooden panel.

The two windows flanking the main entrance and those corresponding to the carriage and harness rooms on the north and

south facades were once fitted with vertical sliding sash (not counterweighted, or "hung"). Fragments of the sash survive inside these openings; perhaps the most intact is that in the north wall. The 6-over-6 light configuration and muntin profiles are characteristic of early to mid-nineteenth century work. The cheeks of these four windows, however, are splayed and flush-boarded in order to receive interior shutters. Luckily, a pair of the shutters survives remade into a trapdoor above the steps to the loft. Each measures 15" by 52" which, together with surviving butt hinges, matches the evidence for such shutters in the four windows on the main floor. Their raised-panel construction seems to be characteristic of an earlier period than that assigned to the stable, but other conservative features have been observed in the building's framing and finish (See: Section B, FRAMING). The clear imprint of a round-headed drop-bolt which had been attached to the bottom of one of the two shutters suggests a mid-nineteenth century date for their fabrication.

The other windows on the main floor -- three tiny openings in each of the north and south facades -- admitted light and air into the stalls. Severe deterioration of the interior woodwork nearly obliterates the evidence of small, single window sash which were hinged to open inward. Iron bars set flush with the interior wall sheathing apparently prevented the horses

from gnawing at the sash.

A long, narrow opening centered in the east wall (now boarded up) appears to have been a combination door with transom to allow additional light to the stall area. The door and transom have been lost, but enough of the jamb survives to indicate that a single door was once hinged on the right on double strap hinges, one of which (lower) survives. The door was approximately 6' high and above it there appears to have been a window judging from the paint lines on the jamb indicative of a window sill. The exact dimension and type of window is as yet undetermined. The doorway served to expedite removal of manure from the horse stalls. 9

Like the door on the main floor, the two cellar doors were probably single doors of simple plank construction hung on strap hinges. The openings are now boarded up, one of which contains heavy wooden jambs which may be original. Unlike the door in the stall area, these contained no transoms. The only light admitted to the cellar came from the opposite wall, where two wide windows are located corresponding to the two loft openings. These window openings are severely deteriorated since the grade has risen above the original level of the sills.

Even greater deterioration has taken place in the loft, where advanced roof deterioration has led to a total obliteration of the four original window/door openings (See: Section A, Part 2). As they are now rebuilt, the brick-lined openings are

not splayed as the windows are on the main floor, which indicates that a single device (sash, shutter, or door) was probably employed to close the opening rather than a combination of devices. The fact that the loft flooring continues into the four openings suggests that louvered shutters (for ventilation) or simple plank-type doors were used (the exterior deck which was probably cantilevered out beneath one of these openings further suggests that shutters or doors, rather than window sash, were employed in these openings). The blocks of wood now set into the brickwork replicate the originals which received the jambs for the missing elements.

Two interior doors -- one in each of the two partitions on the main floor -- have also disappeared. The partition between the carriage and harness rooms is thought to date from the late nineteenth century; its door is of a piece with that period and therefore no trace of an original survives. The larger partition which separates the stalls from the front rooms has a wide opening for a sliding door. Original, flush horizontal sheathing on either side of the opening bears clear evidence of a door sliding to the left, and shorter grooves on the right casing where the door overshot the opening. Although the door itself no longer exists, the type is known to have been employed in the period (See: Section A, Part 1). 7

## C. EXISTING CONDITIONS

### 1. Introduction

The Bartow-Pell stable is a significant structure due to its unique contemporary relationship with the main house as well as its rarity as an intact outbuilding of the mid-nineteenth century. Restoration and maintenance of the building should therefore be a first-order priority among future work to be executed on site. Given the age of the building (approximately 135 years) and the general lack of maintenance, the stable is in remarkably good condition. Nevertheless, considerable damage has occurred and evidence of continuing deterioration is cause for serious concern, especially because of the accelerating nature of these processes. In this section, existing conditions and general deterioration problems and recommended methods of treatment will be discussed. The conditions described below are representative of the problems observed in the field.

### 2. Environment

It is not clear to what extent the immediate environment around the stable has changed; however, reports indicate that the present swampy condition did not exist at the time of its construction. Both the probable change in grade level (approximately one foot) and the rising watertable have caused serious drainage problems, particularly on the north (rear) and east elevations. This has resulted in extremely damp conditions in

the lower level which have been further accelerated by a lack of ventilation due to the sealing of the window and door openings. Although the masonry and mortars have been able to adjust to these high moisture conditions, most of the wood framing is in seriously deteriorated condition due to fungal and insect attack. Any attempt to change the relative humidity drastically over a short period of time could cause widespread mortar disintegration.

3. Masonry

A visual inspection, conducted at ground level, indicates that the masonry walls are in sound condition. No apparent cracks, bulges, or signs of settlement are in evidence. Vegetation (creepers) rooted in the nearby ground and in decayed joints has been and continues to be a major problem causing mortar breakdown and displacement of the masonry. This, in turn, has allowed water to penetrate into the walls causing further masonry movement due to frost action and the deterioration of the interior wood framing and sheathing. Defective and absent pointing, whether caused by weathering or vegetation, has allowed several areas of the stonework to become loose, leading to potential stonework collapse. This has occurred in the past as seen in the area over the north door (based on the later brick infill) and in most of the brick quoin surrounds.

4. Framing and Woodwork

To date, the stable roof framing has been carefully repaired by the National Trust Restoration Workshop; however, further stabilization and conservation treatment of the ground level (rear) framing is necessary. As already stated, excessively damp conditions have caused deterioration and subsequent structural failure of the lower framing members. Phase II restoration work should be conducted immediately in this area and involve the necessary repair, replacement, and consolidation of these timbers. All replacement members should first be 'seasoned' to the temperature and humidity in this area before shaping and installation in order to avoid warping and expansion. 13

Interior woodwork including surviving window sash, doors, and shutters will require further study in order to identify each element and prescribe specific treatments and recommendations. In general, the interior woodwork at the stable is intact and capable of restoration. The window sash, casings and sheathing board which have been identified to the mid-nineteenth century are in extremely poor condition. The paint has deteriorated to the point where most of the wood is now exposed. The putty on all the sash is also nearly completely deteriorated, allowing water to gain access into the stiles, rails, and muntins of the sash, especially at joints where the end grain is exposed.

It is recommended that after a more thorough examination of each element is conducted, a specific decision be made concerning the feasibility (and desirability) of repair versus complete replacement.

## D. CONSERVATION TREATMENT PROPOSAL

### 1. Grading and Waterproofing

Efforts to alter the damp conditions radically in the 15
'cellar area' should be cautiously approached. Due to the area's high water table, a relatively dry environment will always be difficult to achieve. In order to allow proper drainage of rainfall away from the building, the surrounding grading must be corrected. Concealed window sills on the west facade indicate that the grade level has risen at least one foot since initial construction. Any regrading must be done in conjunction with archaeology as evidence for an attached stone-plinthed pen on the east side has been discovered recently.

The use of traditional waterproof membranes or coatings on the masonry foundations (below grade) would retard rising damp and provide partial control. Total water-proofing could only be achieved if the entire foundation could be isolated from the soil by a continuous waterproof coating. Under no conditions should the earth and cobble cellar floor be rendered impermeable to water vapor. Such a treatment would not only disturb the original paving of this floor, but it would cause ground water to migrate up the walls. Similarly, the introduction of artificial dehumidifiers would create a dynamic condition causing more water vapor to enter the dehumidified area.

2. Masonry

In order to stabilize and weatherproof the stable walls, it will be necessary to remove all creepers and to repoint the exterior and interior walls. In the areas where the bedding mortar is absent, resulting in large voids between the stone and brickwork, low-pressure grouting should be considered. Missing, damaged, and loose brick and stone must be repaired and rebuilt where necessary using the original materials (found scattered around the site) or an approved substitute match. In all cases, the original bonding patterns, coursing, and joint dimensions should be replicated.

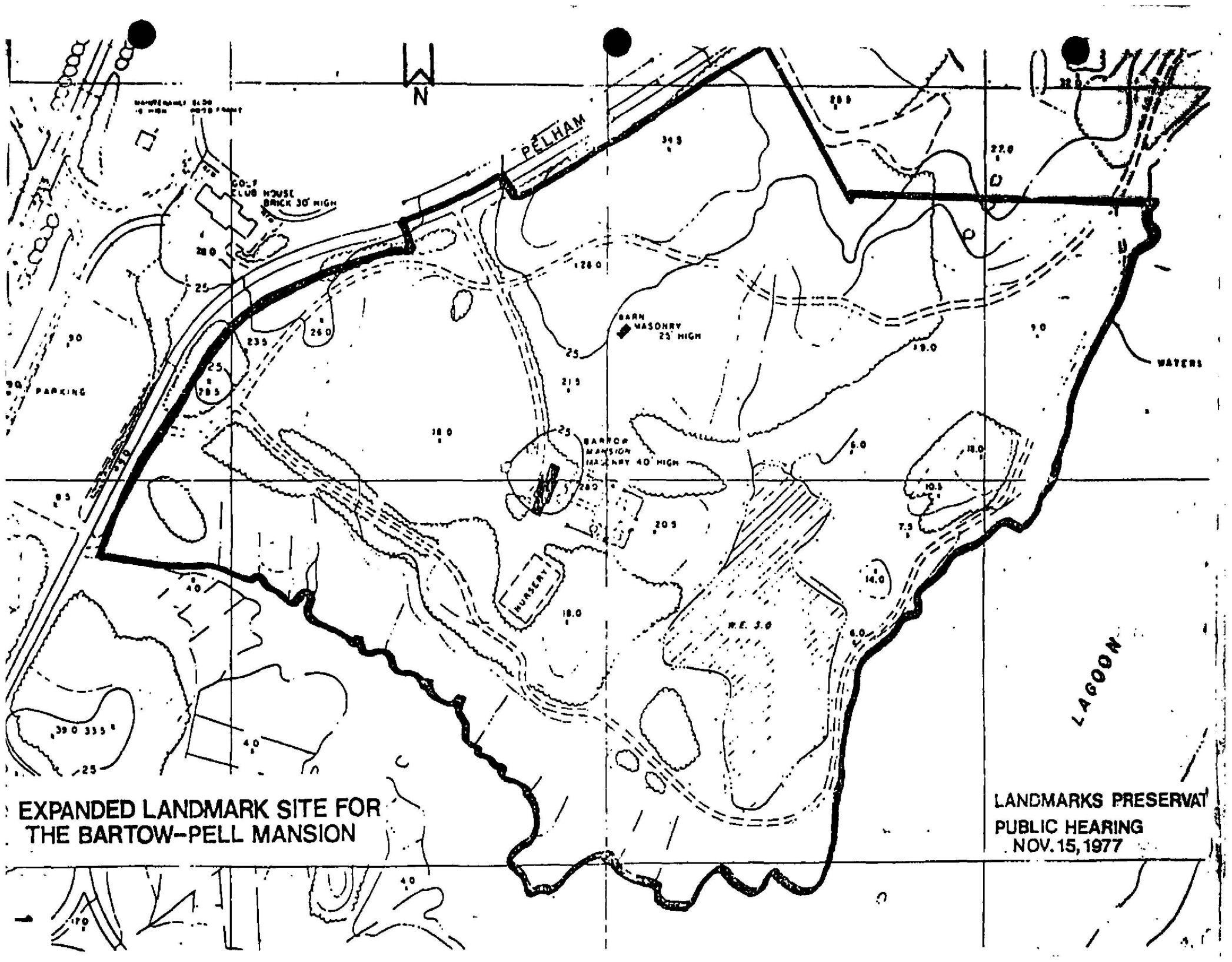
It is unlikely that all joints will require repointing. Selective repairwork must therefore match the original in color, texture, porosity, strength, and tooling. A preliminary examination of the original pointing has identified it as an hydraulic lime-coarse aggregate mortar. A restoration mix should only be prepared after careful mortar analysis has been conducted in order to determine the proper volumetric proportions of the mix as well as the characteristics of the individual constituents. All interior surfaces should, in addition, be whitewashed wherever evidence for it exists. In order to avoid biological deterioration, an acrylic emulsion is recommended in place of the traditional animal glue binders. Whitewashing will not only serve to restore the historic appearance of the interior

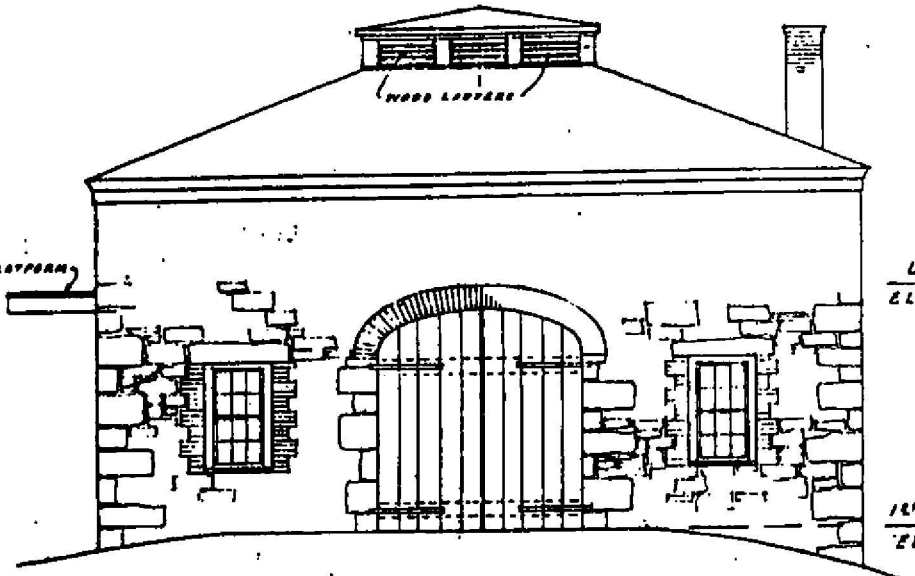
masonry, but it will also act as a temporary renewable waterproofing.

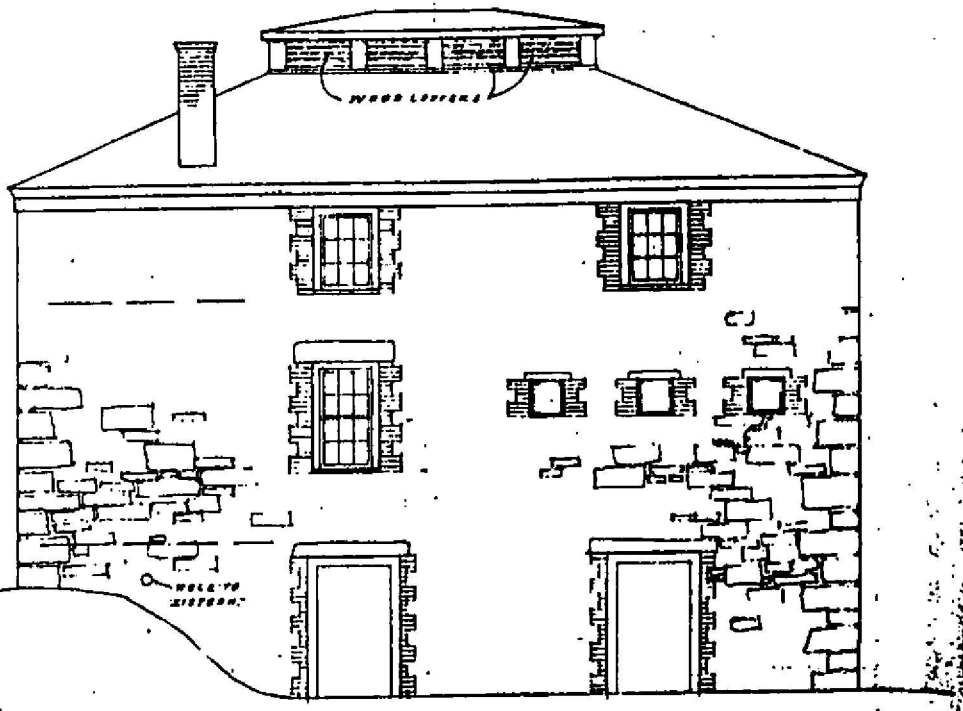
3. Framing and Woodwork

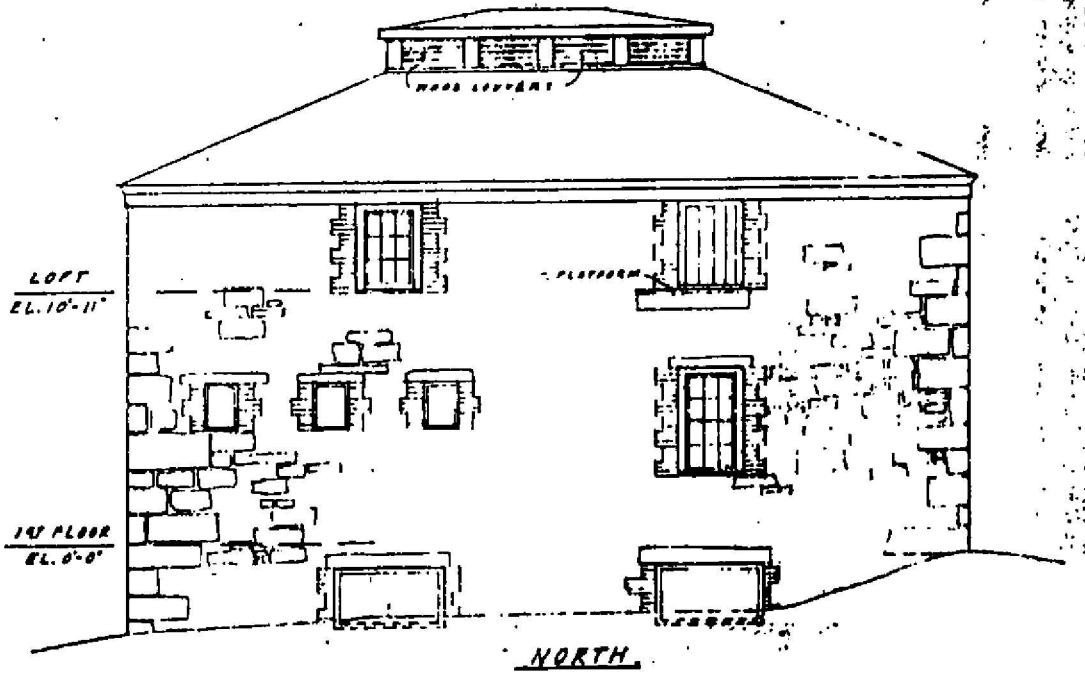
In order to treat the present conditions and prevent further deterioration, three basic methods of wood treatment are advocated: (1) replacement and repair, (2) impregnation and filling, and (3) the use of wood preservatives. Items missing entirely or in part, such as window sash or areas of the box stall sheathing and areas rotted beyond repair will require new wood replacements. Every effort should be made to replace the historic detailing (i.e., moulding profiles, construction techniques). Splices should be joined only with a waterproof adhesive such as U.S. Plywood's Resorcinol Glue(R). Low viscosity epoxide resins and epoxide fillers are recommended for the consolidation and filling of partially rotted wood. Technical information regarding these materials can be found in Epoxies for Wood Repairs in Historic Buildings by Morgan Phillips and Dr. Judith Selwyn, available through Heritage Conservation and Recreation Service (U.S. Department of the Interior). Finally, due to the high humidity conditions of the site, all woodwork whether painted or unfinished should be treated with a wood preservative such as tributyltin oxide (TBTO).

## E. APPENDICES


N
PELHAM
GOLF CLUB HOUSE BRICK 30' HIGH
BARN MASONRY 25' HIGH
BARTOW MANSION MASONRY 40' HIGH
NURSERY
PARKING
WATERS
LAGOON
EXPANDED LANDMARK SITE FOR THE BARTOW-PELL MANSION
LANDMARKS PRESERVAT
PUBLIC HEARING
NOV. 15, 1977

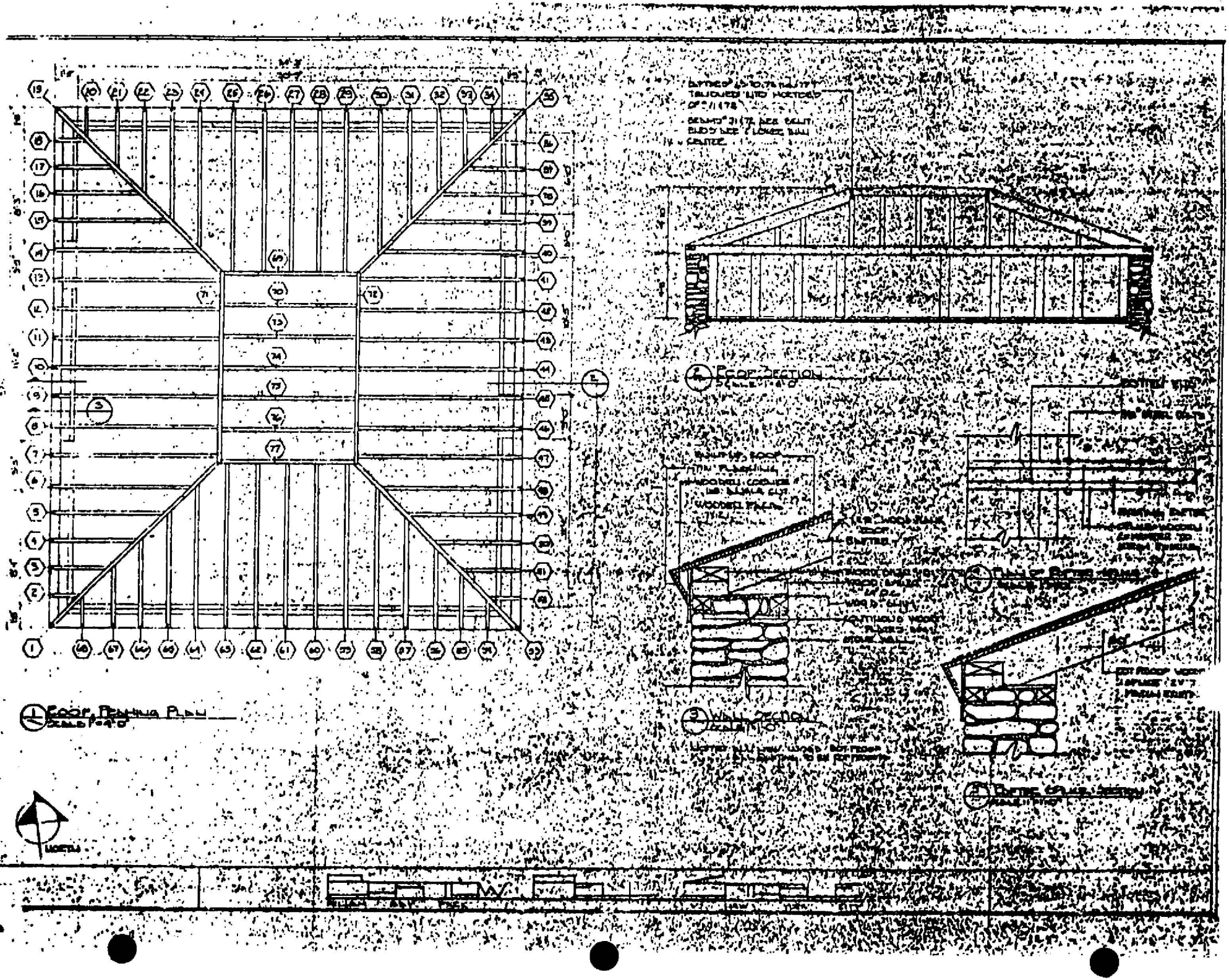



# ELEVATIONS
## BARTOW-PELL STABLE
## PELHAM BAY PARK
## BRONX, N.Y.

NOTE:
SCALE 1/4" = 1'-0"



# CONTRACT FOR RESTORATION WORK

**THIS CONTRACT**, made this 16 day of September, 1977, by and between the **NATIONAL TRUST FOR HISTORIC PRESERVATION IN THE UNITED STATES**, a charitable, educational and nonprofit corporation created by Act of Congress with its principal office at 740-748 Jackson Place, N.W., Washington, D.C. 20006 (hereinafter "NATIONAL TRUST") and INTERNATIONAL GARDEN CLUB, INC., Bartow-Pell Mansion, Shore Road, Pelham Bay Park, The Bronx, New York, New York 10464 (hereinafter the "CLUB").

WITNESSETH:

WHEREAS, NATIONAL TRUST, through its Restoration Workshop, assists the preservation community by providing skilled restoration and maintenance work on National Historic Landmarks and National Register properties owned by member organizations of NATIONAL TRUST; and

WHEREAS, the CLUB has received a National Park Service grant to assist in the restoration of the Carriage House Stables at the Bartow-Pell Mansion, a National Historic Landmark (hereinafter the "Stables"); and

WHEREAS, the CLUB desires to engage the assistance of NATIONAL TRUST in the restoration of the Stables, and NATIONAL TRUST desires to accept such engagement;

NOW THEREFORE, in consideration of the foregoing and the mutual covenants and agreements herein contained, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree as follows:

1. Services and Materials to be Provided by NATIONAL TRUST. NATIONAL TRUST shall provide professional consultant services, skilled artisans and all tools and materials, except as otherwise provided herein, to accomplish the following:

A. Erect all necessary scaffolding and reinforce floors as required for the safety of workers;

B. Stabilize and repair the Stable roof structure, using materials and methods as consistent as possible with the existing dimensions, finish and method of attachment, without altering the design of the roof framing, as follows:

(1) Replace where necessary the top plate, space braces and supporting girders;

(2) Replace where necessary individual rafters;

(3) Scab where necessary new wood ends onto existing rafters;

(4) Inspect and repair masonry between plates;

(5) Repair and replace where necessary roof planking; and

(6) Install heavy duty asphalt rolled roofing;

C. Inspect and repair masonry around windows;

D. Rebuild cornice duplicating as much as possible the original cornice;

E. Install temporary framing with ventilators at window and door locations without damaging the original fabric;

F. Analyze original mortor and prepare and use a compatible new mortor;

G. Treat all new wood used in the restoration work with wood preservative; and

H. Maintain a written and photographic record of the work providing a copy of the written record and contact sheets of photographs to the CLUB.

2. Services and Materials to be Provided by the CLUB. The CLUB shall assist NATIONAL TRUST in the restoration work by providing all labor, tools and materials, except as otherwise provided herein, to accomplish the following:

A. Clean all debris from the Stables;

B. Clear area for a distance of ten (10) feet around the Stables of all debris and plant growth;

C. Remove all poison ivy vines and exterminate all insect life in the areas of the Stables that are to be restored;

D. Supply electrical power and water pressure as required by NATIONAL TRUST to complete the services under this Contract;

E. Provide adequate containers for disposal of debris; and

F. Provide a secure area for the storage of tools and materials used by NATIONAL TRUST.

3. Time of Performance. The term of this Contract shall commence on September 16, 1977. NATIONAL TRUST shall exercise

## F. ILLUSTRATIONS

Figure 256. Clifford Crowninshield House, 74 Washington Square, 1804–1806.

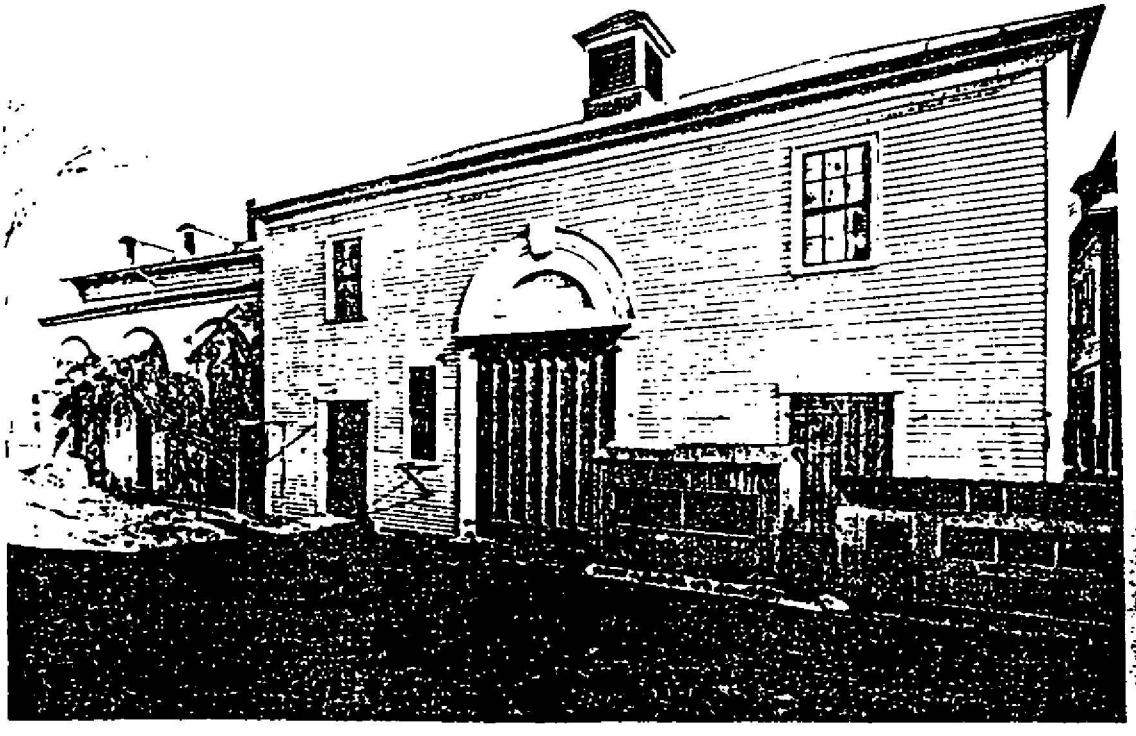


Figure 257. Clifford Crowninshield House, Stable.

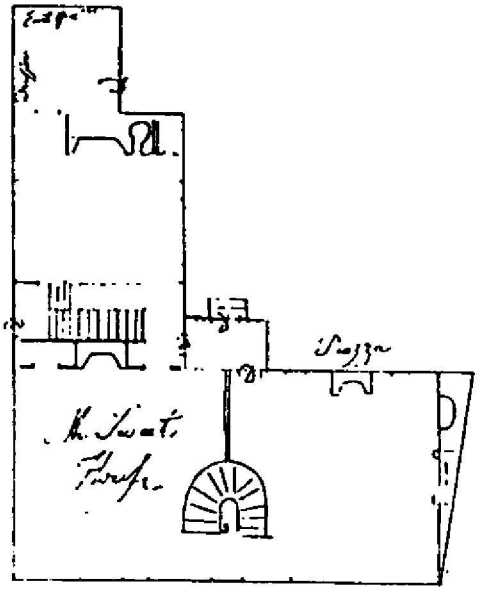


Figure 327. "Mr. Sweet's House."

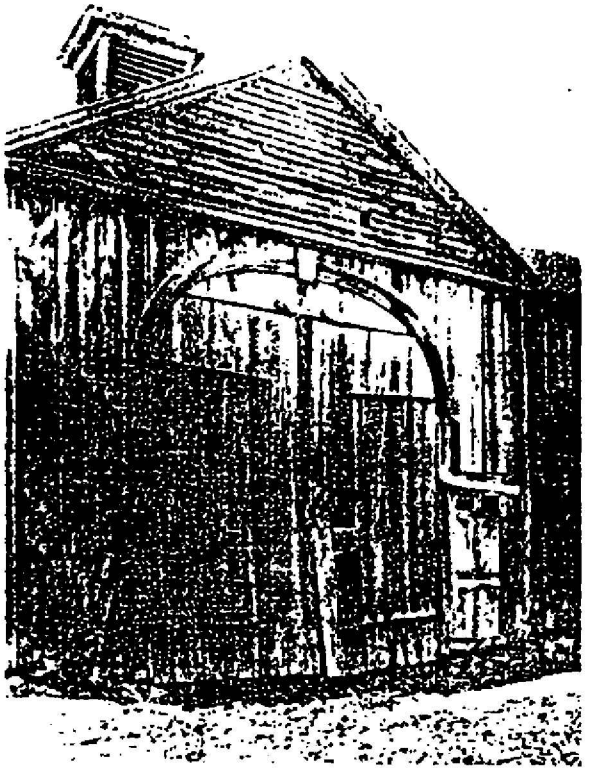
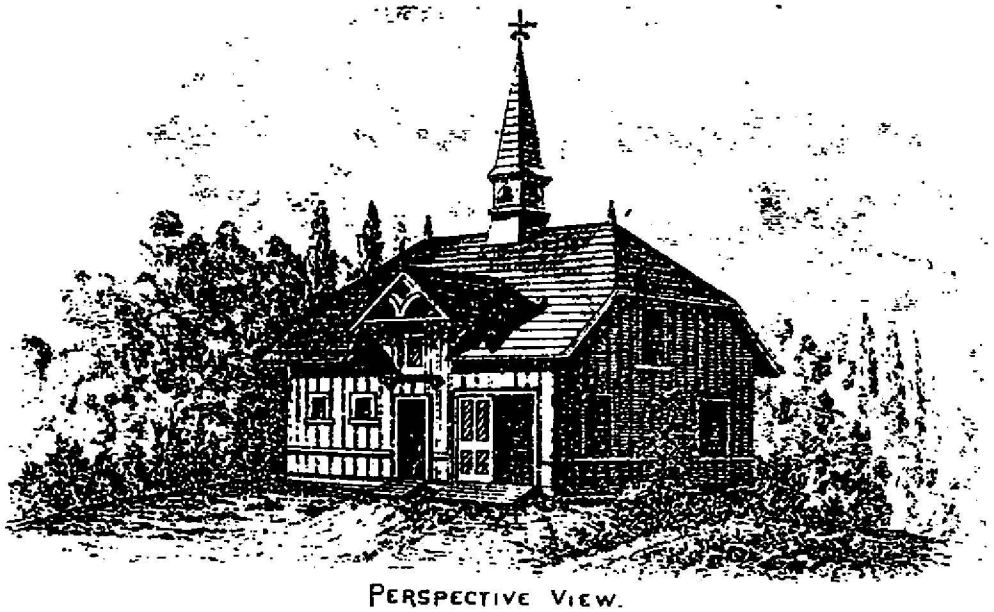


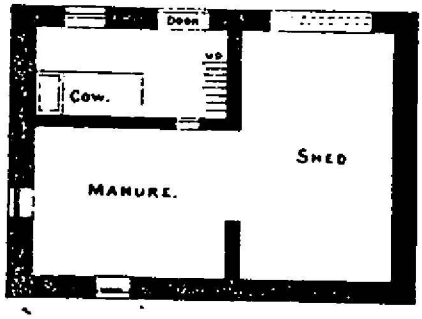
Figure 328. Barn of the Derby Farm, Peabody. Now re-erected at Watertown.

Figure 329. Barn of the Derby Farm.

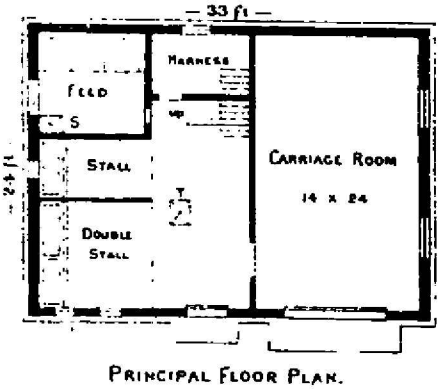
# A SIDE HILL STABLE.



PERSPECTIVE VIEW.




BASEMENT PLAN.




PRINCIPAL FLOOR PLAN.

C

whether it improved the *sheep's* wool I am not able to say. Z. B. WAKEMAN.

*Herkimer, March* 3, 1845.

We forgot one thing about the above cut, and that was to direct the artist to give the boar's tail the proper Berkshire quirl. However, our readers can easily supply this omission with a little imagination. The breeding does Mr. Wakeman great credit, and shows his brother farmers how much can be done with small means. In color, general shape, &c., Black Hawk looks like a thorough bred. Put a fine prick or forward ear on to him, and finer, softer hair, and he would be quite perfect. We think the portrait life-like, and *hog all over*, and have not a doubt if Mr. Brooks would devote himself to animal painting and drawing he would excel; for the above is certainly indicative of considerable genius in that line.

## STALLS OF MR. PELL.

The annexed is a perspective view of two stalls in the stables of R. L. Pell, Esq., of Pelham, N. Y., which we think very complete. The only alterations that we can suggest for the better, would be to have the upright posts of the divisions, *j*, *j*, fastened strongly by a tenon to the beam overhead, and then let the division sides be cut down slanting to the floor, commencing the slant about 4 feet from the manger, so that the horse or ox could not injure its hock bones or quarters against the planking. The slant should not be so short as to allow the animal an opportunity of kicking over it against others in the adjacent stalls to their injury.

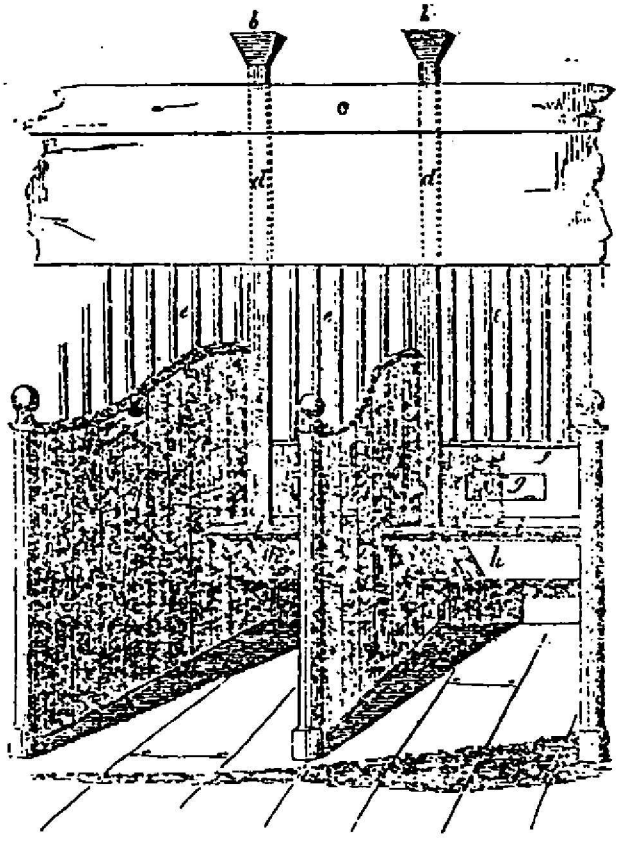


FIG. 53.

*a*, Hay-loft. Behind the hoppers *b*, *b*, are holes in the floor through which the hay is put down into the racks *e*, *e*, *e*.

*b*, *b*, Hoppers.

*c*, Floor-beam.

*d*, *d*, Conductors which lead from the hoppers to the manger. Close behind *b*, *b*, are the grain-bins, so that in feeding the horses, it is only necessary to take the requisite quantity of oats from them, and pour into the hoppers. The groom will thus feed a large number of horses in a short time without the necessity of leaving the hay-loft.

*e*, *e*, *e*. Hay-racks, with oak rollers 4 feet long and 2 inches in diameter, standing perpendicularly 3 feet from the wall. They have round gudgeons at each end fitted into round holes in the bottom and top pieces of the rack. As the horse pulls on the hay to eat it these rollers revolve easily, and he thus gets just what he wants. The bottoms of the racks are latticed, so that the hay-seeds can fall below into the seed-box *f*.

*f*, Seed-box.

*g*, Door of seed-box to empty it of the hay-seed.

*h*, *h*, Trough running the whole length of the stalls.

*i*, *i*, Oak rollers over the edges of the troughs, 3 inches in diameter. The horse will not gnaw this; for the moment he attempts to take hold of it with his teeth, it revolves, and he cannot hold it.

*j*, *j*, Stall divisions 5 feet wide. The posts at the end of these are of turned oak.

PLOWS OF RUGGLES, NOURSE, & MASON.—We are of opinion that we cannot do our agricultural friends a greater favor, than occasionally publishing the voluntary and unbiassed opinions of gentlemen in different parts of the United States, on the merits of these plows. Mr. Shepherd, of Tallahassee, Florida, thus writes us: "I shall soon order more of your valuable plows, which I think decidedly the very *best and cheapest* I have ever used."

Mr. Steele, of Dayton, Ohio, says, "I have compared the Eagle plow you sent me with the best in use here, and find it vastly superior to any of them."

Mr. Townsend, of New Haven, Connecticut, writes: "The Eagle plow I had of you is the best I know. My Scotch plowman says, after using it five or six days, that it is the best he has ever seen in this country; and my Yankee plowman, who has been between the handles of all sorts of plows most of his

Our cut in this number will illustrate one mode of ventilation. The windows above admit the escape of the ascending warm air, charged with carbonic acid. They are attached by hinges, and may be opened and shut wholly or in part, at pleasure. This method has a double advantage; it ventilates and brings the light into the stables from above. If there be a hay-loft over the stables, this method cannot be adopted; in such a case there should be flues to carry off the carbonic acid and noxious gases. For this purpose, tubes may be passed through the hay-loft to the roof, or holes may be made in the walls at the top of the ceiling of the stables. Whatever may be the form of stables, one of these modes may and should be adopted.

To secure the admission of fresh air, windows are necessary. There should be one with a shutter at the head of each horse. These should be used constantly in fine weather. In addition, there should be windows so placed *near* the floor, as to admit a full supply of air at all times, and yet not directly in upon the horses, who should be protected in bad and cold weather, and when *heated* from currents. This can be effected by admitting the air at a distance from the horses, and giving it a direction that will bring it indirectly to them. A screen of boards opposite the inlet will do this. In fine weather, all the means of bringing in fresh air should be used; and most especially the windows in each stall. The current of air right on to the head and neck is less injurious than on to the loins. When, however, the weather is too cold to admit their use, the stables will be sufficiently ventilated by the window, which will admit it for all, provided there be outlets to permit the escape of the carbonic acid and the gases. In cold weather there is less need of ventilation *below*, as the pure air is denser, and at equal volumes contains more oxygen than when warm. The inlet may then be small, and yet the stable be equally sweet, as the breathed air ascends more rapidly.

Such are the general principles of ventilation. They may be adapted to every stable; and will be, by every owner of horses, who regards his interest and is humane.

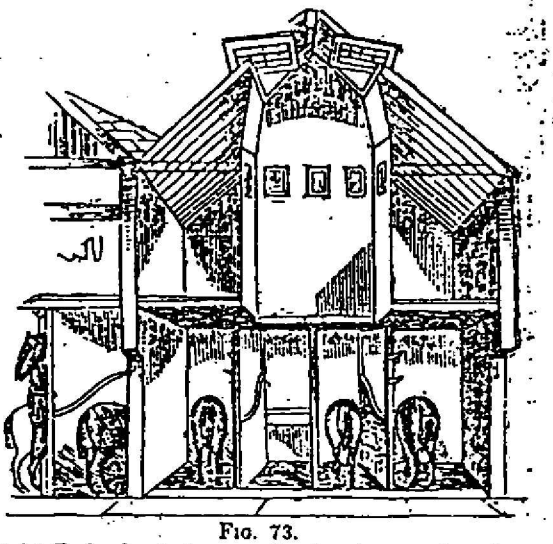


FIG. 73.

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SHEEP FOR THE SOUTH.—Thomas Affleck, Esq., of Washington, Miss., has recently been among us to select a flock of sheep for his plantation, being convinced that they can be bred to as great advantage at the South, as here at the North. He took 46 head in all—15 of the Leicester and Cotswold breed, and 31 of the Saxony and Merino. To these he will probably add a fine flock of Saxony and Merinos, to be selected in Washington County, Penn. Some of the animals selected here, had taken prizes at the State Agricultural Society show, and others at that of the American Institute. They are valuable animals, and we trust that Mr. Affleck will meet with that success which his enterprise merits. Sheep can be supported for almost nothing in the pine woods and some other lands of the south; and many are sanguine, and we fully believe, that a pound of fine wool can be as cheaply produced there, as three pounds of cotton. The former will be worth from 30 to 40 cents on the plantation, the latter 15 to 18 cents only. Mr. Affleck also took out a fine lot of assorted poultry, such as Dorking and Poland hens, African geese, ducks, &c.; some dogs; and a high grade Devon bull

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SALE OF RAMBOUILLET SHEEP.—We have sold the entire flock of Rambouillet sheep, belonging to Mr. David C. Collins of Hartford, Connecticut, to Mr. L. G. Bingham, of Williston, Vermont. We expect that they will pass through this city on their way to their new home, early this month; we shall then take a look at them, and speak of them as we may think they deserve. We have not seen the flock for about two-and-a-half years. We shall find this one thing at least about them, and that is, they are *pure* Merinos, and precious blood runs in their veins. Mr. Bingham tells us that he shall not sell any ewes from this flock at present, but will spare two or three of the young bucks this fall, if wanted by any one. The price will be from $50 to $100 each. Those desiring the same will hereafter please address Mr. Bingham, or if more convenient they can apply at our office, No. 187 Water st., N. Y.

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BENEFIT OF SUBSOIL PLOWING.—A farmer from Connecticut informs us, that he has raised a field of corn the past summer, which he thinks will average 80 bushels to the acre, and that he selected half an acre of the best, from which he gathered 134 bushels of ears, all sound and well filled out. That while his neighbors' corn adjoining was withering with the drouth, his was luxuriant; and he attributes the whole of his success to subsoil plowing. Another fact he stated was, that the whole expense of planting, cultivating, and harvesting after the ground was plowed, did not exceed $3 per acre; that he did not touch it with a hoe, but worked it with a harrow and cultivator; and what few weeds were not reached with these, about the hills, were pulled up by hand before going to seed. We intend to visit his farm next summer, when we shall have something further to report.

every year, for eight or ten years previous. To follow up this with such a crop as cotton, you will call rather *a queer improving rotation!* But so it was—even this change was of great advantage, as was proved by its being entirely exempt from rust, and affording a fine yield of cotton; while it that part of the *cotton field* proper (for you must know that few of us are troubled with a greater subdivision of our plantations, than a truck patch, a cow pen, a cotton and a corn field!) where cotton alone had been grown for many years, much of the crop was injured by rust, the oldest and the wettest land suffering most.

Lime being death to fungus plants, I should suppose the application of it, in this instance, would be very beneficial. I will try it. In fact, I shall persevere until I discover the cause of *rust*, as also of *rot*.

The crops of corn wear a most luxuriant and promising appearance. I only hope that we may have dry weather enough soon, to allow of the impregnation of the ears: if it continues much longer to rain so steadily, the pollen will be washed from the tassel, without its being able to effect the object intended by nature. More grain of every kind, and especially corn, has been planted this year, than ever was put in before.

THOMAS AFFLECK.

## DURHAM BULL LOCOMOTIVE.

We have received a letter from Mr. J. E. Letton, of Bourbon county, Kentucky, stating the superiority of his bull Locomotive, imported from the herd of Mr. Bates of Kirkleavington, England, in 1841. From this we make the following extract:—

"As to Locomotive and his calves, I have won the prize wherever I have showed them. His stock look fine, and handle superior to anything I ever saw west of the sea."

*For the American Agriculturist.*

## ESPY'S PATENT CONICAL VENTILATORS.

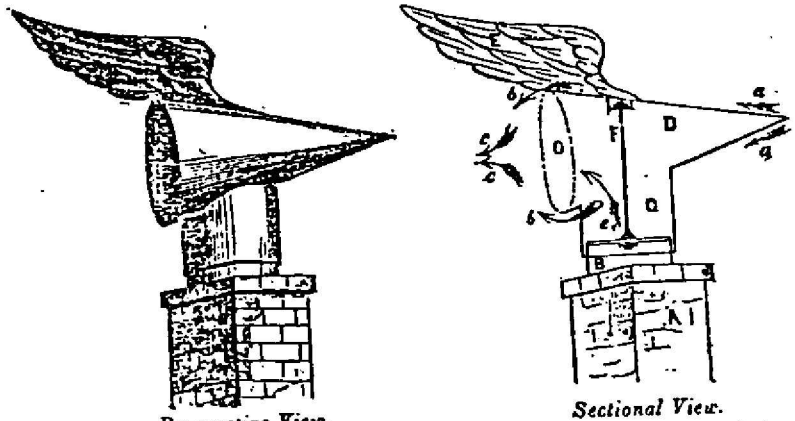
THIS cheap, simple, and efficient apparatus is adapted to all purposes of ventilation.

Basements and cellars, churches, court-rooms, steamboat cabins, school-rooms, hospitals, prisons, stables, vaults, dairies, &c., may, by its application, be rendered free from dampness and foul air: it is also an effectual *cure for smoky chimneys*.

Deleterious gases, emitted by fires in fire-places attached to bad drawing chimneys, together with the chilly, damp atmosphere of most basements, even during dry, warm, summer weather, are the cause of much human suffering; especially in crowded cities. The gases in question, not unfrequently produce vertigo, nausea, &c., while the chilly dampness of basements, by suddenly checking perspiration, often lays the foundation for severe colds, incipient fevers, and other diseases.

These ventilators are confidently recommended as preventives of the dire effects of the above-described powerful, though subtle agents of disease.

FIG. 36.




*Perspective View.* *Sectional View.*

*A practical Description of the above Sectional View.*—Letter A denotes the top of a chimney; B, a cylindrical pipe, closely fitted with a rim and flange into the chimney; C, a cylindrical collar made to overlap about four inches, and large enough to turn freely around the pipe; D, a hollow cone so fitted and secured to the collar C as to retain, when in use, a horizontal position; E, a vane to keep the cone pointed to the wind; F, a perpendicular, substantial iron rod or spindle for the cone and collar to revolve upon; *a*, *a*, *b*, *b*, *c*, *c*, *c*, arrows representing currents of air.

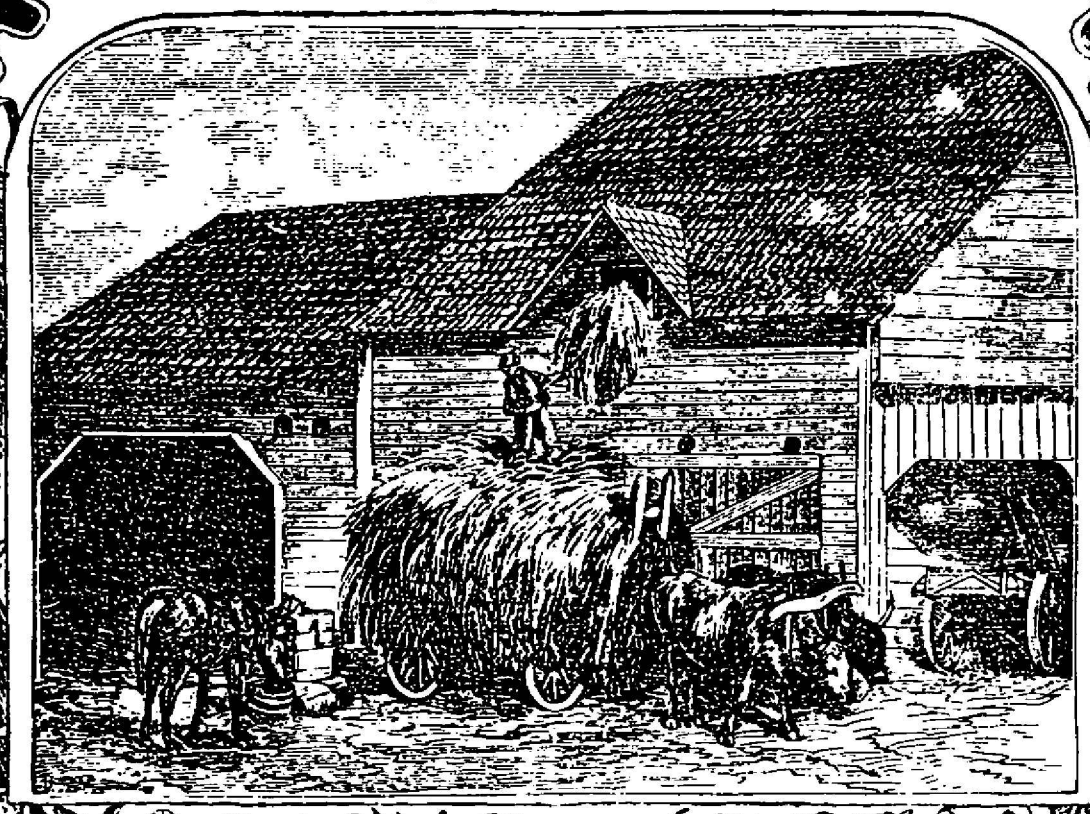
Suppose the wind to blow as indicated by the arrows *a*, *a*, along the surface of the cone from its point to its base; on reaching the base of the cone it will converge as represented by the arrows *b*, *b*, *c*, *c*, and produce a partial vacuum at the mouth of the cone *o*, when a current of air will rush up the chimney A, as shown by the arrow *c*.

This draft-generating principle may easily be tested with a miniature model made of paper, or other material. Let a small flock of cotton or some other light substance be placed at the bottom of the pipe B, then hold the cone horizontally, the pipe being perpendicular, with its point to the breeze, or blow a blast of breath upon it, when a

AUGUST, 1880.

# AMERICAN AGRICULTURIST.

FOR THE FARM, GARDEN & HOUSEHOLD.



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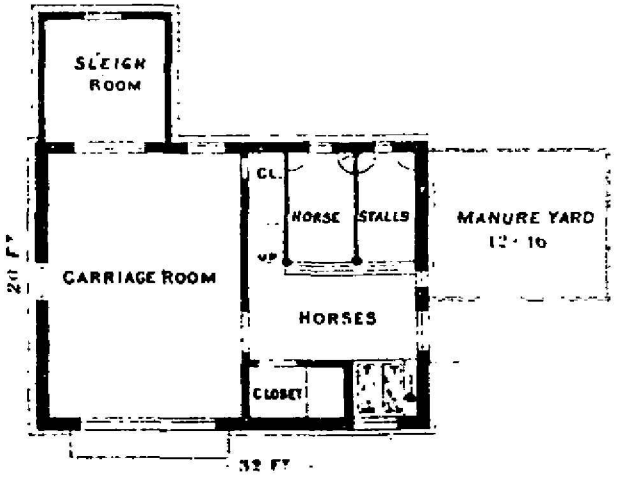
NEW-YORK.

# A BRICK STABLE FOR TWO HORSES

PERSPECTIVE VIEW

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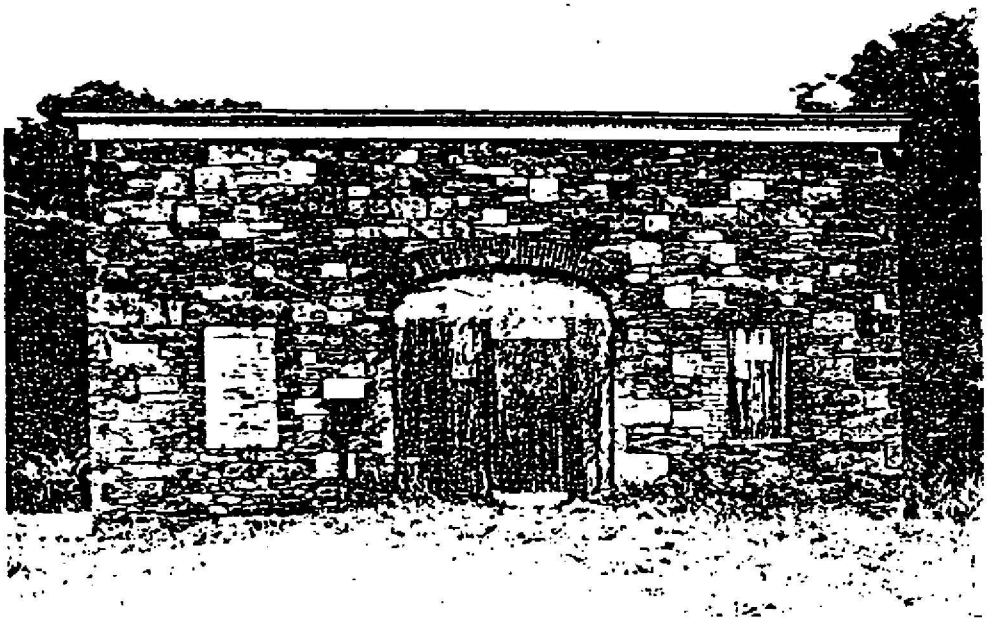

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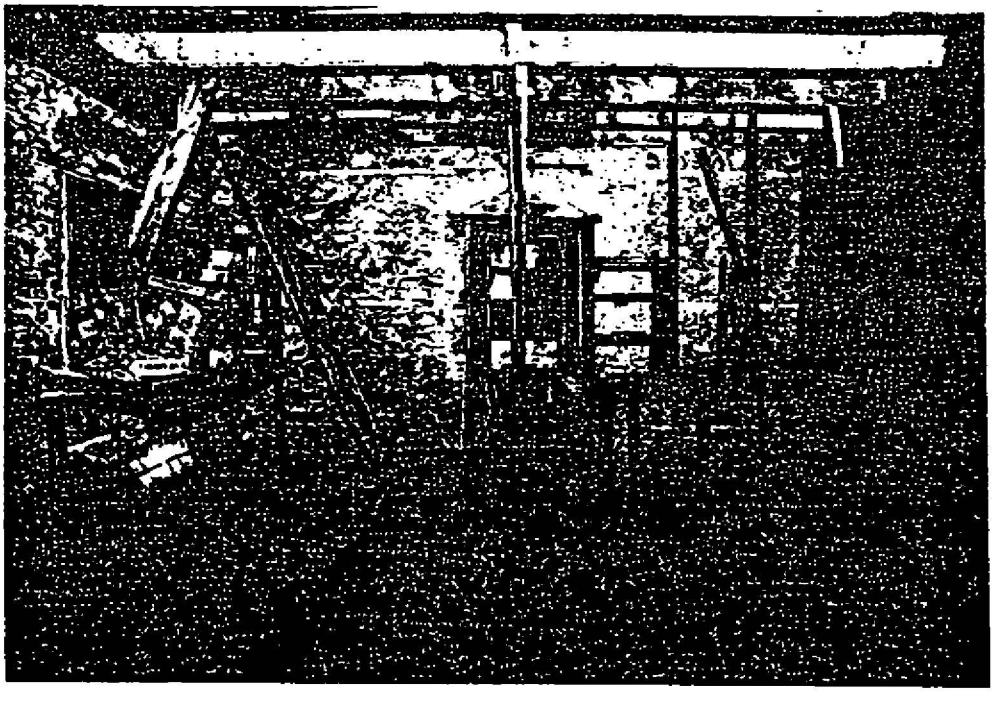

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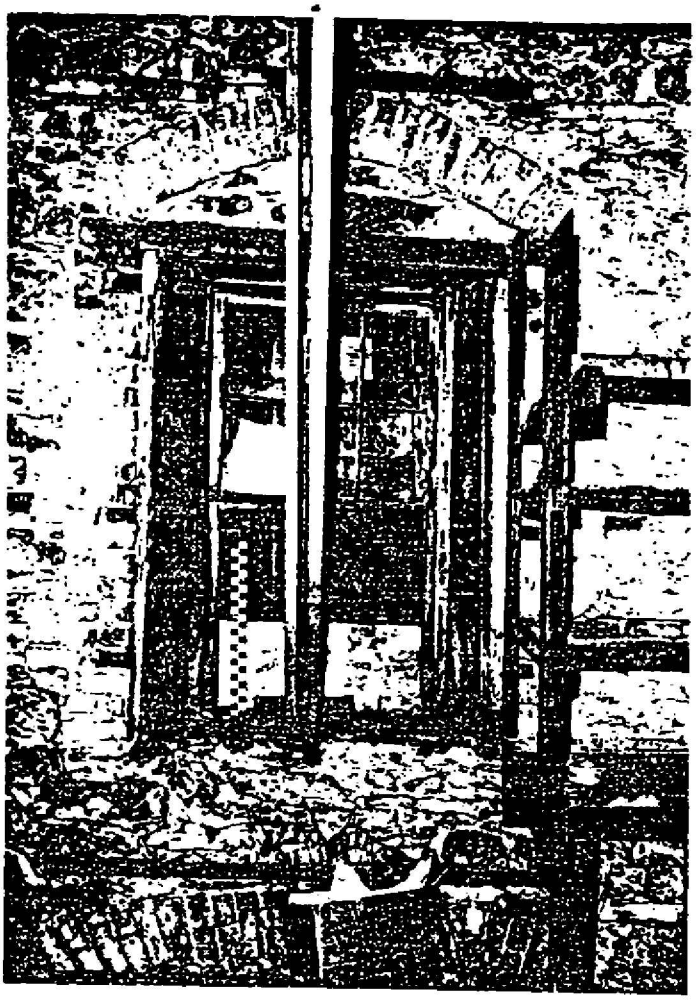

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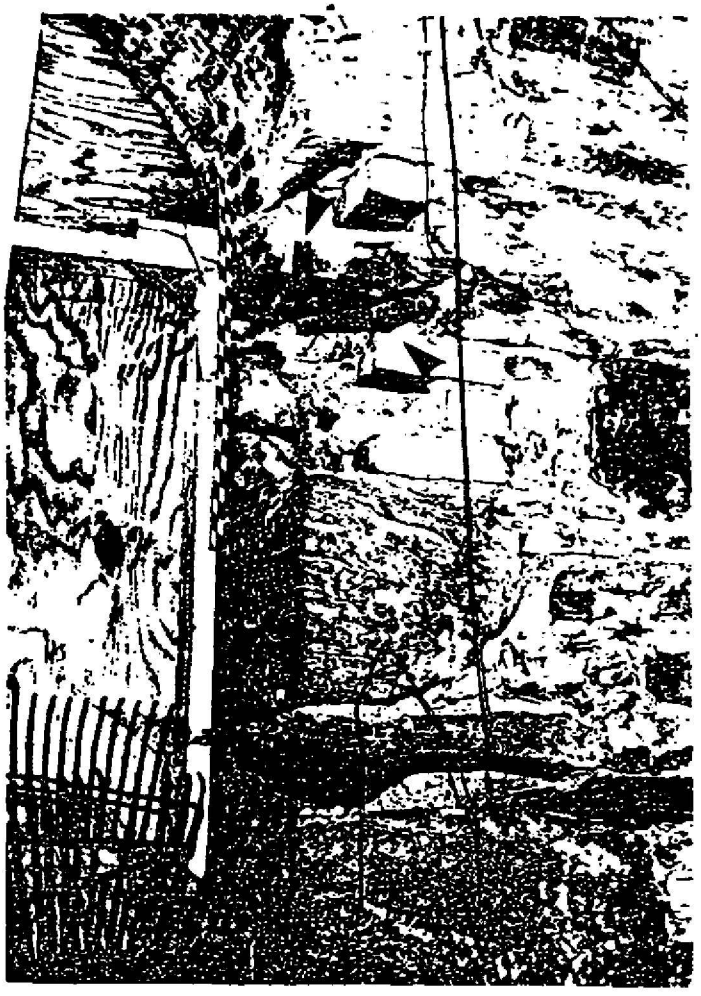

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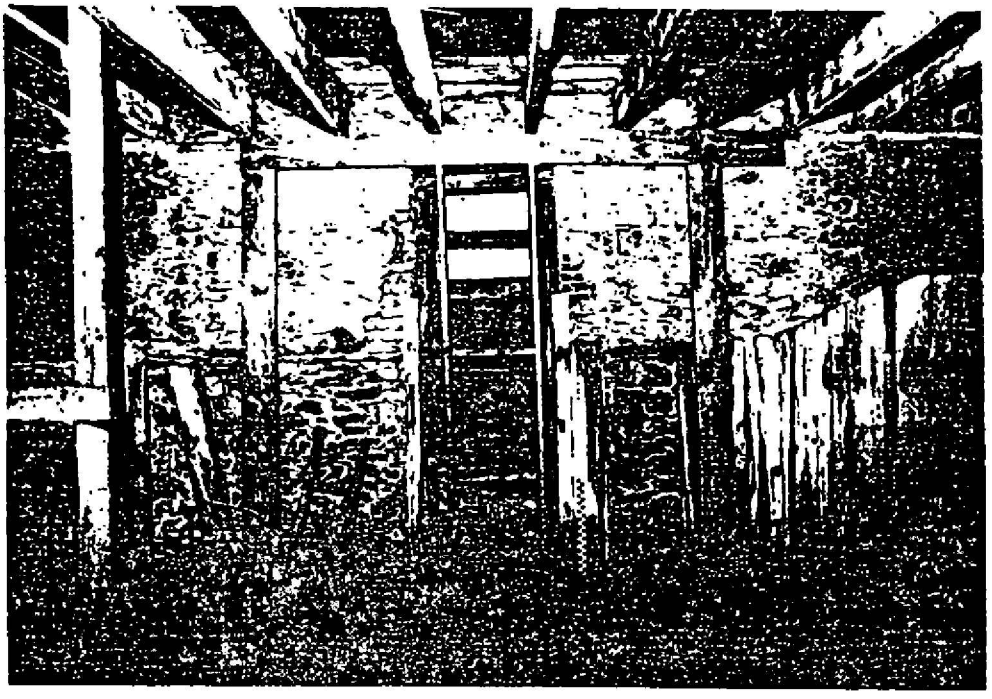

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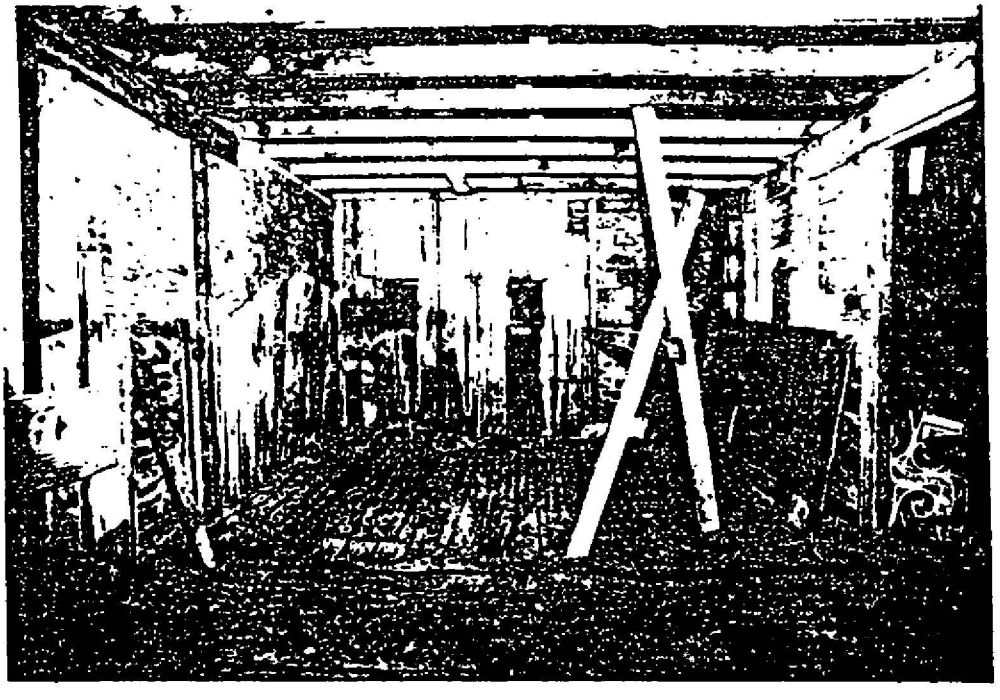

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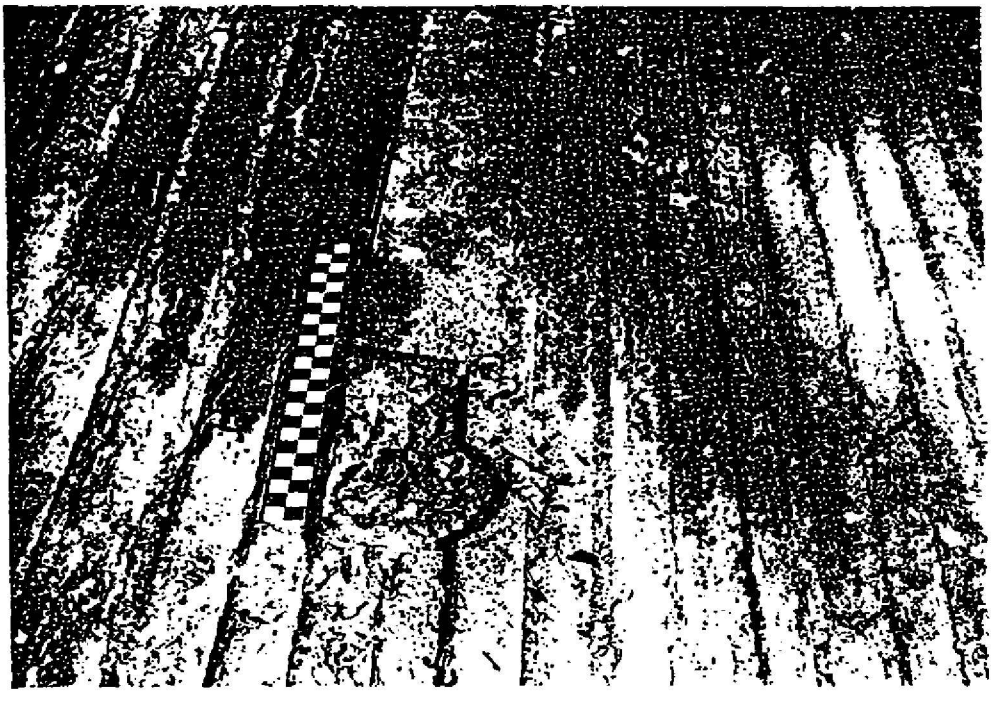

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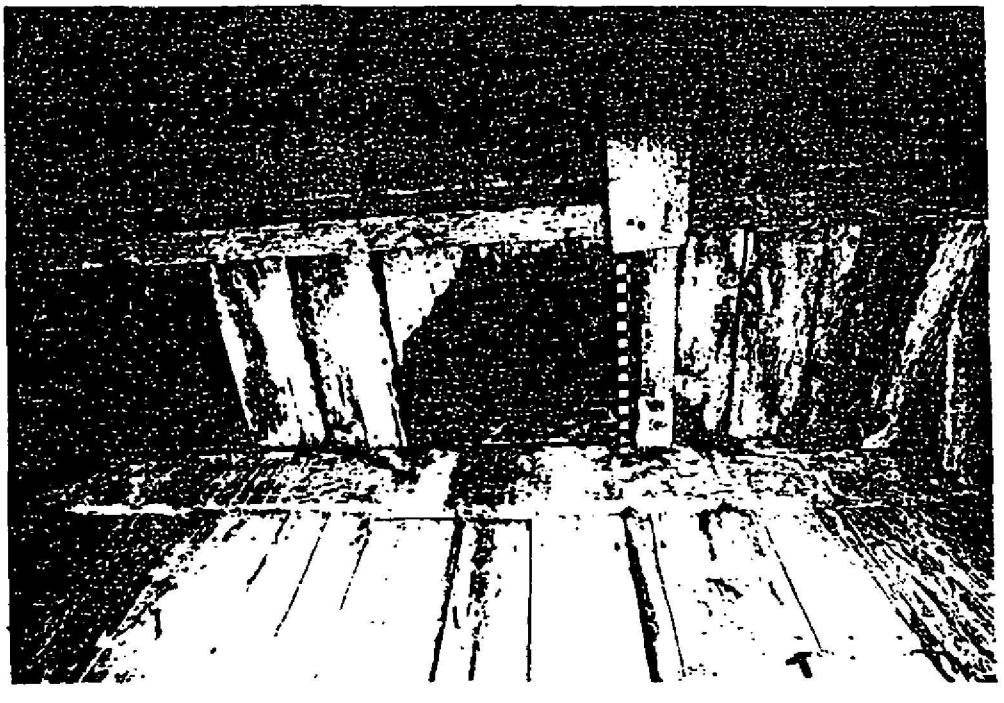

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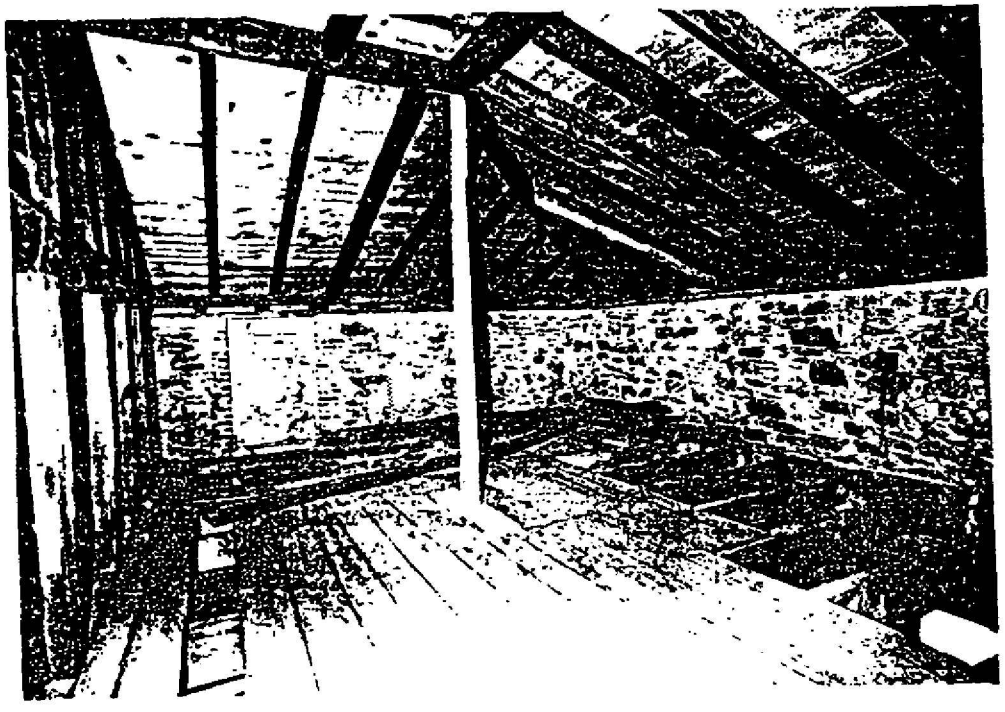

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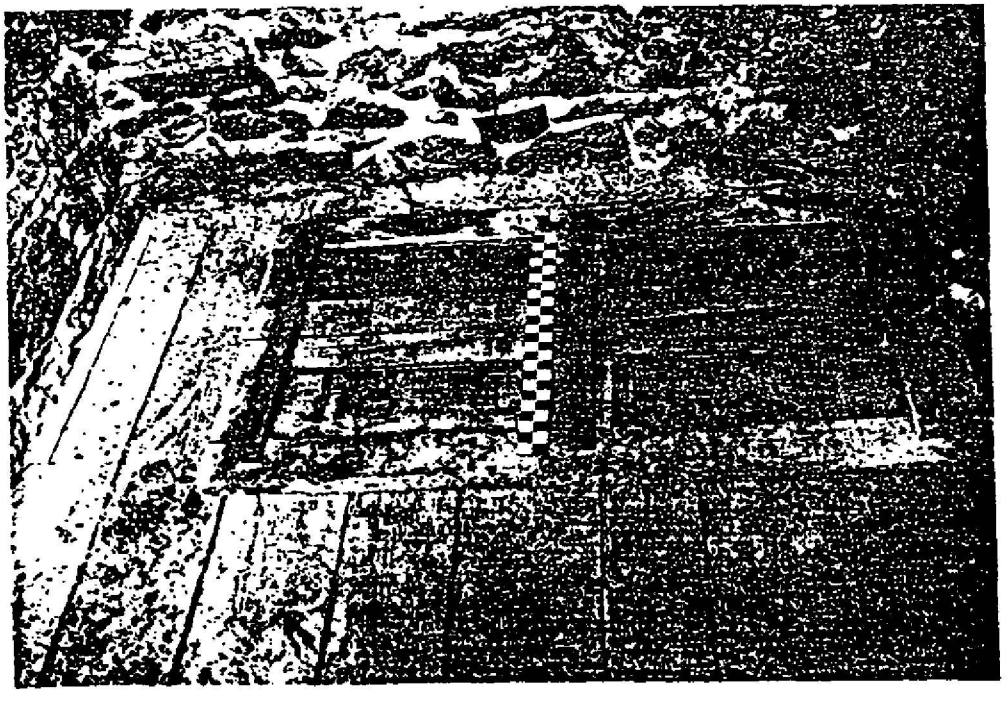

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