



Wheelwright House after the fire.



All photos of reconstruction by Houghton Quarty Warr, Architects.

Reconstruction of Wheelwright House

Woods Hole, Massachusetts

by Dr. Charles U. Lowe

The house at 55 Church Street was built for Ogden Jones of Evanston, Illinois, by the architect, Edmond March Wheelwright. It sits on a rise approximately 60 feet above the sea, 200 yards inland from Vineyard Sound to the south and Little Harbor to the west, commanding a view of Martha's Vineyard and the easternmost Elizabeth Islands. Planning probably started in 1885, and the house was occupied about July 1, 1888. There is evidence that much of the structural carpentry was not done on site but rather produced elsewhere and carted to the building site. For example, the joists under the main hall are labeled in black wax crayon, Main hall joist 1,2,3, etc., and the back stairs have relevant notations on the risers. This work, as well as the mill work, was probably done in Boston, shipped by train to Woods Hole, and taken by horse cart to the site. About 1905, two additional structures were added to the property, the carriage house to the southeast and the servants' quarters and stable to the northeast. Wheelwright was not the architect of record for these buildings. With the addition of the two buildings the estate comprised eight acres and was called Miramar. In 1955, the land was subdivided and the outbuildings were converted to homes while the main house retained 3½ acres and an easement to Church Street.

The structure that Wheelwright built was approximately 180 feet east-to-west and 50 feet north-to-south, providing, if the basement is included, approximately 15,000 square feet of living space. To the best of my knowledge, it had undergone no

significant modifications during the 100 years since construction. The exterior conforms to the shingle style of the region, simple, sedate, and undecorated. The interior, particularly the first floor, is highly decorated with elaborate mantels over the five fireplaces, fluted columns supporting decorated beams in selected places, and coved plaster ceilings in the major living areas. On the second floor, except for some molding detail, elaboration is limited to the mantels of the six fireplaces.

On June 25, 1986, when a painter and two helpers were stripping step risers on the deck, curls of burning paint fell between the deck planks and ignited a slowly spreading fire in the basement. Whether the workmen were aware of the fire is not clear, but apparently one of the helpers poured a teapot of water onto the deck before leaving the job. It being a Saturday, the workmen quit at noon and closed the house. About 2:30 p.m. the Coast Guard Station at Little Harbor saw smoke and at the same time the smoke detectors in the house alerted the fire department. According to fire house records, the firemen were at the scene within four minutes. Since no one was home, they broke windows and doors to gain access. The internal heat must have been enormous for within seconds of the entry of outside air, the house virtually exploded into flames and lifted the burning roof off the building, scattering flaming timbers to the north and south. By coincidence a neighbor was bicycling by and had a camera. He recorded the spectacular destruction as flames consumed the house. The



Work involved in removing chimneys before reconstruction could begin.



Rubble that had to be sifted by hand in search for hardware.



building continued to smolder until the following morning by which time only a fraction of the northeast exterior wall was unscarred. The rest was either charred or had collapsed inwardly so that surviving joists on the second floor supported five feet of water-soaked plaster and rubble, some of which dropped through to the first floor. Only the kitchen was unharmed by the fire, but since it was open to the elements, summer rains eventually destroyed even that portion of the house. By the time drawings for reconstruction were completed, the house, with the exception of the basement, was largely lost.



Chimneys and chimney pots after the fire.

The building inspector condemned the building until the three chimneys could be taken down. These were photographed and the courses of bricks were counted before demolition began. A crane hoisted two workmen above the chimneys in an attempt to remove intact each of the 16 chimney pots topping the flues. When they were lowered safely to the ground, it was immediately apparent that they had become so brittle as a result of the combination of the extreme heat from the fire and the abrupt cooling from the firemen's hoses as to be structurally useless. They did however become models from which to make the new pots.

The family decided to reconstruct the house, seeking to recreate the original with as much fidelity to authentic detail as possible. The architectural firm of Houghton, Quarty, and Warr of Newton, New Jersey, agreed to undertake the restoration. The contractor was C. H. Newton & Company of West Falmouth. The problems were considerable because no architectural drawings existed. The architects could measure the perimeter, as the stone foundation was intact, and numerous internal elements, charred or otherwise, were visible. Some ceiling heights could be obtained directly and others estimated, assisted by extant photographs. Before interior measurements could be made, it was necessary to remove the rubble. This was done by hand, using shovels to permit sifting through the debris for hardware, a process that took almost 6 weeks. Then photographs were taken of any interior structure that remained, particularly the decorative woodwork as well as the mantels on the first and second stories. The photographs were numbered and notations made as to the location of each object photographed. Unburned decorative woodwork (even if incomplete) such as mantels, columns, paneling, spindles, etc., were removed. These were placed in maritime transport containers rented for the purpose and placed on the grounds. Nine containers were eventually needed. An inventory of each container was created and correlated with the

photographs. When millwork started, the appropriate fragments were brought to the shop and compared with the details in the working drawings. Any salvageable bathroom elements, including the nickel plated pipes, porcelain fixtures, and marble slabs used to support the bathtubs, were placed in separate containers numbered for the bathroom (seven in all) from which they had been taken.

The original house was lighted entirely by sconces, there being no chandeliers and only two overhead lights. On the first floor, Wheelwright had designed four sets of sconces unique to the four major rooms. These were cast bronze and the number varied from six to ten in the different rooms. Each sconce had a lamp shade unique for a particular room. They were constructed of isinglass sheets formed into circles, hexagons, octagons, etc., connected with grooved lead as with leaded glass. Approximately half of the shades survived. On the second floor, the sconces were cast brass and different for each of the major bedrooms but the shades were glass and probably had been obtained commercially. The sconces were originally lit by gas and at some time, probably at the turn of the century, wires were run through the gas pipes to convert them to electrical use.

The roofs throughout the house had wide soffits decorated on the underside with various shapes of shingling. Because the third floor roof had blown off the house, fragments of these soffits and cornices were available. They were collected, their location on the house noted, stored in a container, and used by the architect when developing working drawings. About three months were needed to convert the many measurements into structural plans. One device the architects used proved quite helpful. They culled the available photographic material for transparencies (approximately 500) that included sections of the house that were still in place even if charred. For example, they measured an existing window frame.

The appropriate transparency that showed the window and a much larger section of the house, such as a whole side, was projected. They then determined the ratio on the projection between the window frame and the house height and, using proportions and their own site measurements were able to obtain original dimensions. A very troublesome item to establish was the roof line because there were numerous gables and ridges. The most difficult to reconstruct was the tower because only a single knee survived and from this alone the angle of the tower roof had to be established. Some of the gabled windows could be identified by the projection method and several recently taken aerial photographs helped identify the relationship among the various roof elements. Before the final working drawings were completed, the family met to review all of the details in the preliminary version, trying to establish authenticity. Using memory, projection, and photographs, the architect miraculously produced a set of working drawings with which to rebuild the house.

A decision was made to retain the exterior elements that were not completely destroyed: part of the kitchen, the garage, and the bedroom over the garage. All of the studs were full 2" X 4" instead of the dressed studs available today. To match the surviving sections with the rebuilt sections and retain the window lines, it was necessary to recreate full 2" X 4" studs and since these were not easily available, we purchased oversized timbers and cut them to size on the job. The same was true of the floor joists, which were full 1" X 8" or 2" X 12". Matching them required tailoring of oversized timber.

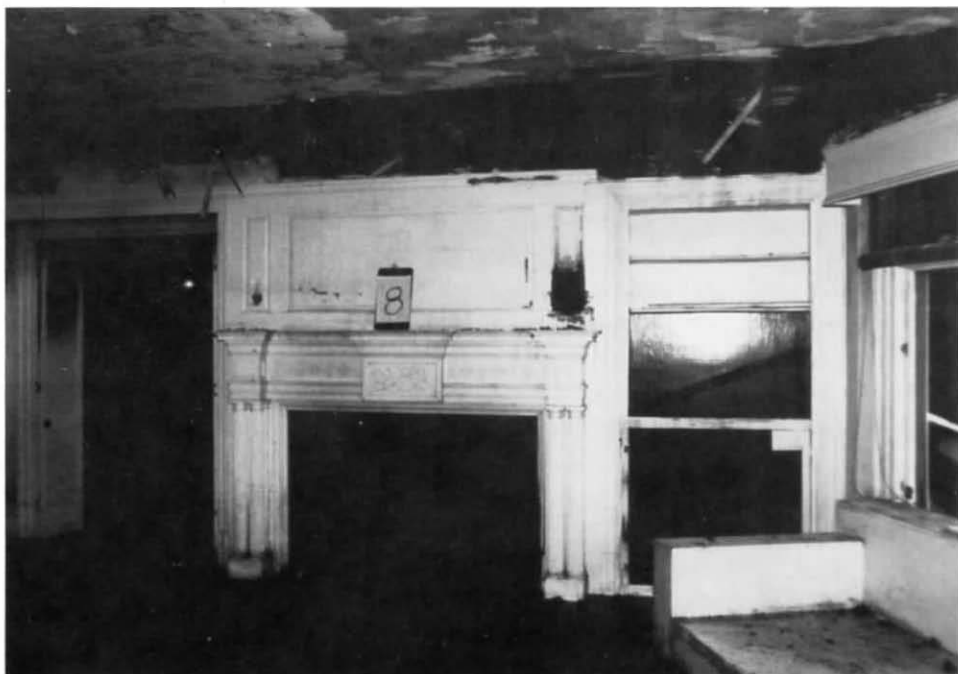
Sections of the remaining north wall had intact original shingles. These proved to be cypress but had weathered so that they were indistinguishable from the redwood shingles that over time had been used as replacements in other parts of the house. In addition, all of the window frames, sashes, and all other sills were also cypress. We eventually found an original

stand of cypress in Florida for use in restoration but could not find a shingle mill to cut the trees into shingles. A source of cypress was available to fabricate all other building elements that originally had been cypress. As burnt sections were pulled away, more and more details of the original house were visible. For example, the decorative wood on the first floor was a mixture of fir, poplar, and mahogany. There was no logic to which wood was chosen for any particular column or spindle. A decision was made therefore to use only fir for the first floor because the wood would be painted and there seemed no purpose to mixing lumber.

The large main hall contained six leaded glass inserts above the windows looking out to the sea. Five were destroyed, but one remained. An artisan was found willing to assist in recreating these lights. He removed the surviving section for study and replication. Through research he determined that the glass in the window was blown glass from Germany and he located either the original source or a source making similar glass. His recreations of the five lights are indistinguishable both in glass texture and color from the one that survived. The lead used in constructing these windows apparently was uncommon, much stronger than the lead used in modern stained glass, and he had to search the country to find similar material. It is of interest that the blown glass contains air bubbles and apparently was used by Wheelwright on the sea side of the house to capture moving sunlight reflected off the water. In other areas of the house there was leaded glass much of which was destroyed, but the fragments that remained were rolled glass and either enough structure remained to indicate the original design or photographs of the originals were available. Thus all of the leaded glass in the house was restored both with respect to the type of glass and the design.

About half of the sconces on the first floor were destroyed. We were fortunate enough to find a metal worker in Boston willing to undertake restoration. Since bronze can be made with mixtures of various metals in differing proportions, he used mass spectrography to assay a small fragment of one of the sconces and from this determined the metallic components and ratios. He made molds of one of each of the four different sconce designs and using a bronze fabricated for the purpose, sand cast copies of the destroyed sconces. The isinglass lamp shades were a challenge but we located the single company in the United States still making isinglass windows for blast furnace doors and were able to purchase sheets of isinglass to recreate the lamp shades lost in the fire. The special grooved lead connecting the isinglass sections was also difficult to find, but eventually a source was secured. The surviving cast brass sconces on the second floor were restored but no attempt was made to recreate these items and so in four places period gas sconces already converted to electricity were substituted for the missing ones.

The oversized sash windows on the first floor were so heavy that no properly weighted sash weights could be found commercially. Some originals were recovered in the rubble. For the remainder, the contractor fabricated weights, using copper tubing filled with lead. A sample window was placed on one pan of a large balance and the sash weights on the other pan. Lead was added to the copper tube until balance was achieved. These windows had spring loaded cast bronze combination window raiser and sash locks to the left and right of the frame. Only six were recovered. Research revealed that the sash risers had been originally made for trolley car windows. We found the original manufacturer in Ohio. Unfortunately, he had recently destroyed the molds for these items. An antiquarian in Mechanicsville, Virginia, agreed to remake these since we had samples of both the left-hand and right-hand risers. His 54



Living room showing damaged floors, walls, ceiling, fireplace detail and sconces.



Front hall and stairs showing burned floors, walls, ceiling, decorative woodwork, sconces and leaded glass.



Restoration of living room nearing completion.



Front hall and stairs after restoration of floors, walls, ceiling, decorative woodwork, sconces, and leaded glass.

sand cast reproductions are now indistinguishable from the originals.

Throughout the house the original hearths were mosaics of glazed ceramic tile. The mason who worked on the reconstruction found identical ceramic tiles in Boston but instead of being 2" X 3" they were 6" X 6" and therefore the large tiles had to be cut on the job to recreate the original designs. The 100-foot rail on the south deck was only 24" high. We had to go to litigation to preserve this dimension because the prevailing code required a 36" height. The retention of the rail height was critical because the windows in the main hall give an unobstructed view of the sea as one enters the house. Visually, the 24" rail lines up with the bottom window sill. A 36" rail would have transected the windows and destroyed the architect's intention of creating the illusion that the sea was almost in the house.

About 25 different types of molding were in the original house and unburned samples of the assortment were found and stored. The millwork shop was given samples and of course the working drawings had cross sections of each. The millwright customized cutting knives to recreate the large variety of moldings.

Since the chimney pots were unusable, it was necessary to find a replacement source. There appeared to be only two manufacturers in the United States and neither would do custom work. We located a cooperative pottery in England but ultimately the company was unwilling to risk shipping clay pots. Eventually we found a sculptor with a kiln large enough to fire a chimney pot. These were of three sizes, the largest being 36" high and the smallest 32" high. He literally sculpted each one and then glazed them in a second firing to reproduce the color of the original pots. We eliminated one flue that ended in a laundry room in the cellar and was of no practical use. Thus, the reconstruction has 15 rather than 16 pots. It is not clear whether Wheelwright himself designed

these chimney pots as the house can be seen in a photograph dated 1896 in the Coolidge-Belmont collection of photographs at the Society for the Preservation of New England Antiquities. The chimneys in the photograph are without pots. I suspect, however, that Wheelwright did design them for installation after 1895 because of his interest in engineering. The pots are very sophisticated, with venturi slots for the top 12 inches, and each pot is oriented to take advantage of the prevailing southwest winds. Thus, with any breeze, smoke was sucked out of the chimneys rather than just rising because of the heat.

Two fireplaces, the existence of which was previously unknown, emerged when partially burned walls were removed. They had been present in the original house and at some later date obscured by changes in room configuration. During reconstruction, the architect designed compatible mantels and hearths for these and there are now fireplaces in the dining room and master bath as Wheelwright intended.

Though the dining room was virtually destroyed, a small patch of wall covering survived. This proved to be hand-blocked canvas. We located the original manufacturer in Boston and had the material recreated for the restoration.

Most of the cedar gutters were burned, but some of the original 16-inch copper hangers remained in the north wall. No comparable items could be found commercially. Copies were fabricated from heavy gauge copper sheets to suspend almost 300 feet of gutters in the restoration. The original fluted copper downspouts had been replaced by some earlier owner. Samples of the originals were found in the cellar and to continue the theme of restoration, downspouts matching these originals were bought commercially and incorporated in the reconstruction.

The second floor hall comprised three elements: a central rectangle, a right-hand corridor 45 feet long,

and a shorter left hand corridor. We had been told that Wheelwright designed the rugs for the halls. We were able to dig from the rubble enough unburned samples of the rugs to make identical copies. We located in upstate New York the rug factory that had made the original carpet. Unfortunately, for technical reasons the plant was unable to recreate the rugs but recommended a Canadian mill that accommodated our need.

Assembling the period hardware presented the greatest challenge of all. In the original house virtually all the hardware was cast brass. This was maintained in restoration even including the light switch plates. For example, in Washington, D.C., we found a shop that had the mortise locks from service doors of the old Madison Hotel. The brass plates of the latches are stamped "Madison Hotel," followed by a floor number so that the seven exterior doors in the restored house all have oversized matched brass mortise locks from floors 8-15 from the 19th Century Madison Hotel. Approximately 200 hinges were assembled in various sizes to meet the needs of construction. Fifty-six period mortise locks were found, including knob sets, knob rosettes, key plates, and strike plates for closures on all interior doors. Enough were found so that sets within each room are matched. Their authenticity in general was established by vendors. Items were obtained in searches covering eastern Maryland, southern Pennsylvania, northern Virginia, and southern Massachusetts. In addition, we found sources in Seattle, Portland, San Francisco, Dallas, and Quebec, Ontario. Even the screen door closures date from the late 19th Century. The same is true of the small pocket door in the dining room, the master bedroom ceiling fan, and the closures in the French doors in the main living room. The period hardware theme was carried out in the entire first floor except the kitchen and about three quarters of the second floor, but the

supply eventually ran out. So the remaining quarter, in what appears to have been servants' quarters, has reproduction hardware.

In the restoration, all five bathrooms on the second floor and the washroom on the first floor contain period fixtures and accessories such as soap dishes and towel racks, hardware, as well as exposed nickel plated brass pipes as in the original house. The salvaged items, intact after the fire, were incorporated into the rebuilt bathrooms which were completed by using period elements found in Boston and Quebec. The flush toilets are an exception and they are recreated overhead tank units. The original tanks were chestnut and the reproductions unfortunately are oak. The same is true of the toilet seats and lids.

No attempt was made to recreate the interior of the third floor in its original form because not a vestige of the original structure remained. A new design compatible with the roof lines and space available improved the utility of this area.

The exterior lamp fixtures and the two interior hanging lamps were also period pieces found in second hand stores. The provenance of some could be authenticated and some were purchased on the word of the vendor.

In summary, to the best of my knowledge the structure is indistinguishable from the original with exception of the interior of the third floor. There are other minor differences. The 1888 original house had no interior heat. A furnace in the cellar bore the date 1921 on the cast iron door so apparently at about that time a decision was made to install a hot air heating system for the first floor and one room on the second floor. The furnace was not replaced and the cast iron floor registers, though surviving, were not reinstalled. During reconstruction, evidence was found that a fourth chimney had existed to service the area which is now the garage. Probably the garage space had been

a bedroom. Invisible changes also exist. The span in the main hall required four steel girders under the existing building code. They are boxed to retain the original look. In the foundation, 39 new Lally posts are embedded in 4-foot cubes of concrete for footings. But again this is invisible from the exterior. The flooring on the first floor was originally quarter sawn oversize oak. We could find no source of quarter sawn oak flooring but did retain the original dimensions.

A final thought: Whatever success we achieved in recreating Wheelwright's major domestic structure reflects in large measure the skill as well as enthusiasm of all those involved. The workmen appeared to take great pleasure in their work, and when the restoration was complete, they attended an open house to which they invited wives, children, and other family

members. Frequently I heard a man say to his wife, "this is what I did" or "this is my work." Some had even left hidden signatures under shingles, in chimney cap concrete, or elsewhere. One is reminded of similar actions by workmen during the construction of some of the great Gothic cathedrals of Europe. Perhaps the greatest reward of all was this pride of accomplishment exhibited by architects, builders, and mechanics.

Charles Lowe graduated from Harvard College and Yale Medical School. His career in pediatrics has been equally divided between academic medicine and research. He went to the National Institutes of Health as Scientific Director of the National Institute of Child Health and Human Development in 1968 and continues to work there. He and his family lived in Woods Hole for four summers before buying Wheelwright House in 1977.



Reconstruction of Wheelwright House complete, summer 1988.