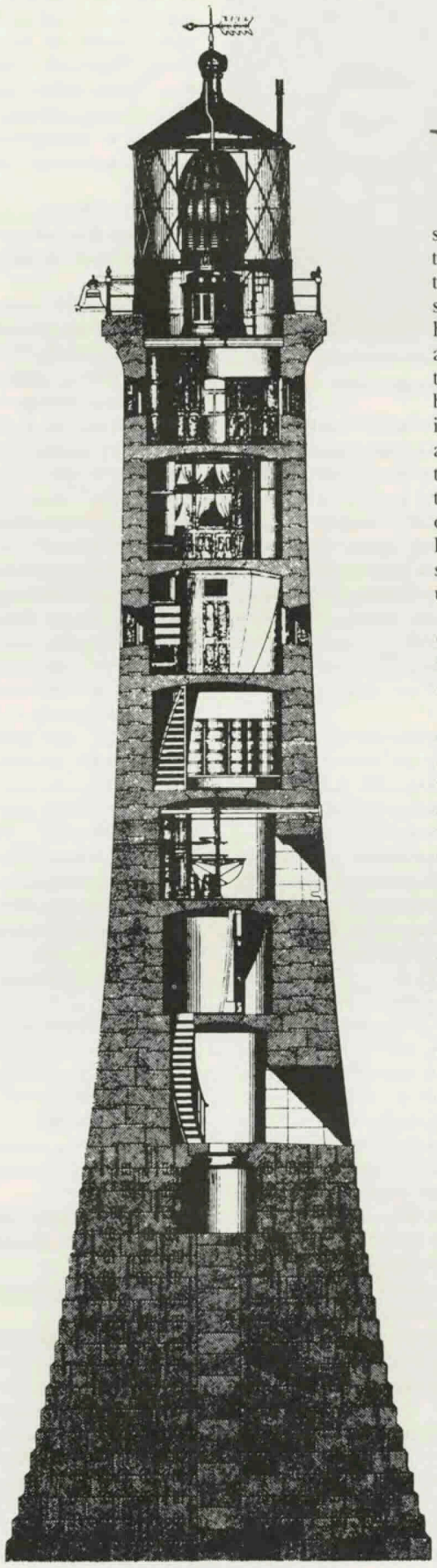
TOWERS OF LIGHT

CHRISTOPHER GLASS

It is our enduring position that the importance of lighthouses goes beyond the countless number of lives that they have saved. We will continue to harken to their human and humane role in our position as a mercantile marine nation, and will continue supporting any group, program or institution that acts to maintain and use lighthouse facilities in the public weal. These lonely outposts are more than winking lights tendering help to mariners; and more, too, than old-fashioned places giving focus to the sentimental memories of the surviving keepers and their families. We need to be reminded that lighthouses and their towers are imprinted on our minds as unique places, as forms — powerful symbols with implications that go beyond the functions of a few watts of optically-enhanced incandescence across watery hazard. Christopher Glass here outlines the special architectural history of Maine's beacons.

The illustration on the right (from Lighthouses of the Maine Coast, *1935, Robert Thayer Sterling, loaned by Earle Shettleworth) shows the cross-section of a "stag" light without outbuildings. Notice the keys cut into the horizontal joints to increase lateral stability.*



WHEN WE HEAR the word "lighthouse" we immediately have an image in our minds of a tall, slender tower perched on some bold promontory. The lighthouse, like the church steeple, is an architectural archetype, an instantly identifiable shape. We associate that shape with all the tales we have heard — tales of stormy nights, shipwrecks, and lonely lighthouse keepers solaced by the occasional mermaid. Lighthouses have been adopted as symbols of vigilance, caring, and guiding by newspapers, churches and financial institutions. These associations are by now built into our perception of the lighthouse, and because of this network of associations we mourn the passing of the lighthouse and its replacement by some skeletal, high-tech contraption that reminds us more of Star Wars than clipper ships.

Despite the clarity of our mental image of the lighthouse, in real life lighthouses come in a wide variety of shapes and sizes. Differing site conditions, navigational needs, tecnologies and symbolic associations have resulted in buildings with significant differences, even among those built within a few years along the Maine coast. Those differences tell us stories about what life was like when these buildings were put up that enrich our appreciation of these symbols.

Basically, the lighthouse as a design problem is simple: make a tower high enough so a light at its top can be seen from far enough away so that ships can avoid dangerous obstacles and steer a safe course. It is this simplicity of function that gives the lighthouse a clarity of form that we can instantly appreciate. A less significant but important function is for the tower itself to be visible during clear weather as a reference point. When we think of a lighthouse, we include in our picture of it more than just the light. We think of the tower as the body of which the light is the head. It is this kind of body standing on the rocks that gives lighthouses their power as symbols. A lighthouse without a tower is not satisfying.

The first Maine lighthouses apparently were unsatisfying in this way. They were houses with lights on their roofs. As storms periodically demolished them, and as larger ships required more distant warnings, these earlier buildings were replaced. The favored shape for this second generation was the classic tapered cylinder we think of as the "real" lighthouse. This shape was not a conscious effort at creating a symbolic form, however, for the tapered hollow cylinder is essentially the most efficient functional

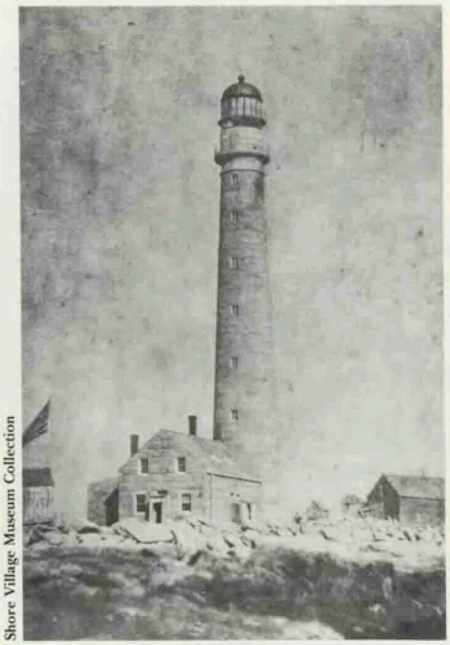
Christopher Glass *is a practicing architect living in Camden, Maine. His office overlooks Curtis Island Light, one of the more beautifully situated lighthouses on the Maine coast.*

shape for a masonry tower. It produces the greatest resistance to the lateral forces of wind and waves with the least amount of material and with the least "sail area" of flat surface catching the wind. If you imagine a cross section of the cylinder, you can think of the round tower as a horizontal arch that transfers force like wind or water around the entire structure. For the same reason castles developed round towers after the introduction of artillery, since round stone walls could distribute the impact stresses of cannonballs. The hollow cylinder provides greater stability than a solid tower of equal mass, and incidentally allows for the access stair up the middle. So the cylinder is the ideal masonry form for a structure to resist horizontal forces.

The taper of the cylinder is less significant to its function, and many of our lighthouses are not tapered. The taper is a visible expression of the need to support greater weight at the base of a tower than at is top. If the interior hollow, with its spiral stair, is to be kept a constant width, then the extra stone needed to support the weight of the stone above can only be added by making the base wider. This use of interior space is even more elaborate in the so-called "stag" lights, which were on sites too inhospitable to support a house and garden and therefore not kept by a family but by a bachelor (hence "stag"). As the illustration shows, the functions of the whole station had to be fit into the shaft of the cylinder, and the size of the rooms increased as they went up, again to provide more mass at the base.

It is this ability of shapes to "look" more or less satisfying that is one of the mysteries of architecture and one of the fascinations of the lighthouse as a form. One of the best theories to account for this phenomenon is that of Geoffrey Scott in *The Architecture of Humanism*. Scott says that we "transcribe architecture in terms of ourselves" by a "tendency to project the image of our functions into concrete forms." So, for example, the Greeks considered the massive Doric columns of the Parthenon to be "masculine," having a height-to-weight ratio based on that of a male athlete, while Ionic columns, which are thinner in relation to their height, were considered feminine. By this kind of analysis the typical Maine lighthouse, with its relatively wide diameter, becomes some kind of superhero, an Arnold Schwarzenegger among cylinders.

The thinner or taller ones such as Boon Island light look more daring, more precarious, because of their thinness. In fact, the tall thin towers at both Boon Island, and Petit Manan Island are not pure masonry cylinders. They are reinforced with vertical tie rods that brace the top third of the tower and keep it from overturning. The weight and arch action of masonry alone is not adequate to the height and exposure, so iron rods act like a kind of bowstring to resist the forces trying to topple the tower. Our perception of them as thin is physically correct, in the sense that they are too thin to survive without bracing.



Shore Village Museum Collection

Boon Island Light is one of Maine's two tall lights, Petit Manan being the other. The picture shows it before the installation of the iron reinforcing rods.



Shore Village Museum Collection

Whaleback Light is tapered shaft of rusticated cut stone with a clearly Egyptian stone cornice topped by a Renaissance dome. The foghorn indicates that technological trashing is not a new idea. At least the tapered tank echoes the shape of the stone tower.

The tapered towers were originally built of stone. Solomon Willard had developed the Quincy granite quarries and built the Bunker Hill monument of the cut stone. Alexander Parris used it to build Boston's Quincy Market in 1825, and he was commissioned to build lighthouses the same way; in Maine he is known to have designed six lighthouses, from Saddleback Ledge in 1839 to Monhegan in 1849. For isolated or especially vulnerable sites the advantages of prefabrication and the greater strength of cut stone were important. Closer to shore, on more sheltered sites, random rubble stone was used, laid up around a brick core that gave precise shape to the interior spaces.

When the towers were not built of stone the problem changed. Toward the middle of the 19th century engineers became interested in cast iron as a replacement for stone. Whole buildings were made of iron cast to look like carved stone, and though we now think of these buildings as exotic and interesting, at the time they were regarded as cheap imitations of the real thing — the vinyl siding of their day. But cast iron was ideal for the lanterns at the tops of the towers. It was relatively fireproof and weatherproof and required only assembly on-site, not fabrication. Prefabricated sections light enough to be lifted into place were simply bolted together. The use of iron gradually increased, until entire structures were made of it, so that the lighthouse at Cape Elizabeth, made famous by Edward Hopper's painting, replicates in iron the tapered cylindrical shape and proportions of a stone lighthouse.

More extreme is the little "Bug" light of 1875 at the Portland Breakwater in South Portland. Here the whole building is iron, including delicate Corinthian columns and other classical details modeled on the Choragic Monument of Lysicrates, built in Athens in 334 B.C. The design was possibly influenced by Thomas U. Walter, architect of the Capitol dome in Washington, which is also a cast iron structure resembling classi-

cal stonework. Significantly, the Bug differed from its Greek prototype by being stouter. The departure from the unadorned cylinder indicated the desire to have the structure symbolize its function in cultural and not just geometric ways.

This cultural symbolism characterizes the last type of lighthouse built in Maine. (Last, that is, not counting the metal monsters of the present.) These are the square, tapered towers of brick build beginning in the 1870s. The tower at Grindle Point on Isleboro is a good example of this type, and there are others at Nash Island, Two Bush Island, Indian Island and the Rockland Breakwater. Lighthouses on reasonably protected sites did not require the same attention to maximizing strength that more exposed ones needed. Brick was adequate and easier to work, if laid in straight lines. The need for greater strength at the base remained, however, so the tapered sides still made economic and structural sense.

But also entering into the design of these square towers was a cultural message. The clue to that message is the shape of the iron cornice which curves out from the top of the tower to support the gallery. This curved cornice on top of the square, tapered tower is a reference to the shape of the pylons of Egyptian temples. In the 19th century Egyptian forms were often used for symbolic reasons. Cemeteries were an obvious application of Egyptian devices, but lighthouses were an equally obvious opportunity, since the most famous lighthouse of all was the pharos of Alexandria, one of the seven wonders of the ancient world. So these otherwise simple and straightforward structures were designed to recall the progenitor of them all.

Also suggesting symbolic meanings were other details such as the preferred 10-sided geometry of the lantern. The decagon was the basic organizing symbol of medieval masonry, and that tradition had survived, along with the symbolism of the lighthouse, in the Masonic ritual. It is significant that when the Masons built a monument to that famous Mason, George Washington, they chose the city of Alexandria on the Potomac and modeled thier building on the Pharos. Our square, brick lighthouses represent the same tradition.

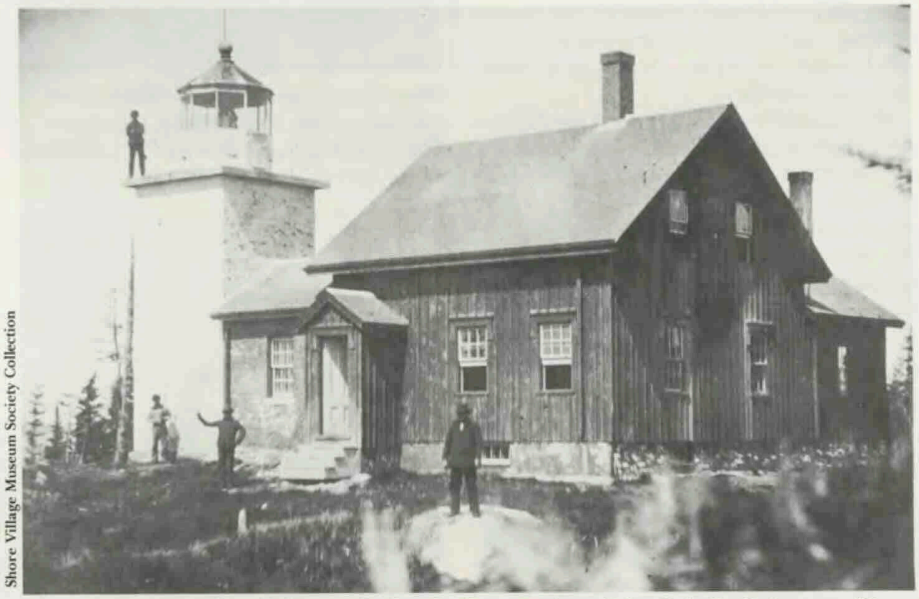
Aside from the formal symbolism of the tower itself, there is the relationship of the tower to the keeper's house. Except in the case of the stag lights, Maine lighthouses consist of the tower and the support buildings for the family of the keeper. The tower is often attached to the house in the way a silo is attached to a farm. The family that lived at the station lived in the same way a farm family did — raising children and crops and chickens and maintaining a nearly self-sufficient homestead. The lighthouse took the place of the "cash crop." Instead of raising produce for market, the keeper provided the service of keeping the light lit.

The physical relationship of the tower to the station was, like the tower shape, capable of a great deal of variation, depending on



Shore Village Museum Collection

Saddleback Ledge Light was an early stone tower with a pronounced taper that does not conform to our idea of correct lighthouse proportions. It looks as if it has eaten too many starches and should be called Saddlebag, not Saddleback.



Shore Village Museum Society Collection

Deer Island Thorofare light was the low-budget version of the Grindle Point type. The tower is not tapered, there is no graceful Egyptian cornice, and the keeper's house is of board and batten, which, though briefly fashionable as Gothic Revival, usually meant clapboards were too expensive.



Shore Village Museum Collection

Goat Island Light is an extreme example of the relation of keeper's house to lighthouse. Presumably the need for the light to be visible over a wide arc dictated the semi-detached placement of the keeper's house. Either that or the keeper insisted on keeping up his bowling.



Shore Village Museum Collection

Grindle Point Light Station. The first lighthouse on this site was built in 1850 and replaced in 1875 by the present structure. It is an aesthetically unsatisfying house light, where the keeper's house seems to have been impaled on an unseen shaft.



Shore Village Museum Collection

Grindle Point Light Station today. Though the lantern is neither much bigger nor much higher than its predecessor, this tower is more "correct." This is one of the Egyptian towers, with references to Masonic precedents. The picture also shows the present state of the art in lighthouse design.

KEEPING THE LIGHT

HOW TO LICENSE AND MAINTAIN A LIGHTHOUSE

The Island Institute, with a grant from the Mildred H. McEvoy Foundation, has recently published *Keeping the Light — A Handbook for the Adoptive Re-use of Maine Island Lightstations.*

This Handbook details what non-profit organizations and interested citizens need to know about licensing and maintaining automated and abandoned island lighthouse building complexes. Based on two seasons of field investigation and two Maine lighthouse conferences, *Keeping the Light* will be of interest to anyone interested in caring for or living in island lighthouse buildings.

the site and period of construction. Often the tower is clearly the dominant, solid element, and the other buildings appear as temporary appendages. But just as often the tower is actually no taller than the roof of the keeper's house, and though the tower preserves its characteristic shape, it has lost its position of dominance. One interesting case is the very late Rockland Breakwater Light, where the Egyptian tower appears to grow up through the roof of the ell of the keeper's house. The only constant is that the tower is visible from the sea as a tower, using its shape as much as its light to identify its function.

Like any cash crop, tending the light and tower took time and attention. One reason Maine lighthouses tend to be all white instead of the multicolored variety is that one of the keeper's duties was to give them their yearly coats of whitewash, and the job was one that did not lend itself to fancy work. Writing in 1935 (in *Lighthouses of the Maine Coast*), keeper Robert Thayer Sterling described this duty:

"It is a job in itself to cover one of these lighthouses whose height is over 100 feet and whose circumference, on some stations, is nearly 46 feet. There is much work in getting the tackle ready for hoisting up the basket which the keeper must stand in while whitewashing. Strict precautions are taken to see that the ropes and blocks are good and fast before ascending.

"The rigging does not last more than two years; then new has to replenish the old. Whitewash has a tendency to rot the rope and great care is taken to inspect it before anybody goes aloft.

"The best time, so the keepers find, to whitewash towers and other outlying buildings and fences is either the last of May or the first of June, the latter being chosen as the best. It is understood that you must wait until you get westerly or northwest wind that will dry up the mixture of lime as fast as it goes on. With these conditions one gets a pure white tower.

"It is necessary to have two keepers take part in this work, for while one is putting on the fluid the other is attending to the hoisting and lowering of the pannier."

And whitewashing, which could be done to fit the weather, was one of the easier tasks.

The work of maintaining such a light could be done economically by a farm family. It is not economical in today's world. The new metal monsters are the self-sufficient robots of our time, needing little maintenance but inspiring no great love. They do not inspire because they transmit only light, not the great variety of structural, architectural and cultural messages the great towers and their appendages transmitted.

The message conveyed by today's steel towers is that all of these values are not relevant to the overriding requirements of technology and economy. I hope our generation does not leave that message as its legacy to the future, or, at least, that we will do what is necessary to keep the old lighthouses sending out their messages of vigilance, caring and ingenuity.