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HANGING THE CURTAINS

The Use of Curtains, Covers, and Pull-Down Window Shades in Lighthouse Lantern Rooms

By Jack T. Graham

Introduction: The light keeper had many tasks to do each morning. One of them was to shield the Fresnel lens in the lantern room from daytime sunshine. This article explores the use of the various shielding devices and attempts to determine if there were specific factors that determined the use of one or another of them or if there was any correlation with lens size or lighthouse era.

"Hang and spread the lantern curtains immediately after the lights are extinguished." So said the *Instructions to Keepers* issued by the Light-House Establishment in 1870. From the advent of the use of Fresnel lenses in U.S. lighthouses in the 1850s, policy directed that the lantern rooms be outfitted with curtains of linen material to shield the lens from sunlight during the day. Four reasons are generally accepted for shielding the lens from sunlight.

1. A curtain hung right inside the lantern glass, together with the ventilation system in the lantern, kept the ambient temperature from getting excessive. This not only benefited the equipment therein but made it less oppressive for keepers who had work to do in the lantern room during daylight hours.

2. A lamp full of oil in the epicenter of the Fresnel lens was a potential source of fire/explosion. Just as the lens concentrated light from the lamp and sent it outward, so could it have possibly reverse-concentrated sunlight and focused it on the lamp in the center. There are anecdotal reports of such fires.

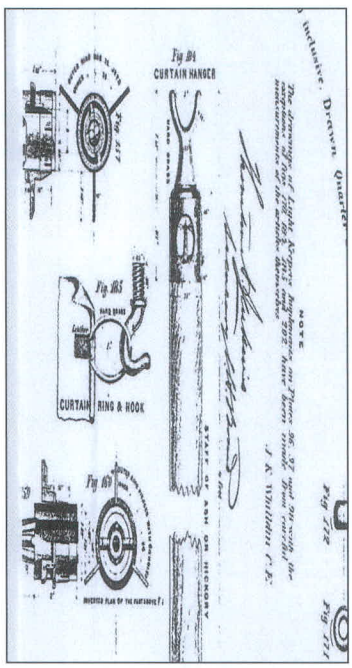
3. Heat buildup within the lantern had over time a deleterious effect on the litharge, the lead-based putty that holds the individual prisms of a Fresnel lens in its frame.

4. Depending on the composition of the glass, exposure to sunlight could over time cause slight color change in the glass of the individual lens prisms.

All official instructions to light keepers issued during the Light-House Board era, and continuing into the era of the Bureau of Lighthouses, specifically directed the keeper to shield the Fresnel lens from sunlight immediately after extinguishing the lamp in the lens at dawn. The wording of the 1870 instructions to keepers referenced in the opening paragraph above was typical of the ever slightly changing language in such instructions issued over the years. Another edition of the instructions similarly stated, "The curtains of the lantern must be put up, or the lens cover must be put on before sunrise, and one or the other must protect the lamp in the lens by shutting out the sun's rays. . . ." These instructions added a second element—a cover in addition to a curtain. The 1902 instructions stated, "When the light is extinguished in the morning the keeper must hang the lantern curtains. . . ." The 1911 version also mentioned a cover as a separate lens shielding device from a curtain. These instructions said, "When not in use, the illuminating apparatus must be covered, and the lantern curtains hung." This indicates that both a cover and curtains were to be used. The term "illuminating apparatus" referred to both the lens and to the lamp in the center of the lens. Interestingly, by 1927, keeper instructions no longer mentioned either curtains or covers. Perhaps lens shielding was mandated by some other Bureau of Lighthouses document by that time as the reasons for this procedure had certainly not changed.

As their use was mandated, curtains were supplied for the lighthouses by the Light-House Establishment. The *List of Allowances To Light-House Stations* published in 1872 included "two sets linen curtains, to be used exclusively for hanging up inside of the lantern, and never in the keeper's house"; this language is repeated in the 1881, 1897, and 1901 *List of Allowances to Light Stations.*

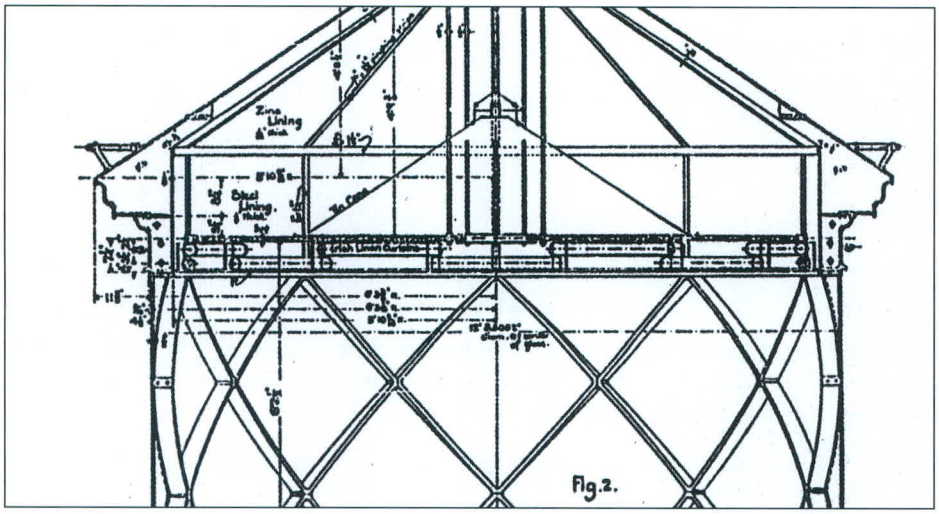
The 1872, 1881, and 1901 listings also stipulated that "two white fine linen covers for the illuminating mechanism" were to be provided. This reinforces the idea that covers were also used in addition to curtains around the lantern. Yet a third item noted in the 1872 listing of allowances is "two covers for the spare mechanical lamps." By 1901 the reference is to "two linen covers for the spare first, second, and third order lamps."



Portion of a page of lighthouse tools/implements from a Light-House Establishment publication. Shows top of a curtain with a ring, and the long pole use to slip the ring over the curtain hook. Courtesy of Sable Points Lighthouse Keepers Association.

There were two general methods of hanging curtains. Most lantern rooms had hooks (see various illustrations) located at the top of each vertical astragal. A long wooden pole was standard issue for hanging the curtain sections onto these hooks. The curtains were taken down at dusk. In some lanterns, a circular curtain rod was used, either right inside the lantern glass or in a smaller circle closer to the lens. At dusk these curtains would be opened by drawing them back and bunching them on the land-side of the light. At an offshore

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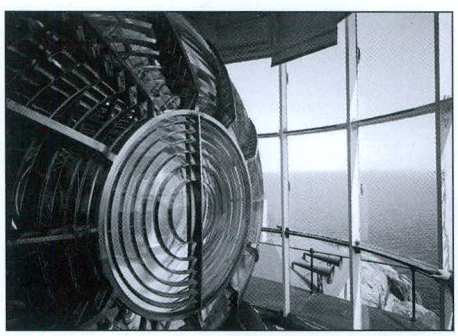
This illustration, circa 1901, shows pull-down shades above the lantern glass and the notation "Irish Linen Curtains." Courtesy of Thomas A. Tag collection.

light where 360-degree visibility of the light was essential, these curtains too would have been taken down entirely and put back up in the morning so as not to block visibility of the light from some quadrant.

The various issuances of keeper instructions all use the specific words "curtains" and/or "covers." Curtains and covers were most commonly made of linen, a soft fabric that would not scratch or otherwise abrade the glass of the lens. Covers were pulled right over the lens itself and were most common with the smaller size Fresnel lenses (fourth, fifth, and sixth orders). However, use of pull-over covers has been documented with larger lenses, including first-order lenses.

Window Shades: Yet a third device to keep sunlight out of the lantern room was often used. While serving as a volunteer at Minnesota's Split Rock Lighthouse, I noted that the lantern room there was fitted not with curtains but with individual pull-down window shades—one on each vertical section of the lantern glass that faced Lake Superior. Research into files at the station is conclusive that these shades, rather than curtains, were original to this lighthouse, which went into service in 1910. Split Rock has a huge third-order bivalve (clamshell) Fresnel lens, and at that time it was the only lighthouse that I was aware of that used pull-down window shades rather than curtains to shield its lens from sunlight. Split Rock was designed by Ralph Russell Tinkham, later the chief engineer of the Bureau of Lighthouses, and I wondered if perhaps shades were a preference of his rather than of the bureau. This was the impetus for the research that has gone into this article, as I wanted to know how commonly such shades were used in other lighthouses.

The reference to curtains in the 1870 version of keeper instructions is noted above. What is also mentioned in this same version (section IX, paragraph 2) is the use of blinds (that is, shades). This paragraph tells the keepers to "lower the blinds and arrange the curtains of the lantern which double protection is necessary to prevent the sun's rays from melting the burner of the lamp." This clearly makes a distinction between the blinds (shades) and curtains. This is thus far the only official reference to window shades that I have found, but it clearly indicates that the use of shades/blinds well predated the Tinkham era.



Interior of Split Rock Lighthouse lantern. Note window shades in upper right. Library of Congress photo.

Information Sources: To find out about other sites, information for this article was gathered from three primary sources: inquiries to today's keepers of individual lighthouses, review of early inspection reports of specific lighthouses from the National Archives, and photographs of lighthouses found in books and articles.

Inquiries to Lighthouses: Direct inquiry was made to dozens of more or less randomly selected individual lighthouses, asking current owners/operators what they knew of the early use of lens-shielding devices during the oil lamp days. The practice of shielding the lens ceased decades ago at most lighthouses as electric lamps took the flammable oil fuels out of the lanterns and then as automation took away the keepers. Thus, in all too many cases this information just is not known. Staff at many sites were aware of, and graciously shared documents, log entries, and/or historic photographs that provided such information or hinted at it. Many sites also provided information about or photographs of hook/rod/bracket hardware that still remains in their lantern rooms. Inquiries were made to sites with all sizes of lenses. The information obtained from this source would have been more representative had more of the recipients responded; approximately 40 percent of those queried responded. Replies that were received from individual sites are summarized in an appendix to this article.

Inspection Reports: *Description of Light Station* inspection reports from 1858 onward are found in the National Archives Record Group 26. Many of these, in an ongoing project, have been transcribed into a database on the U.S. Lighthouse Society website by volunteers of the Chesapeake chapter. These reports have various sections. The two sections where pertinent information for this article was found are "Lens Protection" under the "Illuminating Apparatus" part of the reports and "Curtain Hooks/Hanger" under the "Ventilators and Watchroom" section. Information from many individual reports is noted in other sections of this article. Hundreds of reports were reviewed, yet far more from all periods of the lighthouse era remain for further research.

Photographic Evidence: Hundreds of archival photographs of lighthouses taken during the day show the lantern glass covered on the inside, but most often the photos were taken from too far away to determine whether it was a curtain or multiple window shades that were in place. It is sometimes possible to

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Heceta Head Lighthouse, a typical archival view of curtained lantern room. Photo courtesy of Heceta Head State Park.

see that some did not hang straight but rather were "wavy" as curtains would likely have been. Some photographs showed the screening material appearing straight and taut; these were likely window shades. To cover the entire width of the glass, shades typically overlapped each other, so that an "in and out" pattern can sometimes be determined. I believe that more of these old photos show shades inside the lantern glass, as opposed to curtains, than is commonly presumed. Current photos of remaining hooks, brackets, and other such hardware were also received from many lighthouse sites.

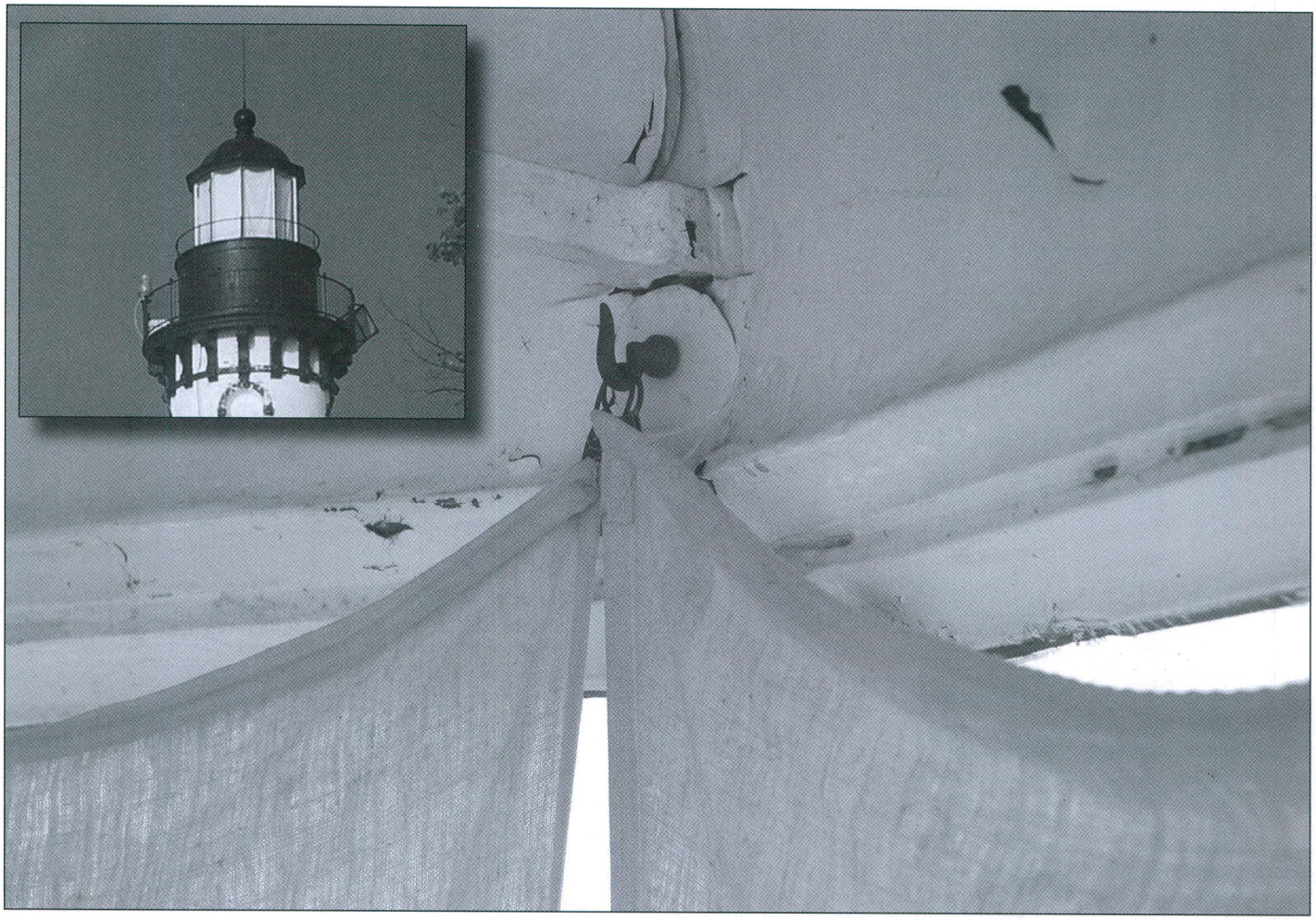
Use of the Term "Curtain": As noted above it is very clear that pull-down window shades were always used at the Split Rock, Minnesota, Lighthouse. What is also clear is that the keepers there used the term "curtains" in referring to these shades. An entry in the station log dated October 12, 1921, states, "Fitting new curtains in the lantern." In another reference, Keeper Franklin Covell sent a letter to the district office requesting new "curtains," also saying that the "curtain rollers" needed replacement. A letter of reply to Covell from the district office directs him to send one of the "shades and rollers" to that office so that they could prove that it needed replacement and to get accurate measurements. A letter from 11th District Superintendent W. G. Will in August 1931 states, "A new set of lantern curtains complete with rollers will be furnished." A Lighthouse Service "Requisition For Articles" dated April 15, 1939, notes that 12 "lantern shades with rollers, rollers 28" long, curtain 26-½" by 9'6" had been ordered "for lantern."

The word "curtain" was also used to refer to pull-down shades at other sites, if not throughout the system. This is supported by several entries in the inspection reports. As an example, the February 1906 report for the Sabine Banks, Texas, Lighthouse states that "14 Irish linen curtains are secured to tin spring rollers." The December 1918 report for the Ashtabula Harbor, Ohio, Lighthouse documents "12 curtains on metal rollers supported by brass hangers screwed to soffit lining." The February 1909 report for the Toledo Harbor, Ohio, Lighthouse documents "14 curtains on tin spring rollers." The June 1909 report for the Cape Disappointment, Washington, Lighthouse states clearly, "Curtains are rolling window shades operated by cords." The January 1909 report for the Oswego, New York, Lighthouse notes the use of "curtains on rollers." There are many other such examples from sites across the country.

Curtains/Shades/Covers: Respected lighthouse experts and historians speculate that curtains were likely used mainly with the largest first- and second-order lenses—the ones with the largest lantern rooms. Lantern rooms with third-order or smaller lenses were more likely fitted with shades, and the keeper could use a hook on a pole to raise and lower these shades. The smaller fifth- and sixth-order lenses were likely fitted with a pull-over cover.

A popular motion picture called *The Lightkeepers* was filmed several years ago using Cape Cod, Massachusetts, lighthouses as filming sites or background. Interior views of the lantern room of the Race Point Lighthouse used in the film clearly showed pull-down shades mounted inside the lantern glass. Staff at Race Point confirmed that this was correct in 1916, the era depicted in the film. The present Race Point Lighthouse dates from 1876 and had a fourth-order Fresnel lens; whether shades were used from the time it was first illuminated is unknown.

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Top: The curtains of Au Sable Lighthouse. Photo courtesy of Pictured Rocks National Lakeshore. Inset photo from 2010 by the author.
Left: The curtains inside the lantern at Point Reyes Lighthouse in California. Courtesy of Point Reyes National Seashore.

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Questions remain. How widespread was the use of shades, as opposed to curtains, during the Fresnel lens/oil lamp period of lighthouse operation, and were covers always/often used in addition to or instead of other devices? Were new lighthouses fitted with shades while old ones continued to use curtains? Was there a gradual change-over to shades as curtains wore out and were not replaced? The reference to the use of both "blinds" and "curtains" as early as 1870 seems to indicate that both were in use at least that early. Somewhere there may be station log-book entries where keepers dutifully record drawing curtains or lowering the shades at dawn, or pulling on the lens cover, but such entries are likely scarce. Most logs tend to document weather or unusual incidents, and such daily tasks as these were simply too "routine" to warrant mention.



A photo from 1953 of the Gay Head Lighthouse shows a cover over the lens. Library of Congress photo.

Architectural Drawings for Lantern Rooms: Drawings of lantern rooms found in National Archives files show that there were three sizes of lanterns produced. The largest size was used where first- or second-order lenses were to be installed; a mid-size one for third- and 3.5-order lenses; and a smaller size one that was used with fourth-, fifth-, or sixth-order lenses.

The drawings of all three sizes of lanterns show pull-down shades installed therein (see illustration on page 31). The first-order drawing labels them "Irish Linen Curtains." They are not so labeled in the other drawings but are illustrated identically.

Although I was unable to determine a date for these drawings, the largest of them is labeled "Cape Fear Light Station NC." The Cape Fear Lighthouse, with its new first-order lens, went on line in 1903. This would indicate that shades were the preferred state-of-the-art device at that time, even with the largest lenses, and were likely being used in all new lighthouses in that time period.

Lens Protection: As noted above, one of the sections of the inspection reports was entitled "Lens Protection," and I expected to find references to curtains/shades/covers in this section. Although a relatively few entries in this category do say such things as "linen" or "lens cover," the majority of the reports leave this item blank. In some cases, as at Michigan's Rock of Ages Lighthouse, the term "none" is entered for "Lens Protection," yet the "Curtain Hooks" section of the report documents that Hartshorn roller shades were in use. The report for the Lime Kiln, Washington, Lighthouse states "no" under "Lens Protection" but then notes that "rollers on brackets" were in use. The purpose of this inspection item may not have been to document the curtain/etc. device used to shield the lens from sunlight. It is also probable that many inspectors were unclear as to its actual purpose and/or the type of information that was supposed to be recorded there.

Presence of Curtains/Curtain Hooks: The design of the standard curtain hook is shown in the photo above. This is illustrated in an early Light-House Establishment "Light Keeper's Implements" plan sheet, which also shows a long pole used to place the rings or grommets of the curtains over the hooks. (This plan is signed by Thornton A. Jenkins, as naval secretary to the Light-House Board; Jenkins served three different terms as board secretary, the last of which ended in 1872, thus giving a general date range of this hook design.) Photos of existing hooks were received from numerous lighthouses. Many of these are of this standard design, yet there are any number of variations in the shape of the hooks, some looking decidedly homemade. Placement of the hooks is generally above each of the vertical dividers (astragals) of the lantern, although there are some exceptions.

The inspection reports frequently noted the presence of roller shades and lens covers in various lantern rooms. Although actual curtains were seldom noted, in spite of the fact that many archival photographs spanning a wide range of time show what appeared to be curtained lanterns, dozens of the inspection reports document the presence of curtain "hooks" in the lantern rooms. Many current photos received show hooks still in place in the lanterns, but in most cases present staff has no supporting photographs or other documentation of curtain use. I suspect that hooks were sometimes installed when the lantern was made simply because the plans called for them, and that they may never have been used for their apparent purpose. Or perhaps curtain use was simply too "standard" for inspectors to bother mentioning. There are a few instances in which the inspection reports do document the presence of curtains. One report that does is the May 1935 report for Curtis Island, Maine, which had a fourth-order lens at that time. The report notes both a "linen cover" and "curtains hung by rings on hooks." A 1911 report for the West Rigolets, Louisiana, Lighthouse (fifth-order lens) states that there were no hooks in the lantern, but rather that curtains were "hung from bolts."



A current photo of the St. Augustine Lighthouse lantern shows "standard" hook in the lantern above one of the astragals. Courtesy of St. Augustine Lighthouse & Museum.

The wording used to describe where the hooks were located was as varied as the number of inspectors who noted their presence, to the extent that one wonders if the inspectors knew lantern terminology at all. Some of the descriptions, actual quotes from the reports, are as follows: screwed to the soffit, screwed to soffit casing, screwed into verticals of the lantern, secured to astragals; screwed to top of astragals. Perhaps the most thorough description, from the North Head, Washington, report is "16 brass hooks screwed to pinching strip of zinc lining of the architrave." A listing of many of the descriptions of curtain hook placement locations within lantern rooms found in the inspection reports is included below under "Placement of Curtain Hooks in Lanterns."

Curtains most commonly hung on rings slipped over a hook. One of the inspection reports noted another device: "Buttons screwed into frame of lantern." A matching "button" on a curtain would have "snapped" into

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Shades currently in use following the recent restoration of the Kilauea Point Lighthouse. Photo courtesy of Sue Licht, restoration architect.

place, similar to common fasteners found on clothing. This was the only mention of this device found in any of the reports, yet it may well have been more widespread.

Lens Covers: The use of a cover that simply pulled down over the Fresnel lens was common. This was usually made of linen so as not to abrade the lens prisms. The inspection reports often indicate the use of such covers while at the same time noting the presence of curtain hooks. A case in point is the Ottawa Point, Michigan, Lighthouse, where the 1858 inspection report noted the use of a "lens cover" with the fifth-order lens there at that time, while also noting that curtain hooks were "screwed to soffit."

Many sources state that pull-over covers were used primarily with fourth-order or smaller lenses, where it would have been easy to put it on, and this is generally supported by the reports that noted lens covers in use. 1935 reports for both Avery Rock and Baker Island lighthouses in Maine noted the single word "linen" under "Lens Protection," most likely in reference to lens covers. However, nothing about lighthouses is ever absolute. The use of a cover is documented with the fixed first-order Henry-Lepaute lens at Maine's Seguin Island Lighthouse. Lighthouse icon Connie Small, who with her husband Elson served many years at several of the lighthouses of Maine tells in her book, *The Lighthouse Keeper's Wife*, of the cover used at Seguin, where her husband was the keeper from 1926 to 1930. "The lens cover of linen, twelve feet long with four sections about six feet wide, had a drawstring at the top of the lens. The cover came down over the lens and fastened at the bottom with another drawstring. It was necessary to use a ladder to reach the top to fasten and drop the cover." Photographs of the lighthouses at Gay Head, Massachusetts, Point Reyes, California, and Heceta Head, Oregon, all of which also have/had first-order lenses, also show covers immediately around the lenses at points in time.

Several reports from lighthouses in Louisiana and Texas, with lenses ranging in size from third to fifth order (including one 3.5-order lens) note under "Lens Protection" the single word "linen." This could refer to either a cover or to curtains of linen. Several 1927 reports for other Louisiana lighthouses, including ones with a first-, second-, and third-order lens, have the single word "cotton." It is easy to speculate that the inspecting officer simply did not know linen from cotton, but then cotton was a major crop in Louisiana. Again, this could refer to either a cover or to curtains.

Spring Roller Shades: A significant number of the reports from all over the U.S. note what had to have been pull-down window shades. These also further document that the term "curtains" was used to refer to pull-down shades as well. But these references, from reports between the years 1880 and 1918, are not noted in the "Lens Protec-

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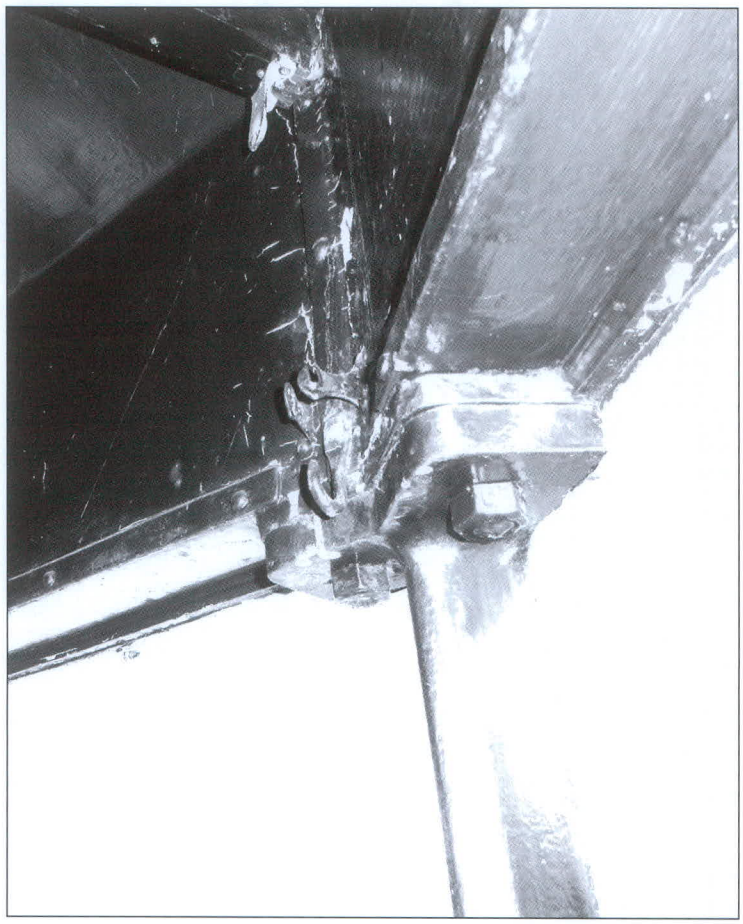
tion" section of the reports, but rather in the "Curtain Hooks/Hanger" section. As referenced above, one of the most definitive entries was the 1906 report for the Sabine Banks, Texas, Lighthouse, which documented, "Brass curtain fixtures, supporting block tin spring rollers to which are secured 14" Irish linen curtains." Another example of what I hoped to find was revealed by two inspection reports for the Cape Disappointment, Washington, Lighthouse. The 1882 report, when this light had a first-order lens, had the entry "fitted on rollers" in the "Curtain Hooks/Hanger" section of the report, a reference to window shades. A second report from 1909, by which time a fourth-order lens was in place here (the first-order lens having been moved to the new North Head Lighthouse) stated definitively "curtains are rolling window shades operated by cords." A sampling of other references to pull-down shades in the reports are 1910, South Manitou, Michigan, third-order lens, "Lantern fitted with Hartshorn self-acting shade rollers"; 1909, Stannard Rock, Michigan, second-order lens, "12 roller curtains raised and lowered by cords"; 1913 New London Ledge, Connecticut, fourth-order lens, "spring rollers." Many other such examples are documented in the reports.

Conclusions: A preliminary assumption, supported by several knowledgeable lighthouse researchers, was that a curtain installed right inside of the lantern glass was the standard device when Fresnel lenses were first introduced into American lighthouses. When practical pull-down shades became available in the period following the Civil War, these became the shielding method of choice, particularly in lantern rooms where smaller size lenses were in use. First- and second-order lenses were in a larger, taller lantern where the keeper could not simply reach up and pull down the shades. Curtains, either put in place with the use of a long pole or hung on rollers that ran on a circular curtain rod, were used with these larger lenses. The information obtained from the sources noted generally supports this preliminary assumption, but as noted above, with lighthouses there are no absolutes.

The use of curtains based on the inspection reports remains vague, as noted above, in spite of the common presence of curtain hooks and the many existing photographs of what appear to be curtained lanterns. The historic use of curtains at some point in time was documented by today's keepers at sites with first-, second-, third-, fourth-, and fifth-order lenses.

The use of shades on rollers is documented in the inspection reports for lighthouses with first-, second-, third-. 3.5-, fourth-, and fifth-order Fresnel lenses. The historic use of shades was confirmed by today's keepers at sites with first-, third-, fourth,- and fifth-order lenses.

The use of lens covers is documented in those same reports, and by photographs, for lighthouses with all seven standard orders of Fresnel lenses (first through sixth, plus 3.5), although 30 of the 42 instances are with fourth-order or smaller lenses. Data from present-day keepers notes the historic use of covers with first-, third-, fourth,- and fifth-order lenses. Although light keepers' official *Instructions* state clearly or hint strongly that covers were used in addition to other devices, this was not documented in any of the inspection reports reviewed nor confirmed by any current staff.



Contemporary photo showing both curtain hooks and shade brackets that remain in the lantern of Point No Point Lighthouse in Washington. USLHS archive photo by Chad Kaiser.

Unfortunately, there are few reports for, or good photographs of, the same lighthouses at different known dates, so it is speculative at best to assume that whatever method of lens shielding was in place at the "moment in time" focused on by an individual report or photograph held true for any other period. There are some examples, one being the Point Iroquois, Michigan, Lighthouse. The 1858 report indicates the use of a lens cover on a sixth-order lens. No mention is made of curtain hooks. A second report for this light, in 1909, when a fourth-order lens was in use, makes no mention of a cover but does note "brass hooks screwed to soffit." But by then a new tower had replaced the one that stood in 1858, so perhaps curtains were by then being used with the larger lens.

An archival photo of the Heceta Head, Oregon, Lighthouse taken in 1884 clearly shows a curtain drawn around the inside of the lantern glass. A second photo taken in 1933 just as clearly shows a cover immediately around the first-order lens. It is noted above that a cover was also in use at Point Reyes, California, at one point, but another photo of that light, dated 1910, taken from the *Historic Structure* report, shows a curtain in place just inside the lantern glass. A circular curtain rod a few feet out from the lens is presently installed in this lantern, but whether it is original to the tower or was added later is unclear.

The 1858 reports for both the Cheboygan, Michigan, (fifth-order lens) and the

Copper Harbor, Michigan, (sixth-order lens) lighthouses, note the use of lens covers but do not document the presence of curtain hooks. Reports for these two lighthouses in 1910 (Cheboygan still had a fifth-order lens; Copper Harbor then had a larger fourth-order lens) make no mention of covers but do note the presence of curtain hooks "screwed to soffit." An 1881 report for the Cape Blanco, Oregon, Lighthouse, which had a first-order lens at that time, notes "curtains hung on rollers" but does not mention hooks. Another report, 29 years later, in 1910, still with a first-order lens, makes no mention of curtains/rollers but does document the presence of curtain hooks. Today, Cape Blanco's lens is protected by a curtain. It is, of course, very possible that the hooks were in place at all of these lighthouses at the time of the earlier reports but were not of interest to the inspector.



By the late 1800s, the Hartshorn roller shade had pushed most others off the market. They are noted in inspection reports as the make found in many lighthouses. *Harpers Weekly* ad from 1885 courtesy of Millburn-Short Hills New Jersey Historical Society.

Photos taken of the Gay Head, Massachusetts, Lighthouse in 1898 and again in 1940 show either curtains or shades in place inside the lantern glass, yet other photos from the 1880s and one from 1953 clearly show a cover immediately over the lens, a case of the shielding device alternating over time. A 1933 photo of the Point Sur, California, Lighthouse, shows what appear to be shades; a circa 1960 photo clearly shows a cover in place over this first-order lens.

I have thus far been unable to determine conclusively that any one lens-shielding device supplanted another time-wise. Rather, I must conclude that it is more likely that any given device may have been used at any point in time at any given lighthouse. It is also likely that all—curtains, shades, and covers—may well have been used concurrently at any given point in time at any specific lighthouse as well. One of the few sites where my research documents this is the Point Sur, California, Lighthouse, where curtain rods remain, inspection reports note roller-shades, and a photo exists of a lens cover in place. This situation was undoubtedly far more typical than I have been able to show.

Many of the earliest guidelines if not regulations governing operation and care of our American lighthouses were modeled on those in use much earlier in France. A description of the daily activities of the "guardiens" (keepers) of French lights (de phares) noted that they were to pull down the "window blinds," place the "curtains," and to finally "cover" the lamp. It is indeed likely that these same tasks and procedures, utilizing all three types of devices, were daily occurrences in our U.S. lights as well.

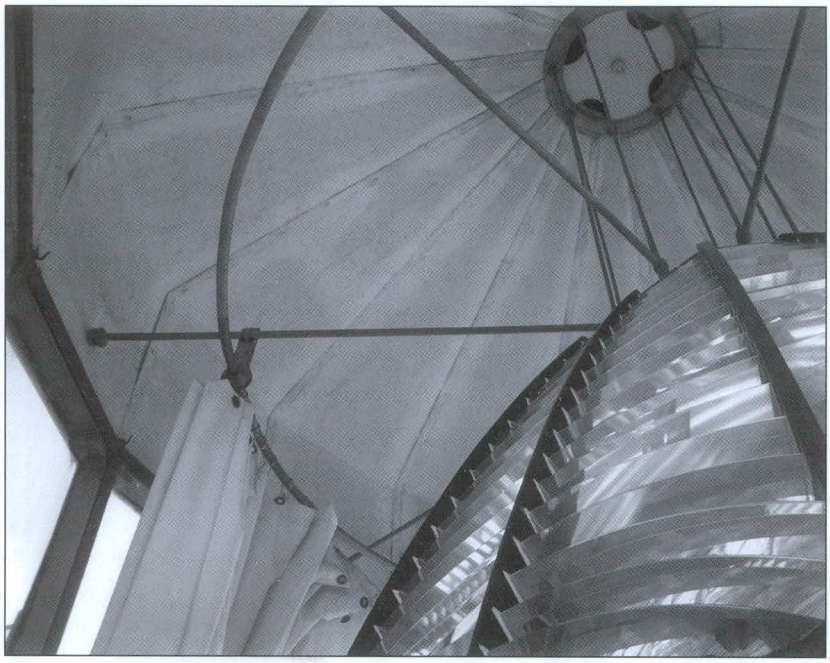
Brief History of Roller Shades and the Hartshorn Company: The use of various materials to hang over windows to block out (shade) sunlight had been common practice for centuries, but it was not until the mid-1800s that the invention of the spring roller permitted a cloth covering to be easily rolled up and down. There were many types of window shades on the market by the time of the Civil War. Between 1822 and 1873, over 75 patents had been issued for window shades, rollers, and other parts. Stewart Hartshorn (1840-1937) worked to improve the crude spring roller that had been patented years earlier by his father, Jacob Hartshorn, and in 1864, Stewart received patent number 44,624 for a design utilizing a ratchet and gravity pawl. This design remained state of the art for decades. This correlates well with the 1870 keepers' *Instructions* to "lower the blinds," as good quality functional such blinds were available by then. Stewart Hartshorn's business acumen and aggressive advertising practices soon largely crowded other roller-shade makers off the market. Hartshorn shades, at least by 1900, were made of a fabric they called "oil opaque," which was painted muslin. As noted above, Hartshorn roller shades are specifically mentioned in the inspection reports of many lighthouses. The use of shades by other manufacturers, particularly in the later years of the 1800s can not be ruled out.

Placement of Curtain Hooks in Lanterns: The following is a sampling of the descriptions that document the existence and location of hooks at the time of the inspections. They are taken verbatim from the lighthouse inspection reports. Hooks were common features of lanterns of all sizes whether or not curtains ever actually hung from them.

"Hooks screwed to soffit; brass hooks screwed into vertigals of the lantern; brass hooks screwed to posts of lantern; 1 set regulation, brass, secured to astragals; 1 set of brass hooks, tapped in angle of lantern; brass screwed in angles of lantern; 10 brass curtain hooks screwed into astragals; hooks screwed into upper ends of vertical bars; screwed into sash bars; screwed into cornice; brass, new style; curtain hooks of brass, tapped in vertical bars of lantern; on sash bars; 10 brass hooks screwed to soffit casting; 8 brass hooks secured into corners; curtain hooks fitted into lantern plate; secured by bolts to spider rods; iron, fitted on radius rods; brass, screwed in each post above top of glass; curtain hooks screwed into iron work at top of lantern; on hooks screwed to inside of architrane; brass hooks attached to front of rafters; hooks and eyes; iron hooks screwed into sash bars of lantern; 10, of brass, screwed into lantern posts; iron knobs [same inspector as entry above and below, so he knew iron from brass]; brass hooks, screwed into lantern posts; buttons screwed into frame of lantern."

Iron/Metal Lens Protection: Unexpected mention, due to my own ignorance of lantern design, of various types of metal devices was

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Current photo of the Heceta Head Lighthouse lantern shows the ring surrounding the lens on which curtains are hung. Hooks just inside the lantern glass used with an earlier curtain are also visible. Photo courtesy of Heceta Head State Park.

also found in the "Lens Protection" section of the reports for many lighthouses. Some of the terms noted are "galvanized iron," "sheet iron," "galvanized sheet iron cone," "zinc," "zinc cone," "sheet metal cone," "metal shield overhead," and "metal umbrella." These devices were simply an inverted metal cone (point up) that was mounted to the underside of the lantern ceiling. These did serve to protect the lens, not from sunlight, but from soot, dirt, or debris that might fall out of the piping that directed exhaust fumes from the oil lamp to the ventilator ball, or from the ventilator itself. The cone diameter was large enough so that any such falling debris would not land on the glass of the lens but rather slide to the outside and fall to the lantern floor. These protective devices, or remnants of them, survive in many lantern rooms.

Curtains Before Light-House Board Era: Although this article focuses on the use of shielding devices in the days when a single oil lamp sat at the epicenter of a Fresnel lens, curtains were apparently required or at least suggested before the use of these lenses in our American lighthouses. The first Fresnel lenses in the United States were installed at the Navesink, New Jersey, twin towers in 1841. Only two other sites, Sankaty, Massachusetts, and Brandywine Shoal, New Jersey, utilized Fresnel lenses prior to the advent of the Light-House Board in 1852. Yet references have been found from 1852 and earlier regarding the presence or absence of curtains in lantern rooms. One such reference is found in the 1852 *Report of the Light-House Board*, the year the board was created, in a list of questions to be asked during lighthouse inspections. Question 39 asks, "Are curtains hung up early in the morning when the lights are put out?" Note the word "lights." Prior to the use of the Fresnel lens, many lamps were in use in the lantern; afterward only a single "light" was needed. Inspection reports as early as the 1840s occasionally mention "no curtains in the lantern room."

Of the reasons noted at the beginning of this article for the practice of shielding the lens from sunlight, only one would be relevant to the pre-Fresnel lens era when multiple "Argand/Lewis-type" lamps were in use. Keeping sunlight out of the lantern room to prevent heat build-up for the comfort of the keeper working therein would be valid in a lantern without a Fresnel lens. Covers were apparently used with these lamps also, likely to simply help keep them clean when not illuminated.

Protection Today: Far too many Fresnel lenses that still remain in lantern rooms, or where they have been reinstalled, are totally unprotected from sunlight, many of them for decades. The concern over igniting the oil in the lamp is, of course, not a factor as all now utilize an electric bulb as the light source. Fresnel lens experts can vouch for the discoloration of lens prisms over the years, and the litharge that holds individual prisms in the lens frame continues to be vulnerable to the effects of heat over time. Any of today's keepers will also tell you that the comfort level of working in a lantern room during the day is much enhanced when the room is curtained. Some sites now use a "lumar" film applied to the glass to screen out UVA/UVB light rays, but this does not reduce heat buildup. Many sites utilize curtains or shades during daylight hours, and those that do not should consider the value of this practice.

Sources and References: I thank the following persons for information and views expressed in this article: Wayne Wheeler, Jim Woodward, Jeremy D'Entremont, Thomas Tag, Jim Claflin, Terry Pepper, Cullen Chambers, and George Worthylake, all wonderfully knowledgeable sources. I also thank staff members at the various lighthouses nationwide for sharing information and photographs and for putting up with my visits, correspondence, and questions. Special thanks go to Lee Radzak at Split Rock for his diligent research regarding the window shades used in that cavernous lantern room that set me off on this quest, and for subsequent archival information as well. The inspection reports referenced can be found at uslhs.org/national_archive.php.

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Information From Individual Lighthouses

Au Sable, Michigan, third-order lens
Hooks remain inside lantern glass; curtain still in use to protect lens.

Big Sable, Michigan, third-order lens
Hooks remain inside lantern glass.

Bodie Island, North Carolina, first-order lens
Shade brackets remain.

Burnt Island, Maine, two different fourth-order lenses over the years
Archives state a "linen cloth" (probably a lens cover) was used here.

Cape Blanco, Oregon, originally first-order lens (second order installed in 1936)
Hooks remain just inside glass and were likely used when larger lens was there. A circular curtain rod remains just outside the edge of the present lens, and a curtain is still in use on this rod to protect the lens.

Cape Hatteras, North Carolina, first-order lens
Reference book at the site notes curtain was placed "around the lens frame." Same book also notes "another set inside the plate glass enclosure." Neither reference gives a time frame. A 1998 National Historic Landmark Study noted that in 1937 the lens was covered "with a linen cloth." Photograph shows what appear to be shade brackets still in place in the lantern. Thus, all three shielding devices were used here at one time or another.

Curtis Island, Maine, fourth-order lens
No hardware remains. 1935 inspection report noted a "linen cover" in use, as well as "curtains hung by rings on hooks."

Forty Mile Point, Michigan, several fourth-order lenses
Hooks remain at top of each vertical astragal. There are references in keepers' logs to "curtains."

Gay Head, Massachusetts, first-order lens
An 1880s photo shows a cover over the lens. Other photos dated 1898 and 1940 definitely show curtains around the inside of the lantern. Yet another photo dated 1953 definitely shows a cover in place.

Heceta Head, Oregon, first-order lens
Hooks remain in the lantern. There is also a circular curtain rod approximately two feet inside the lantern glass. An archival photo shows what appear to be curtains just inside the lantern glass. A second archival photo shows a cover in place over the lens.

Highland, Cape Cod, Massachusetts, first-order lens
Present staff stated that there "were curtains on the windows." Shade brackets remain in the lantern.

Jupiter Inlet, Florida, first-order lens
Curtain hooks remain around the edge of the lantern.

Kilauea, Hawaii, second-order bivalve lens
Shades were originally used here but discontinued in favor of curtains (date unknown). Photos from 1930s and 40s appear to show shades in use. Shade brackets have been restored as part of a recent project, and replica shades are presently in use.

Little River, Maine, fourth-order lens
No hardware remains in the lantern room, which was redone in 2001 after years of abandonment. Archival photos show what appear to be curtains in place.

Little Sable, Michigan, third-order lens
Hooks remain, but only on the "sun" side of the tower, indicating that the curtains were only hung on that side.

Nauset, Massachusetts, sixth-order lenses, changed to fourth-order in 1873
This was a triple light. No remaining hardware. Present staff can "recall curtains being used" with the fourth-order lens but is not aware of any document references. An undated National Archives photo shows the three towers with lens shielding in place; the closest one appears to show shades.

North Head, Washington, first-order lens, replaced by fourth-order lens in 1935
Historic Structures Report noted that this light originally had curtain hooks around the perimeter of the lantern. None of these remain. Report also indicated that "roll-up blinds" (shades) were used at one time. No shade brackets remain either.

Ontonagon, Michigan, fifth-order lens
Hooks remain in the lantern—photos of two similar but different hooks sent. Hooks also remain in the wainscoting below the lantern glass spaced the same distance apart as the window width.

Point Arena, California, first-order lens
A circular curtain rod goes around the interior of the lantern approximately 24 inches outside the lens. Archival photo shows a curtain just inside the lantern glass.

Point Bonita, California, second-order lens
No sign of hardware. A staff member recalled hearing that "black canvas curtains" had once been used. Disappointing answer from an NPS site.

Point No Point, Washington, fifth-order lens 1880, fourth-order lens 1914
Shades on hooks were used earlier; spring shades used later. Both hooks and shade brackets remain in the lantern.

Point Reyes, California, first-order lens
Lantern presently has a curtain "rod" that circles about six inches inside the lantern glass. A curtain hangs on hooks that run on rollers along this rod. This may not be original. A 1900 photo shows what appears to be a cover right over the lens. A 1910 photo appears to show a curtain just inside the lantern glass. *Historic Structures Report* notes that in 1924 curtain hooks inside the lantern were "fitted to top of lens." No hooks remain in place.

Point San Luis, California, fourth-order lens
Curtains hung from bronze hooks inside the lantern windows. Hooks are no longer present.

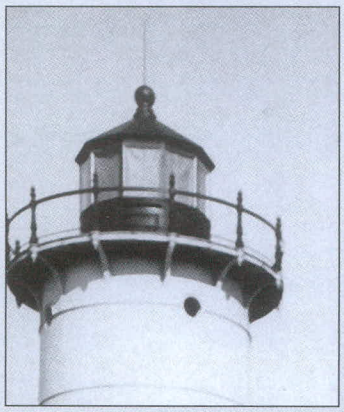
Point Sur, California, first-order lens
Two curtain rods remain, one just inside the lantern glass, and a second nearer to the lens.

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Based on this, staff believed that "curtains were all that were used at Pt. Sur." However, a 1933 photo shows shades in place in the lantern; a second photo (likely 1960s) shows a cover over the lens. Inspection reports (1907 and 1911) say "curtains are hung on Hartshorn's shade rollers," and "curtains are hung on rollers."

Ponce Inlet, Florida, first-order lens, third-order lens in 1933
Historic Landmark Study done in 1998 states, "Interior curtains once hung on hooks to protect the light lens during the day."

Portsmouth, New Hampshire, fourth-order lens
An undated photo of the lantern clearly shows shades in use, yet no shade brackets remain. Curtain hooks do still remain in place. Staff noted references to "a cloth cover" being placed over the lens.





Above: Archival photo of Portsmouth Lighthouse shows shades in use in lantern. Right: Curtain hook still in place in the lantern. Photos courtesy of Friends of Portsmouth Harbor Lighthouse.

Sandy Hook, New Jersey, third-order lens
Metal brackets still remain along the tops of the lantern windows. A 1937 HABS photo shows what appear to be roll-down shades, as does an 1890 photo in Holland's book *America's Lighthouses*. Other historic photos in H.C. Becks' book, *The Jersey Midlands*, show what appear to be shades.

Seguin Island Lighthouse, Maine, first-order lens
No evidence of curtain or shade hardware is present in the lantern. Connie Small's 1999 book, *The Lighthouse Keeper's Wife*, documents the use of a lens cover in the 1920s. It makes sense that a removable cover was used, as the Sequin lighthouse is on an island, and its light needs to be visible from all directions. If a heavier curtain was in use, it would be bunched up at some point when "opened," and thus partly block the light.

Split Rock Lighthouse, Minnesota, third-order bivalve lens
Pull-down window shades have been used here since this light first went into service in 1910.

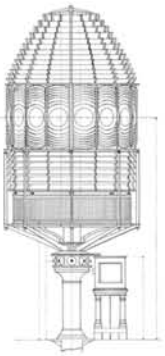
St. Augustine, Florida, first-order lens
Hooks as illustrated in USLHE publication remain in the lantern.

Whitefish Point, Michigan, fourth-order lens, replaced by 3.5-order lens
An archival photo believed to be circa 1885 shows a cover over the lens.

Yaquina Bay, Oregon, fifth-order lens
The lighthouse began service November 1871 and went out of service 34 months later when bigger, brighter Yaquina Head Lighthouse was put in service. No evidence of hardware for curtains or shades remains, if such were ever present. Staff believes a pull-over cover was in use here, but there is no substantiating photographic or other evidence.

Yaquina Head, Oregon, first-order lens
Early engineering reports note covers were provided, but there is no documentation that they were actually used. Archival photos show curtains hanging from hooks that are still in place. A circular curtain rod was installed at some point just around the lens. It does not show in design drawings so it was removed as part of a recent restoration as not being original to the tower.

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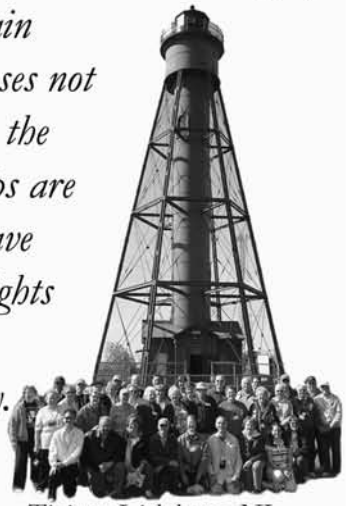
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