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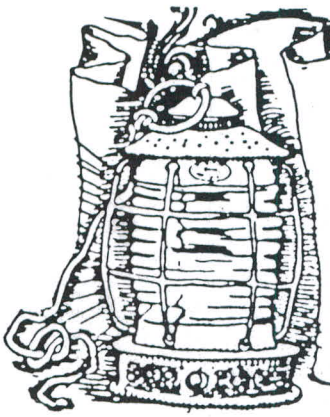
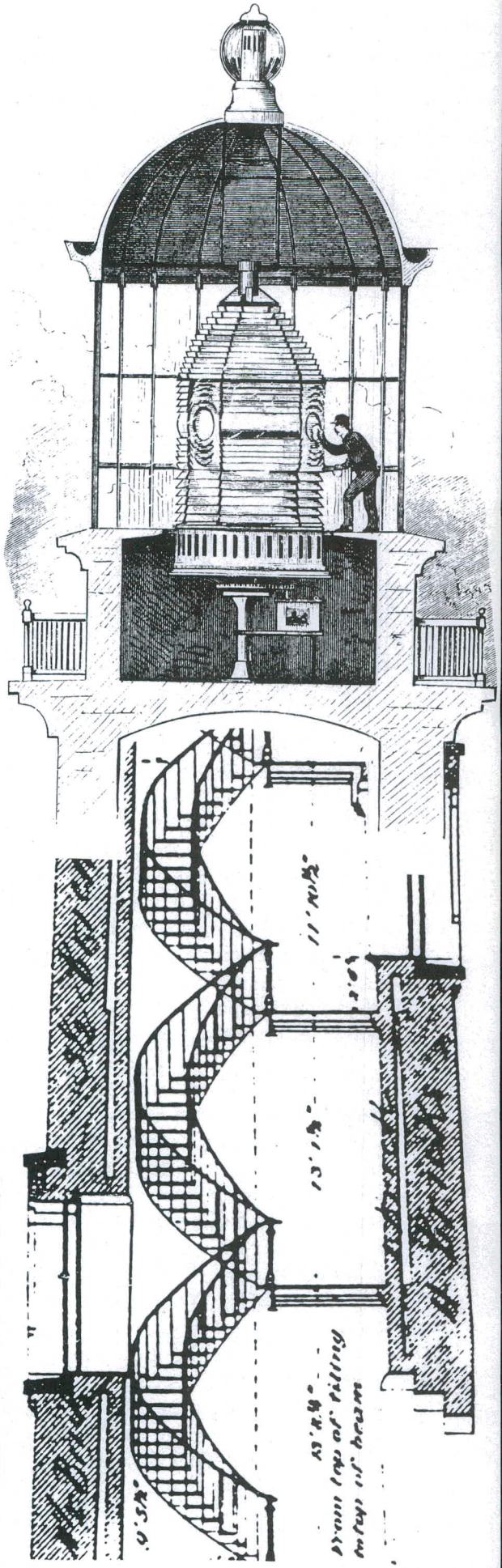


editor's note - This section of THE LOG, entitled the TECHNICAL SECTION, is devoted to explaining just how various components of the light station work. It will also deal with explaining the workings and purpose of different types of aids to navigation and provide general definitions.

THE LANTERN ROOM



Certainly the most important aspect of the lighthouse to the mariner is the light that emminates from the tower. Many people have remarked "oh what a beautiful light!" (when they meant tower or lighthouse), sometimes people say that such and such a station has a beautiful light made in France (when they are really talking about the lens). As long as we are going to discuss lighthouses, lets use the correct terms.

The lantern room is that portion of the top of a lighthouse tower that encloses the lens. Often the lantern room or lantern (in the "old days it was call LANTHORN) is a metal and glass room that surmounts a brick, masonary or wooden tower. Usually it was constructed by a manufacturer and transported, in sections, to the site of the lighthouse where it was assembled on the top of the finished tower.

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The lantern is comprised of three parts (1) the lower SERVICE ROOM location of the clockworks (for rotating optics), fuel tanks (A) for an IOV type lamp and vents (B). It was in the SERVICE ROOM that the keeper cleaned the lamp chimneys and prepared the lantern for the coming night. The next part of the lantern might be called the OPTIC SECTION - this is the area surrounded by glass windows called storm panes (C). The storm panes are set in metal frames. The vertical members are called astragals (D). Sometimes, more often in British lighthouses, the astragels were diagonal. Hand holds (E) were installed on the exterior side of the astragals for the keeper to grip while standing on a ladder cleaning the exterior sides of the storm panes. The interior portion of the horizontal part of the frame (F) were concave to catch any condensation that formed on the interior face of the lantern panes. The OPTIC SECTION also contained the heart of the lighthouse, the optic or lens. For many, many years the "optic" section was open to the elements (no glass storm panes) and was the area where an open fire burned.

For many, many years the "optic" section was open to the elements.

At the end of the 17th century the lantern was enclosed with glass and candelabras installed as the "optic". Then, in the 18th century, banks of parabolic reflectors with lamps fitted with hollow wicks were the primary source of light. Finally, in 1820 the Fresnel lens was invented which was powered by a single source of light ... the LAMP (G). Lamps were of many designs, at first sperm whale oil fueled the multi-hollow wicks.

However, when the price of this fuel skyrocketed in the 1850's European countries turned to Colza oil (wild cabbage). The United States changed over to lard and then (in the 1870's) kerosene. Eventually the oil

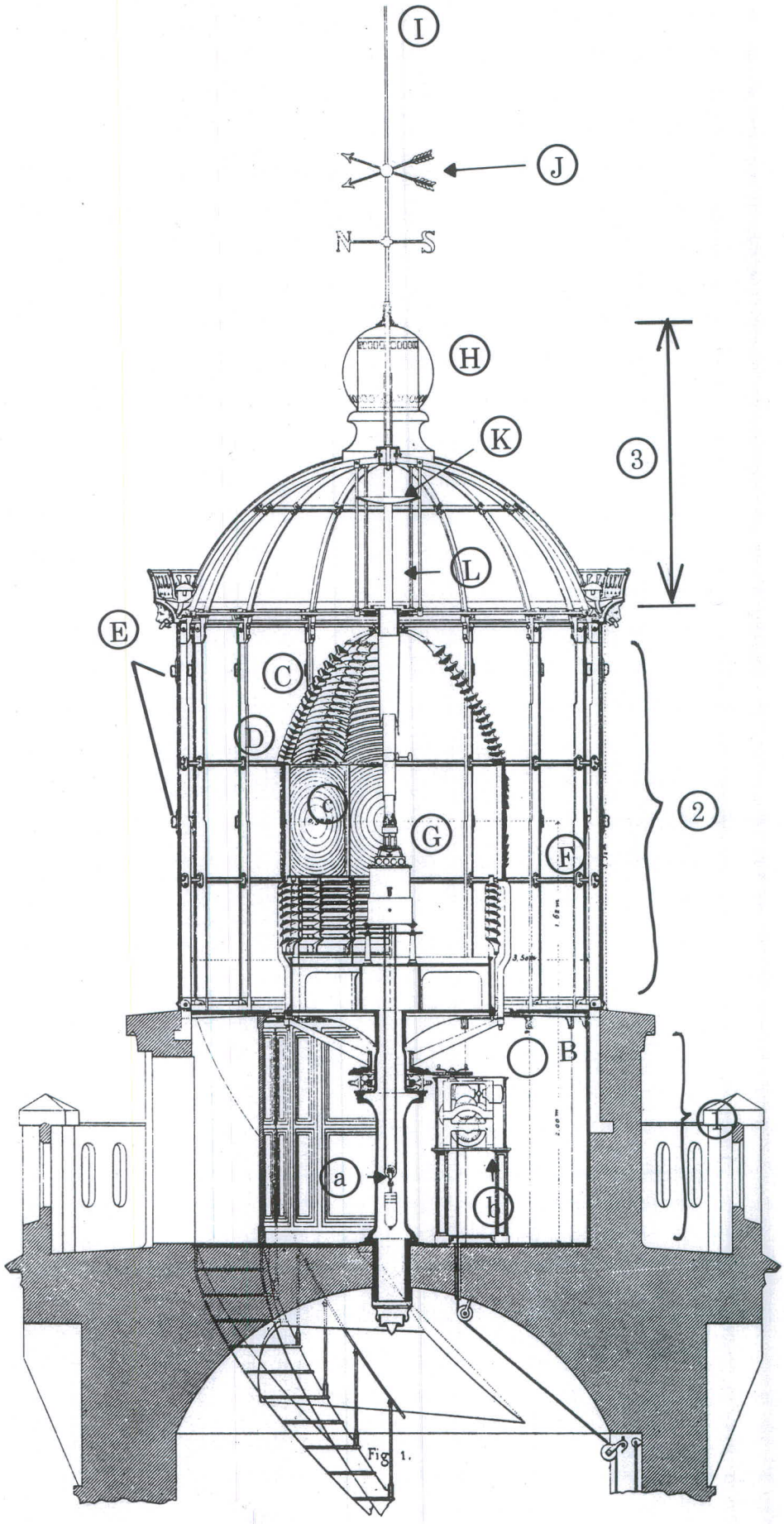

Fig. 1.

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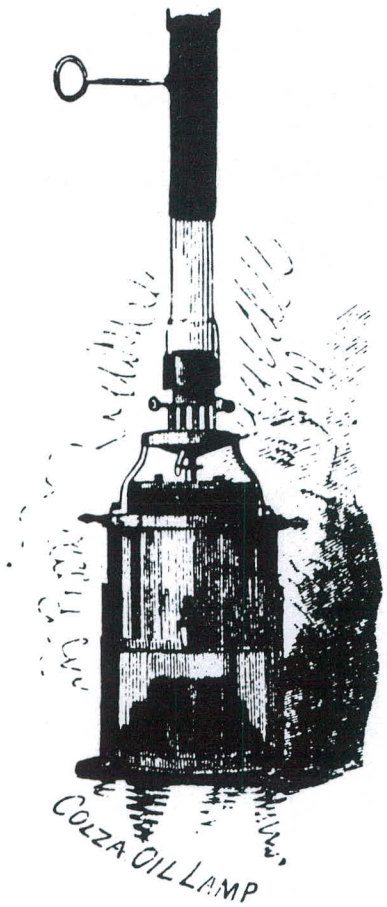
lamp was replaced by the electric lamp, generally a 500 or 1,000 watt lamp (bulb).

The final section of the lantern is the DOME (3). The dome is made of metal and usually copper clad. It is



surmounted by a ball vent (H) through which air can pass. The ball vent is topped by a lightening rod (I) and sometimes a wind vane (J) to assist the keeper in discerning wind direction which will help him position the vents (B) I will explain this later. In the interior of the dome, beneath the top, is a large concave dish (K) surrounding the vent tube (L). This "dish" catches condensation that forms in the top of the lantern.

The optic consists of the pedistal (a) clockworks (b) and lens (c) which is made up of dioptric, catadioptric and bullseye prisms (the lens will be explained further in a future edition of the LOG).

The keeper was instructed to wear a linen smock so that the "rough" wool of his uniform wouldn't scratch the optic or lens. He was required to clean the interior and exterior of the lantern panes, clean the optic with spirits of wine (vinegar) and once a year polish the lens with rouge. The keeper also cleaned the chimney of the lamp, always making sure that spare clean lamps and chimneys were on hand (usually two). The clock weight was wound and the clockworks cleaned and oiled (if needed). All preparations for the coming evening were to be completed by 10:00 a.m.

In the evening the keeper would ascend to the lantern room and check the wind direction. Then he would adjust the vents (B) to allow just enough draft into the lanternroom. The entering draft would rise along the interior sides of the lantern panes (keeping them from "fogging") to the top of the lantern.

The wind passing horizontally through the ball vent (H) would create a vaccuum which pulled the draft up to the top of the lantern room. It also created a draft in the vent tube (L) which sucked the fumes from the oil burning lamp up the vent tube to the ball and out of the lantern room. The vent tube was metal and directly attached to the glass chimney of the lamp.

During the course of the evening, the keeper on watch was required to wind the weights at least once and trim the wicks of the lamp as necessary. He was also required to adjust the vents so that a proper draft was present at all times. Often the lamp chimney needed cleaning.

The balconys surrounding the lantern room are called galleries. The interior of American lantern rooms were painted white although sometimes the lower Service room portion were finished in natural or stained wood. Exterior of lanterns were usually red or black although some green and white lanterns did exist.

Each morning the keeper (on duty) was required to accomplish numerous cleaning tasks in the tower and lantern room. Among the vast list of instructions and supplies were a list of brushes. Different brushes were designated and provided for different portions of the lanternroom.

LONG HANDLED BRUSH
Sweeping the floor and stairs of the interior of the lantern.

POPE'S HEAD BRUSH
Sweeping the platform and cage of the stairs of the tower.

FEATHER BRUSHES
Dusting the optic, glass of the lantern (storm panes), frame of the rollers (chariot wheels) and cage of the optic.

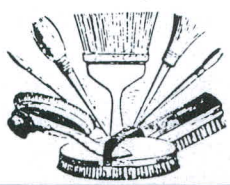
CAMEL HAIR BRUSH
Applying polishing rouge on the prisms of the optic and silvered reflectors (if any).

SILVER PLATE BRUSHES
Cleaning lamps and utensils, remove excess rouge and to clean revolving machinery of brass or copper. Some of these brushes were for general use and for applying coal tar (ugh) on iron work.

HAND BRUSHES -
A half round brush with a 10 to 15 inch handle. Used to clean the lantern frame, interior walls and the last four or five steps in the lantern room.

SASH BRUSHES -
Painting the iron of the lantern.

BOTTLE BRUSHES -
Wire stemmed brushes for cleaning the glass chimneys of the lamps and lamp burners.



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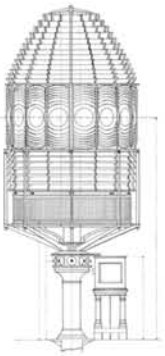

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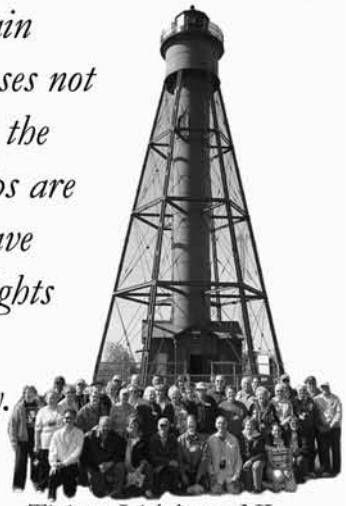

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