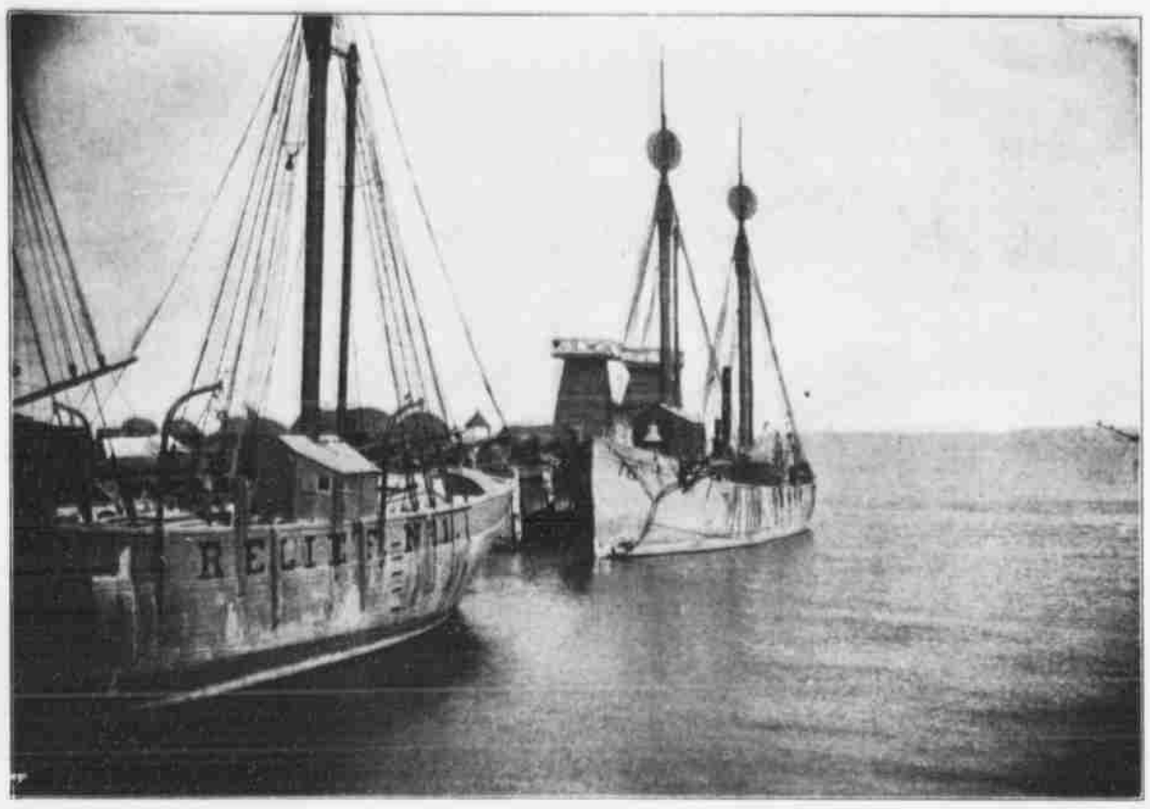
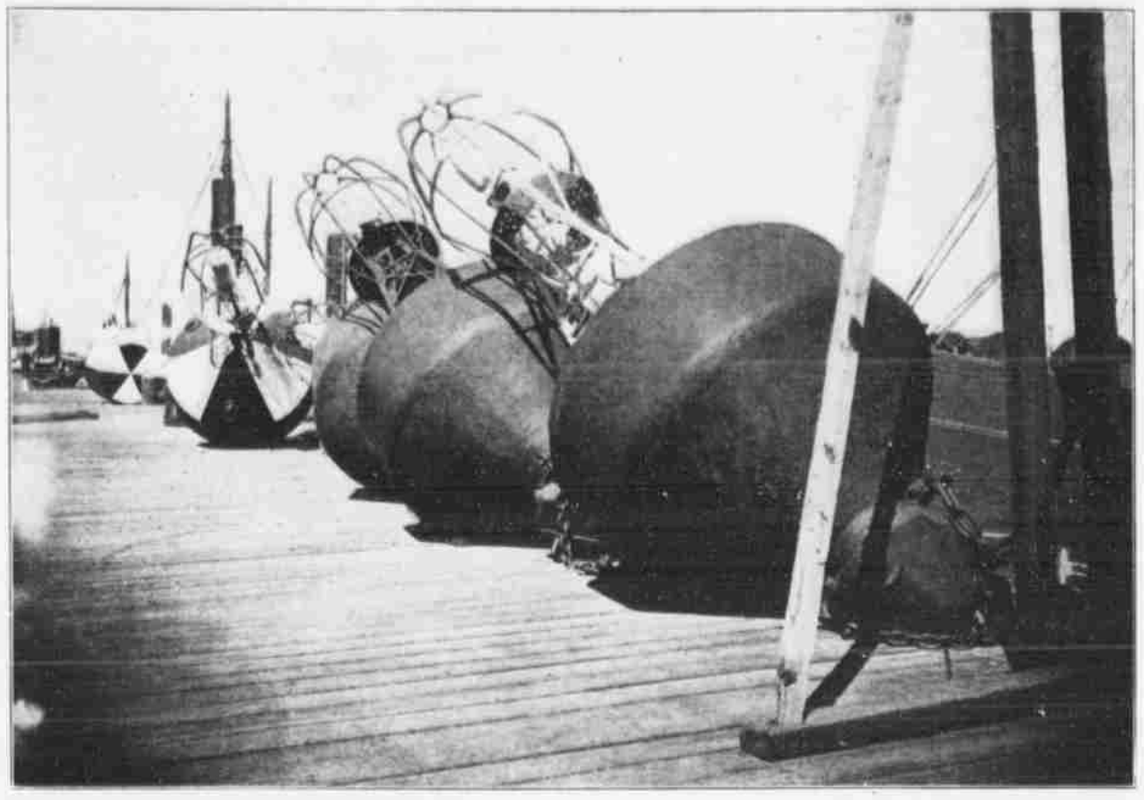
Immense New Lights to Shine Along the Coast



REGULAR STATION SHIP IN BACKGROUND—RELIEF SHIP IN FOREGROUND.



GAS BUOYS—CAGES ON TOP PROTECT LIGHTS WHICH BURN NIGHT AND DAY.

WITH the beginning of November there begins a hard fight all along the coast of the United States—a fight rarely chronicled, yet incessant and fierce. It is the fight of the coast lights and signals against storm and fog.

From March to November the men caged in the slender steel and stone cylinders that stand on hidden ledges with the nearest land lying along the horizon like a dim cloud, need not fear even if storm-beset; for the summer storm does not last long and they are sure that the relief and supply vessels will make their way to them within a few days. But when the gales of the late autumn and of the winter begin, there may be a month and even more when no ship can dare to approach those foam-bordered perches.

Then the keepers are as besieged men. They must save every drop of oil, that their lights may be kept burning even should a new supply fail to arrive when due. They must watch their machinery every minute, for no help could reach them to repair it should it break down.

On such lighthouses as famous Minot's Ledge off Boston Harbor, rising sheer out of the sea, they are imprisoned, unable to move an inch out of their narrow tower.

Minot's Ledge light stands eighty-five feet high from the level of the sea. The reef on which it is set is far below the surface in any except low tides even in ordinary weather. When the ocean roars around it in a winter storm the mariner, looking at it from the sea, often can discern only its brave lantern above the spray. The entrance to this lighthouse is half way up the tower and an iron ladder reaches from it to sea level. In the winter there are days after days, and sometimes weeks, when no man could venture into that doorway. He would be carried away by the rollers that break against the base and sweep the little balcony.

But this merely physical fight is only one part of the battle that goes on in the light houses during the winter. There is another battle as great, that is worry and anxiety.

The light keepers of the United States have been trained to look on their lights as the American soldier and sailor look on their flag. So well have they been disciplined and so well do they guard the trust that there rarely is a case of a light having failed when human energy and pluck could keep it burning.

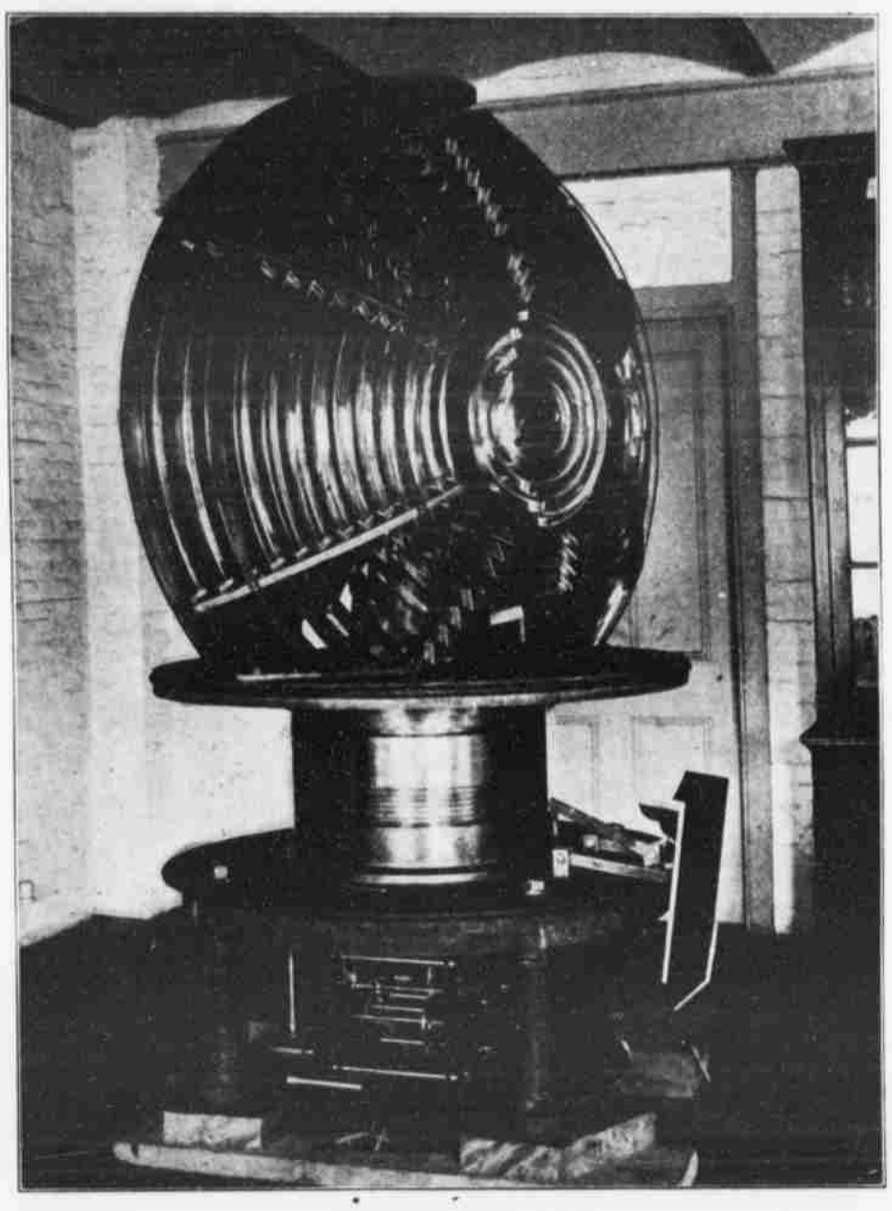
When sleet and snow drive over the towers, these men are stricken with the fear that despite all their care, the light, burn it ever so brightly, may not be able to pierce the thick air. Only one who has been in a lighthouse through a great winter night's storm can realize how keen and wearing an anxiety this is to them. Like all men who have to do with the powers of nature, they know that though they do their best, that best is not good enough, if it is not successful.

So blow the gales as they may, the keepers climb out on the narrow platform around the cutside of the big windows that protect the precious lens, and with the weather beating them and the wind threatening to blow them into the black sea below, with waves reaching up to them, they scrape the drifted snow and frozen sleet from the panes throughout the night that the light may shine out freely.

The dimming of an ordinarily sufficient light in thick weather has troubled the lighhouse department seriously for years, during which time the engineer and the naval officers on the board have experimented constantly. The result of their efforts has been the recent adoption of a lantern lens entirely different from the cylindrical one used to this time.

The new lens is known as the "bivalve," which is expressive of its appearance. Instead of a cylinder of glass revolving around the light, it consists of two immense convex disks pointed at the edges by thick brass bands. The value of the bivalve lens is that each face throws an immense beam, concentrating the light rays that in the ordinary lens are dissipated by being shot to many angles.

LIGHT HOUSE OF FOURTH ORDER.



A $12,000 BIVALVE LENS.

A bivalve light of the fourth order will throw a flash of 5,000 candle-power from a light of only 250 candle-power.

Only a few of them have been installed as yet. Their cost is heavy, a third-order lens costing $12,000.

One of these bivalve lights has been installed in the famous Navesink lighthouse overlooking Sandy Hook. Although not a first-order light, the new lens makes it one of the most powerful in the world. It throws a flash every five seconds and the lighthouse department has a report from a sea captain who declares that he saw the flash seventy-five miles at sea. If he was correct, what he saw at that distance must have been the reflection of the flash on the sky, for the Navesink tower is 246 feet above the sea and consequently the extreme limit at which the eye could see the light directly is only twenty-two and one-fourth miles, the curvature of the earth precluding any greater reach. But this light is so powerful that it is certain that its illumination of the sky and sea can be seen from a distance many miles beyond the direct reach of its rays. When twenty miles away from it its glare is so blinding in clear weather that the eye is dazzled and pained by it.

The bivalve light, of course, must be revolved much more quickly than any cylindrical lens and, as a lens weighs from two to three tons, according to its class, the problem was a difficult one in practical mechanics, since all the lights of the country are revolved by clockwork. A system of chariot wheels, mounted on beautiful steel ball-bearings have been perfected now that carries these great masses of ground glass so smoothly that the touch of a finger is sufficient to set them revolving. Once, as an experiment, a mighty third-order lens actually was set to revolving in the lighthouse headquarters at Tompkinsville, Staten Island, by a man with powerful lungs, who blew at it until it turned.

Another big improvement in the efficiency of the lighthouse service is the final construction of an apparatus that will burn acetyline gas perfectly. Scores of plans have been tried only to be rejected, but now the department feels fairly certain that it has succeeded.

The value of acetyline gas for coast lights does not lie in its illuminating power. Kerosene oil has been found to be the most satisfactory in all respects for all kinds of lights in that respect. But acetyline gas is of great value with the hundreds of lights that are not in the care of keepers, but are simply lighted and left burning day and night. Small lights set on bars and reefs, range lights set along shore and on hill tops, and many lesser lights in harbors and estuaries are kept going this way.

The trouble with kerosene is that after a time the wick carbonizes and the light fails before the kerosene in the reservoir is exhausted. With the new apparatus for making and burning acetyline gas, there is no such trouble and the burners will last at least as long as the gas holds out. Lights have been kept burning for 60 days and nights without needing attention.

The method cannot be applied to light buoys or other floating lights, as the proper production and government of the supply of gas demand that water shall reach the chemicals only in strictly regulated quantities. So that class of lights still must continue to depend on ordinary gas and kerosene for fuel. For this purpose immense iron tanks are used. On their top is a cage in which the lens is set. Immense chains are shackled to the bottom and a queer cast iron mushroom anchor holds them in position. These mushroom anchors or sinkers are so shaped that they work themselves deep into the mud or sand and after a few weeks they cannot be dislodged even by the huge derricks of the lighthouse tenders. When it is desired to take up buoys of this kind—as in the winter when the ice threatens them—they are unshackled from the chains and dragged aboard, and big wooden spars are fastened to the chains to serve as marks until the danger is past.

While every year sees more or less damage to lighthouses and beacons there is only one spot along the coast that has defied the lighthouse builders successfully and that is Diamond Shoals off Cape Hatteras, the most dangerous place in the lighthouse service. A lighthouse engineer will get "hot in the collar" if it is suggested that this spot has defeated the department. He will say that a lighthouse can be built there and built to stay. He will point to the lighthouse that finally was constructed and has remained off the mouth of the Elbe, a worse spot than even Diamond Shoals. But the question of money prevents. A lighthouse on Diamond Shoals would cost too much.

So this year, as in previous years, a lightship will hang on to the bottom there with its anchors like grim death with all on board praying that it will continue to hang on. A somewhat alarming comment on the beauty of the station is to be observed in the department's directions for the year: "Light vessels No. 71 to 72 will be used on this station alternately." Each of these ships is fitted so that it can move under its own steam, so it will not be an absolutely helpless hulk when it breaks away from its mooring in a howling gale as it will more than once in this coming winter.

Lightship No. 69, also built to go under its own steam, was driven from its anchorage six times in four months, but managed to steam back to its position each time. The seventh time it failed. It fought against the hurricane for three days and then went up on the North Carolina beach near the Creeds Hill Life station. The lifesavers got its crew off.

The value of the Diamond Shoals lightships is shown by the fact that during this vessel's last year on its station, 2,570 steam vessels and 2,576 sailing vessels passed it.

The United States light vessel that has had what probably is the most extraordinary experience is Columbia river light vessel No. 50. Its station is off the mouth of the Columbia river, eight miles off shore. That shore is one of high rocks and forbidding promontories, wherefore there are such names along its threatening miles as Cape Disappointment, Cape Foulweather and Destruction island. One day in November a gale began to blow from the sea. It rose to a rate of seventy-four miles an hour. The heavy anchor chain of the light ship snapped. It drove toward breakers that were so bad that even the old captain described them as "frightful" in his short, dry, official report.

Sail was made and the men worked it about twenty-five miles off shore. The next day two tenders steamed out and tried to tow it in. Both failed. By dusk the big high-sided lightship was in the breakers.

Now there was only one chance for life. North and south lay rocks, promising a sure end to ship and men. But between them lay a short stretch of sandy beach. If the ship could hit that it might escape immediate destruction. It was headed for it and struck the right spot before dark. Its crew was taken off in the breeches buoy.

When it struck its men by consummate skill had so handled its sails that it turned head to sea and thus presented its high bow to the surf with the result of saving it. When the storm ended it was high and dry on the sand. Then contract after contract was made by the government to launch it again. Each contractor failed. Finally it was decided to haul the ship into the woods behind the beach and across half a mile of country to Baker's bay, in the mouth of the Columbia river. The ship made the journey among the pine trees without accident and within a month was launched and anchored in front of the lighthouse department's wharf.

The Other Side

Atlanta Constitution: An author who illustrates his own novels has submitted to an interview.

"You find that it pays, don't you?"

"You bet!—in lots of ways. For instance, I get paid for the story?"

"Yes."

"Then, the illustrations of the author of a book are worth double those of the ordinary artists?"

"Of course!"

"Then some fool of a rich fellow comes along and offers a fabulous sum for the original drawings, and wants an introduction to you, and invites you to dine with him, and your fortune is made, and your future is safe! It's a great scheme, I tell you, and authors are fools who don't make the most of it."