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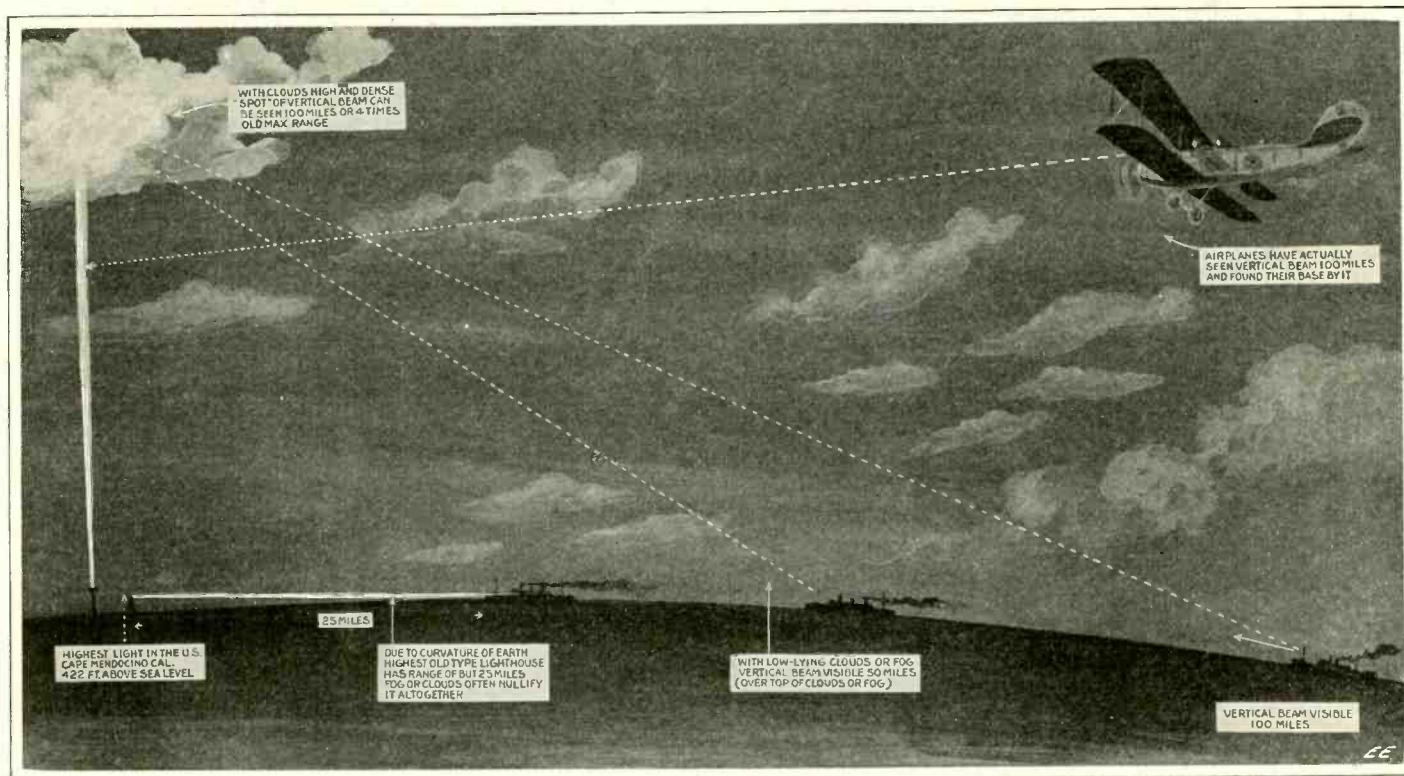
## Vertical Lighthouse Beams

**T**HE history of lighthouses is as old as navigation itself. Ever since the ancients ventured out of sight of land in their triremes and their sailing craft, there have been mariners' beacons. From the beginning, navigation has been a twenty-four-hour-a-day industry and guiding beacons have been a

projector or searchlight, which can be seen 100 miles at sea. The greatest range heretofore of any lighthouse has been 25 miles.

"It was in the 18th century that the first attempts were made to use an optical system with the light. In 1812, the United States adopted a scheme consisting of a crude copper reflector and a bull's-eye lens

"Within twenty miles of Brooklyn, the most brilliant lighthouse in America shines every night. The Navesink Light at Sandy Hook holds this foremost position, swinging a beam of 11,000,000 candle-power out across the harbor entrance once every ten seconds. It is well worth a trip to this faithful mariners' guide to see the remark-



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The Latest Idea in Lighthouses—Vertical Shafts of Light Instead of the Old Horizontal Beams Which Were Often Not Visible at All in Foggy Weather. Vertical Lighthouse Beams Have Been Seen 100 Miles Away—the Maximum Range of the Old Style Beacon Is About 25 Miles.

necessity. Altho vague references to beacon lights are found in literature dating many centuries B. C., the first lighthouse of which we have authentic record is the great Pharos of Alexandria. This famous light of the ancients, which was built about 258 B. C., was a huge tower of solid masonry on which a large bonfire was maintained nightly. Even today one can see, not far from London, the remains of an old masonry beacon quite similar to the Egyptian Pharos." Thus spoke P. R. Bassett, research engineer of the Sperry Gyroscope Company, which concern has recently developed a remarkable vertical lighthouse

in several of the important lighthouses. But, in the terms of one of the old lighthouse reports of the time, it 'made a bad light worse,' and hence was short-lived. It was succeeded, however, by better and better apparatus until in about 1852 the Lighthouse Board adopted the Fresnel system of prisms and lenses, which has remained unimproved for this service up to the present time. This system is now so universally employed for lighthouses that one always thinks of a lighthouse as a tower with one of these beautiful cages of concentric glass rings and prisms mounted in the light-room at the top.

able Fresnel prism head. Two tons of optical glass built in the form of a cylinder about six feet high are mounted so beautifully that one can rotate the system with the slight pressure of a finger. This heavy head floats in a container of mercury and thus rotates with practically no friction. The two-ton head is revolved slowly all night long by the gradual dropping of a small weight through the height of the tower.

"Let us look at the broader aspects of the lighthouse problem and consider the requisites and the limitations. In general,  
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