

LIGHTED SURVEY BUOYS

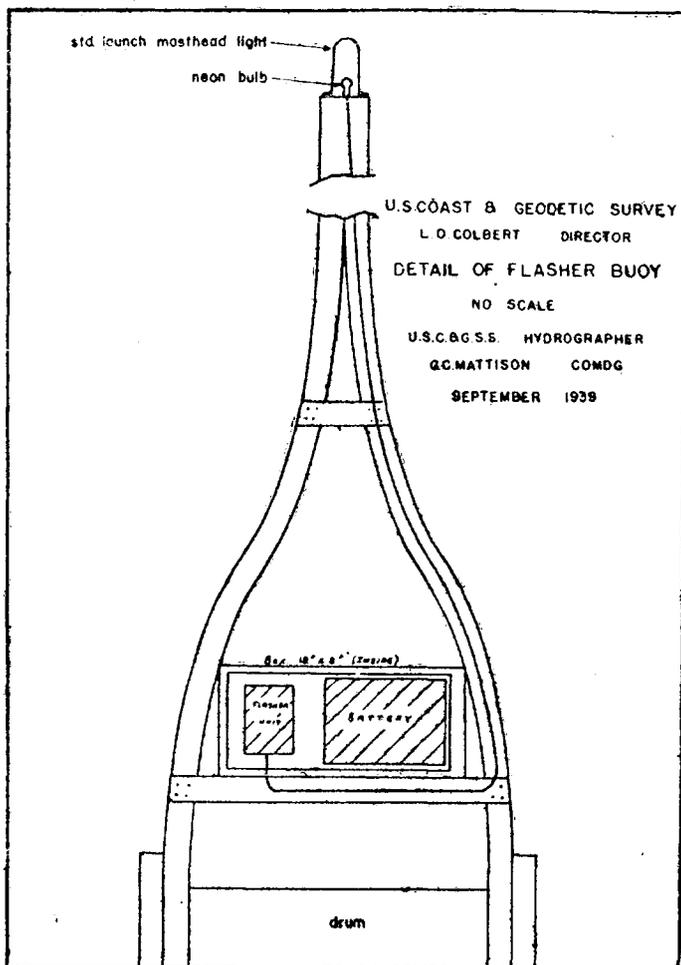
by

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A study of the *Hydrographer's* project for the 1939 season indicated that lighted survey buoys would be of great value in expediting the work.

The subject of lighted buoys was not new since lighted sonoradio buoys were used by Commander F.S. BORDEN on the "Hydrographer" in 1936. In the case of Commander Borden's buoys, the light was operated by the noise of an approaching ship so that the buoy was dark except when the transmitter was actuated by some sound in the hydrophone. This complicated the sonic-radio buoy slightly, and to avoid this and to have the light available for any type of buoy seemed sufficient reason to try another type of light.



Preliminary inquiries addressed to officials of the Lighthouse Service and various supply houses resulted in very unpromising replies. Apparently, the only equipment available would be either too expensive, too cumbersome, or else would not be suitable for marine use. We informed the Washington Office of our needs, with the result that an assembly, which had never been tested at sea, was obtained for trial from the National Carbon Company. This equipment has proved so satisfactory that it is intended to equip several buoys in a similar manner. The three units, consisting of light, flasher equipment and battery, are so compact and light in weight that it hardly seems possible that improvement could be made along these lines. The weight is but a fraction of that of other equipment for such a use. The same relation holds true regarding cost. Although other equipment was not available for test, it is evident from descriptive literature, that the accepted unit has the simplest operating mechanism and apparently requires very little attention to keep it in operation.

The parts used in the assembly are shown in the accompanying photograph and sketch. The light consists of an Anglo Batrilite N° 75-C3R, which fits into a standard 4-prong radio tube socket. This is mounted in a standard masthead light fixture which is held in place by a 1/2-inch brass pipe about 18 inches long screwed into the base of the fixture. The lower 14 inches of this pipe is flattened out and has two screw holes used for mounting on the buoy upright. Rubber covered Tyrex cable extends from the tube socket into the pipe and out through a 3/8-inch hole drilled one inch below the base of the fixture. This wire extends down the buoy framework to the box containing the operating unit and battery. This box is mounted between buoy braces almost five feet above water. As it is about four inches in thickness, it is almost flush with the edges of the two by four inch pieces on each side. There is ample room in this container for the Eveready Luminous Tube operating unit Model A6-80L, and the 6-volt hot-shot battery of four dry cells. There is no difficulty with the wiring as the terminals are plainly labeled. Rubber gaskets are used on the battery box to make it watertight, and all outlets for connections are made as watertight as possible.

The units can be obtained with a flashing frequency of either 80, 200, or 400 flashes per minute. The battery life with the respective units is 110, 100, or 40 days. The 80-flash unit was selected as it gave the maximum battery life.

The total cost will vary depending on the local cost of the construction material. The Anglo Batrilite cost us \$ 3.00 each and the Luminous Unit \$ 7.95. The total cost for material per buoy amounts to slightly over \$ 20.00. Quantity purchases should make the price within a few cents of that amount.

We have been unable to see the buoy beyond a distance of two miles, and at that distance only under favorable conditions. One mile seems to be the average limit of visibility. It is believed that a greater range of visibility can be obtained with some other type of globe than the Fresnel. This type is designed for an upright position and will not give its maximum efficiency when rigidly mounted on a survey buoy which is canted over due to wind or current. We may be able to devise a practical counterbalance mounting that will have an effect similar to gimbals. We also intend to experiment with different types of globes. It is possible that a 200-flash tube will give a greater range of visibility than one with only 80 flashes per minute, and with only a ten per cent decrease in battery life.

We intend to use lighted buoys as a protective measure in areas where there is considerable maritime traffic. Although we only have evidence that vessels have dragged two of our buoys during the past two seasons, it is quite possible that vessels colliding with them may account for the loss of some other buoys.

NOTE: The Angle Corporation of Chicago manufactures the neon lamps supplied with the flasher, which have been used in the above expeditions. This Company also makes a flasher which they call a "Flasherpak".

