LEAD SHOT BUOY SPACER FOR WIRE DRAG.

by

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Accompanying this report is submitted a lead shot buoy spacer developed in the shore drafting office in connection with the *Guide*, which is believed to be an improvement over the celluloid or metal type buoy spacer, the use of which is explained on page 21, U.S.C. & G.S. Special Publication N° 118.

The above mentioned publication explains that the celluloid or metal strip can be bent so that the curve will take the proper shape and direction with each end buoy line touching the position of its corresponding buoy. The edge of the curve against the sheet will then show the line of the drag, while the position of each intermediate buoy will be indicated at the point touched by its corresponding line. Where the dragging is approximately a straight line with each of the towing launches maintaining the same spread a normal bight will be had and the above mentioned spacer can be used. It was found in plotting our sheets where the line of drag follows the delineation of the coast line that using the buoy spacer was cumbersome, taking one man to hold the spacer, assuming the shape or position of the drag, while another marked the buoy positions. When another person tried to check the plotting of these buoy path lines in difficult areas he assumed the shape and position of the drag and it was found that in many cases their ideas as to the proper shape of the drag would conflict. In order to check one another it was decided to drag a string of the proper length along the line of drag and note its shape in order to get a more accurate picture of the field condition of the drag. This helped some but it still was not satisfactory. After having tried several different types of buoy spacers we finally decided that the type described was fast, accurate, and gave us more nearly the actual shape of the drag as used in the field.

After the Near and Far buoy positions are plotted and the correct times of each joined, as is the usual practice, the positions of time of tide and depth changes are marked. The total time for the depth change divided by the number of buoys changed will give the time it takes to change one upright plus the time it takes to run to the next buoy. These intervals are so marked on the path travelled by the Near and Far buoys. The lead shot buoy spacer, using the proper number of buoys and the correct length of section, is placed with the *N* weight directly over the *N* buoy position and *F* weight directly over the *F* buoy position with the bight in the direction as noted in the record. The two end weights are then towed, using a tow length on each end, slowly, carefully and simultaneously to the next identically timed position. The buoy paths to be shown are then marked, drawing a short dash under the line of drag on either side of the buoy and a dash at the mark for position of buoy. The position of the drag or any buoy can be marked at any desired time. Similar lead shot buoy spacers can be made to comply with conditions required, i.e. drags composed of other lengths of sections.

Accompanying this report is a tracing showing a portion of Wire Drag Sheet 6, Season 1934, and photographs of the lead shot buoy spacer in operation. All of *B* day and positions 6--40 of *E* day are shown for this demonstration.

The drag on *B* day is of length 4800 feet having 12-400 foot sections. The drag on *E* day is of length 9900 feet having 19, 500 foot sections and 1 400 foot.

The photographs show the behavior of the drags while they are under unusual conditions. It would be almost impossible to plot the same course with the celluloid buoy spacer and obtain the consistent buoy paths as are obtained with the lead shot buoy spacer. A close study of the photographs will reveal the very irregular course of the drag on *B* day.

The lead shot buoy spacer is made of split shot pinched on a piece of waxed thread. (The waxing is to keep the thread from raveling). The shot are put on in order from one end to the other because the string stretches some when the shot are put on.

We realize that this buoy spacer is still a bit crude, that the string does ravel, and that some of the shot are not balanced perfectly on the string. As we have been unable to experiment more with this buoy spacer we are not in a position to recommend changes other than to use a better grade of string and still keep its flexibility, and more carefully made shot so that they will be balanced on the string.

NOTE. — Because of similar friction, the "Lead Shot Buoy Spacer" naturally assumes the position of the real drag. For sections 200 feet or less it would appear that the spacing of shot would be too close for proper manipulation; in which case a celluloïd spacer should be used. Since on regular drag work sections less than 300 feet are seldom used this is of small consequence.

While anything that tends to facilitate the plotting of the drag work and increase its accuracy is highly desirable, too much reliance should not be placed in the delineation of bights of drags in so far as coverage is concerned. Whenever a matter of importance arises in connection with drag work, a safety factor must be applied and the bight of the drag assumed in the position of least coverage.

A MARINE CORING INSTRUMENT - ITS CONSTRUCTION AND USE.

by

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A bottom-sampler for procuring cores several feet long has been developed recently. Designed for use on the 34-foot ketch *Queequeg*, this instrument had to be light, inexpensive, operated with ease by a three-man crew, effective in deep water under various conditions of wind and sea, and of a type that could be handled with a light winch and light cable. The sampler consists essentially of a light cylindrical core-barrel that is held upright on the sea-bottom by a float, and is driven into the mud by a streamlined lead hammer, which slides along the core-barrel.

A folding tripod-support for the core tube was successful in an experimental model, but proved unwieldy when built to full size. If a vessel large enough to carry a cargo-boom were available, this difficulty would probably not be encountered. A float-support was considered as an alternative. It became evident that the core-tube should be independent of the float, and that the float should be held submerged by weights resting on

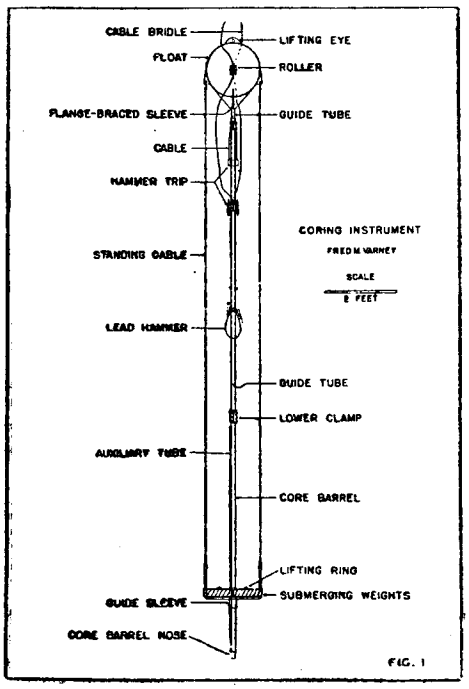

FIG. 1