IMPROVEMENTS IN THE TECHNIQUE OF MARITIME SIGNALLING (*)

A Report on the Work of the Technical Conference on Maritime Signals held in Paris in July, 1933, was printed in *The Hydrographic Review*, Vol. XI, No. 2, November 1934, page 123. Among the papers read at that Conference, dealing with research for the improvement of maritime buoyage and lighting, attention is called to a memorandum dated 9th May 1933 by Mr. G. R. PUTNAM, Commissioner of Lighthouses for the U.S.A., entitled *Development of flashing characteristics and their use to differentiate buoys according to purpose.*

As is known, progress in maritime lighting has made possible the introduction into practice of a new technique of flashing lights, in which the flashes occur in rapid succession. This arrangement permits of new combinations in the buoyage of channels. Mr. PUTNAM'S memorandum puts forward the following suggestions for the buoyage of channels.

(1) Channel-side lights, in the lateral system, should have a slow-flashing period.

(2) Buoys marking obstructions should be characterised by a quick-flashing period.

(3) Wrecks, by an interrupted quick flash.

(4) Safe passage, mid-channel or landfall buoys should be characterised by brief and slow flashes.

The slow periods should not exceed 24 flashes per minute, whilst the quick-flashing or scintillating lights should exhibit at least 75 flashes per minute.

This system is of interest in that it gives distinctive features by night in the same way as the shape or colour of the buoys does by day. The basic principle of the system consists in distinguishing the buoys at night by three immediately recognisable types of flash : a quick flash for obstructions, a combination of one long flash followed by a short flash for mid-channel buoys, and the ordinary (slow) flash for the sides of channels. The distinction between quick and slow flashes is obtained by using the above-mentioned speeds, i.e. speeds of 75 or more short flashes a minute as compared with 30 or less flashes a minute. (The groups of quick flashes followed by a pause are simply a variation of the quick flash).

No counting or timing of flashes is required in this system. It is so simple that the navigator is bound to see at once whether the light is quick-flashing, slow-flashing, or a combination of both. There is no complicated timing, and as it is not even necessary to count the flashes, the system should be reasonably dependable in a rough sea ; the characteristics are more definitely recognisable than in a system which calls for the counting of flashes.

By day, the successive buoys of any channel may be distinguished by numbers or letters to an almost unlimited extent. In the proposed system, this distinction between adjacent buoys serving the same purpose can be made by night also, by variations of characteristic within the limits mentioned above, on which distinctions of colour may be superimposed according to certain principles. Of course, the proposed system is by no means intended to supersede the necessary consultation of the chart in cases where the channels are complicated and the buoyage very dense.

It may be objected that, for channel entrance buoys and very exposed buoys in open waters or far from their base, such as landfall buoys, the system entails the adoption of a group-occulting characteristic giving the appearance of a short flash followed by a long flash, a rather delicate characteristic to maintain. But this characteristic may, for the moment, be reserved for fairway buoys in the channels themselves, and there appears to be no need to use their general characteristics for off-shore buoys in open waters.

The tests made in the United States of America of mechanisms with these characteristics prove that they are dependable and are comparable with other flashing applian-

(*) *These notes have been kindly communicated to the I.H.B. by* M. DE ROUVILLE, *Directeur des Phares et Balises de France, President of the Technical Conference on Maritime Signals, Paris,* 1933 ; *they are published here as a supplement to the report of the work of that conference, a summary of which was given in* The Hydrographic Review, *Vol. XI, No. 2, Nov.* 1934, p. 123.

ces in reliability, apart from a few local accidents. It would be interesting to know what experience has been gained in other countries in the use of these characteristics.

Mr. PUTNAM reverts to the objection formulated at the Conferences on the Unification of Buoyage, concerning the danger of marking wrecks aground on the red-light side of a channel by green lights, when green lights are in use on the other side; it remains to be seen whether this difficulty can be satisfactorily overcome by counting a specific number of flashes. The same remark applies in cases where these characteristics may have to be distributed among lights on the cardinal system of buoyage.

Tests of night buoyage systems with quick-flashing lights have recently been made in the U.S.A. on the Delaware River. It has been found desirable that the turns in important channels should be distinguished by buoy lights differing from those marking the intermediate straight stretches. The bends in the main channel of the Delaware River have been marked with quick-flashing lights of the colour appropriate to their own side of the channel. To avoid confusion between these lights and the quick-flashing lights on buoys marking obstructions, Mr. PUTNAM proposes to use quick-flashing lights varied by a single long flash; this characteristic would be used for the sides and entrances of the channels.

Such an arrangement introduces one more distinction in the proposed system of flashing lights, but this varied quick flash is very simple and readily recognisable and requires no counting or timing.

H. B.