

The committee is of the opinion that such a means of visual indication of a manoeuvre is inadequate for the following reasons:

- a. Great difference in travelling speed between light and sound increases the chance of indistinctness.
- b. The short time for which the light signal is visible.
- c. The manoeuvre is coded; viz. a certain light/sound signal means a certain manoeuvre.

In this connection it is therefore important that the SAFCON 1960 documents contain the following passage regarding the text of Rule 28(c):

'In adopting the following text for insertion in Rule 28, the Committee understood that it would not have the effect of forbidding the use of other visual signals associated with sound signals provided their character was not such as to constitute a breach of Rule 1(b).'

In order to increase safety in navigation, the Committee recommends installation on ships of the Vreugdenhil trafficator system wherever possible.

As a result of this recommendation the second Netherlands vessel to be equipped was m.s. *Moerdijk* of Holland America Line. It is to be expected that several other Dutch vessels will in the future be fitted with a similar trafficator, to improve safety of navigation by the prevention of erroneous interpretation of sound signals.

'The Impact of Radar on the Rule of the Road'

Captain J. F. Kemp

COMMANDER Clissold (19, 109) has produced a very well considered argument to demonstrate that the Steering and Sailing Rules are inadequate for present-day use and that in the future they are likely to fall well short of traffic requirements.

I agree entirely with this assessment and I agree in general with his proposed solution. His suggested Rule *requires* action to be taken by both parties to every encounter where there is risk of collision, and the most important objection to this is that it implies dual responsibility for manoeuvre. This is something which many people consider highly undesirable despite the fact that it apparently succeeds in the case of Rule 18, and to proceed directly from the present Rules to Commander Clissold's Rules would, I believe, be too large a step to be generally acceptable.

My own suggestions (this *Journal*, 18, 233) lead in the same direction as Commander Clissold's, i.e. they would require the present giving-way vessel to take action similar to that which his Rule prescribes and would give the present privileged vessel the option of doing so or of maintaining course and speed. The only change of action *necessary* if my suggestions were adopted in place of the present Rules would be in a relatively unimportant overtaking case and apart from this it is expected that in the majority of clear weather encounters most craft would behave exactly as they do now. The permissive manoeuvres would be

available for those who consider the present rules to be unreasonably restrictive when applied to their own craft and would regularize the position of navigators who, for safety reasons, already make such manœuvres under the not very satisfactory cover of Rule 27. After a period of use it might be that the permissive actions I have suggested would commend themselves to more and more navigators and that only a minority would continue to maintain course and speed when in the position of the privileged vessel. At this stage consideration could well be given to making such actions compulsory for all vessels on the lines of Commander Clissold's proposals.

Mariners are by nature and very properly cautious people and changes should therefore be made in very small steps or, if a large step is unavoidable, then the transition must be allowed to occur slowly. Any radical proposal which does not provide for hysteresis of this sort is unlikely to find acceptance whatever its theoretical merits.

I should emphasize that the points I have raised are only concerned with ways and means. I do not believe that it is practicable to change to Commander Clissold's Rules in one step, but if we could evolve towards them I am sure that they would prove more satisfactory than the present Rules.

The Pair Rule and the Collision Problem

Rear Admiral J. García-Frías

(*Spanish Navy*)

1. INTRODUCTION. In my recent paper¹ I proposed a set of manœuvring rules intended to solve the operational aspect of the collision problem. These rules are simple, but they are different if the bearing is lesser or greater than 90°. The object of this paper is to present a simpler rule valid for every bearing between 0° and 180°.

2. THE PAIR RULE. Except for the singular situation of both vessels meeting head-on or head-to-stern, every encounter involving danger of collision is characterized by the fact that the heading of both vessels is on the same side of the sight line. Close-quarter situations also involve, in general, those standing head-on, except for some situations with the heading on opposite sides of the sight line when one or both of them heads close to this line. Consequently, the evading manœuvre must be such that both headings are on opposite sides of the sight line and opening enough to ensure a safe passing.

With vessels in sight of one another, because of the aspect it is easy to get the heading of both vessels on opposite sides of the sight line. But aspect does not help in the radar case in an immediate and continuous way. Nevertheless, it is possible to achieve the same objective with the information given directly by radar by keeping to the *Pair Rule* as follows.

Fig. 1 presents the steady bearing situation. Since both vectors are on the same side of the sight line, it is easy to establish a convention for one of the vessels to