avoiding collision at the same time as, for instance, when in a complex of fairways and buoyed channels.

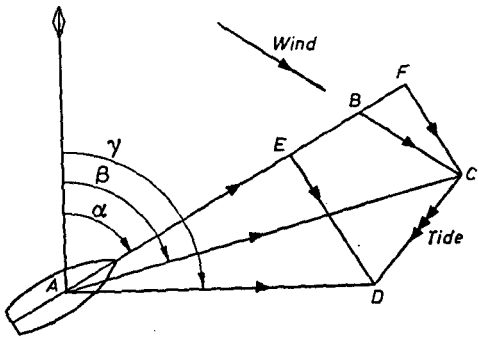

FIG. 1

Figure 1 illustrates the velocity of the ship relative to different frames of reference and also the quantities measured by the different types of log. It is apparent that technology has outstripped teaching, text-books and training. Radar plotting exercises (and for that matter chartwork exercises) and, more importantly, examination questions, usually refer to own ship's 'course' and 'speed' and require the student to deduce conclusions. In the light of today's technology this is just not good enough: the ship's velocity must be more precisely referred to a particular frame of reference and greater emphasis laid on just what can and cannot be obtained from any type of display.

Behaviour Patterns in Encounters between Ships

from Captain D. A. G. Dickens

IN G. R. Spooner's interesting if not important article (27, 265), a situation was described wherein a risk of collision was created by basic non-adherence to the Rules. Firstly, the intention of the officer-of-the-watch to alter course to port was wrong, whilst that of the Master, substantially to alter course to starboard, was right. Secondly, the action of the non-burdened vessel was in error in as much as she should have stood on in anticipation of the burdened vessel making a decisive turn to starboard. The fact that at the precise moment of ordering this turn the other ship altered to port need not have necessarily prevented the burdened vessel from altering to starboard and 'taking a turn out'—a procedure adopted in many such instances as that under discussion.

Analysing the position still further, it can be said that delay was initially occasioned by the original wrong intention of the officer-of-the-watch, and subsequent correct countermand of the Master; in addition, it is possible that information gained from the radar, as to the approaching ship's distance of 3

miles, influenced the officer into a belief of a comparative lack of urgency—doubtless met with to a much lesser degree in the days before radar.

Despite the fact that 'nowadays nearly every vessel carries radar' not every one *does*; further, a proportion of those which do so have their sets in defective if not unusable condition. Finally, in order to reinforce the views expressed above, it is submitted that the present-day requirement for candidates up for certification only having to 'construe' the Rules, is insufficient. Prior to that edict, it was an absolute requirement for the Rules to be known by heart from start to finish—I can only say that in almost a decade of command time, to say nothing of many years in officer grades, such knowledge was of the greatest value; indeed it introduced a confidence whereby hesitation, indecisiveness and uncertainty were eliminated.

K's and F's

from Duncan M. Henderson (Master Mariner)

In the old Cunard Line the log-books on the passenger steamers had a K and an F column on the left-hand page of each opening. This was taken to mean, and in fact was so used, as Knots and Fractions (NOT fathoms as in W. E. May's article, p. 116, Vol. 27).

Each noon the junior third officer filled in the columns for the previous 24 hours, and each hour had the nautical miles and the fraction thereof expressed in cables which had been steamed, entered in the appropriate box. Thus the figures in the F column never exceeded 9.

I understand from one of the R.N.R. officers who was then in the Company that the R.N. Navigation School (H.M.S. *Dryad*) has on display a naval log-book of the mid-seventeenth century—with the old K's & F's columns! Surely it would be easy to check from a few old log-books (from the figures in the F's column) what was originally meant—fathoms or fractions.

To end on a lighter note, there was the apocryphal story in Cunard about the Chief Officer who insisted that the F meant furlongs, and would not permit the Third Officer to put any figure above 7 in the F column.

Sines, Versines and Haversines in Nautical Astronomy

Charles H. Cotter

Of immense importance to nautical astronomers are tables of trigonometrical functions. The history of these begins with the table of chords first suggested by Hipparchus two centuries before the beginning of the Christian Era. The earliest table of chords extant is that computed by Ptolemy (fl. *c.* 150 A.D.) whose table, true to the sexagesimal tradition, is based on the division of the radius of a circle