

The inquiry into the opinion of Masters and others conducted by Trinity House and the Honourable Company of Master Mariners did not, in the Committee's view, meet the requirements of an objective survey; in any event, no canvass of opinion could on its own be a sufficient basis for radical alterations to recommended routes.

The traffic situation in the Strait can now, the Committee felt, only be substantially improved as a result of far more information than is at present available; and this can only be obtained as the result of a properly conducted systematic traffic survey. Until this information is available, the present scheme must be supported and nothing done to erode the discipline which proper compliance with it involves.

### *Pilotage*

Some consideration was given to the problem of pilotage in the area, since clearly the location of pilot stations will have a considerable effect on the pattern of traffic and on the ease with which recommended routes may be followed. It was suggested, for instance, that there could be some correlation between on the one hand the 'accident black spot' that has appeared recently in the southbound lane east of Folkestone and on the other the improvement of the situation off Dungeness, with the shift in 1968 of the pilot station from Dungeness to Folkestone. It is impossible without much more detailed information to comment on this suggestion. On the other hand it is clear that the siting of a pilot station is an important element in the successful operation of any traffic separation scheme.

London  
4 February 1971

M. W. RICHEY  
*Executive Secretary*

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## Collisions in the Dover Strait

A. N. Black

In the October *Journal*, p. 538 and Table I on p. 539, it is shown that the number of collisions per fog day (abbreviated below to *c/fd*) has fallen by some 20 per cent since routing was introduced in 1967. It is not legitimate to assume without further argument that this is a case of cause and effect.

In particular it is noticeable, from the graph in the frontispiece to the October *Journal*, that the *c/fd* showed a tendency to fall during the years preceding routing. Whatever the cause of this fall might be (e.g. more radar sets in use, variation in fog frequency, better simulator courses) it might well be unaffected by routing. If so one would expect the *c/fd* to be lower in later years even if routing had no effect.

Statistical analysis shows that the apparent downward trend on *c/fd* is not significant, so that one cannot be sure that it is a real effect. But the probability

that the trend is a chance effect is so small (of the order of 4 to 1 against) that one cannot base an argument about the effectiveness of routing on the assumption that there is no trend. The question to be asked is not 'is the trend statistically established?' but rather 'is the absence of an appreciable trend established?', and the answer to the latter question is an emphatic negative.

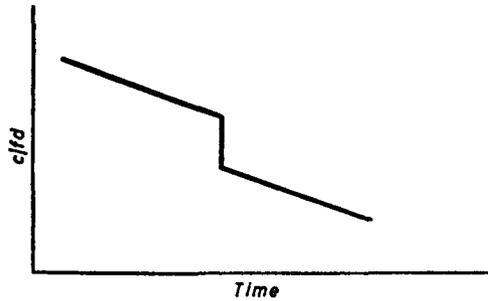


FIG. 1

If, therefore, for the purposes of argument we accept the existence of a trend, the reality of an effect of the introduction of routing can be investigated by fitting a line, with a step in it at the introduction of routing, to the data. Such a line would appear as in Figs. 1 or 2; the former represents an improvement, the latter a worsening, in the collision rate. The magnitude of the step can be fitted to the data, and its significance assessed, by ordinary statistical methods.

When this is done it is found that the step is a very small upward one, as in Fig. 2, but that its magnitude is far from significant. There is, then, no evidence

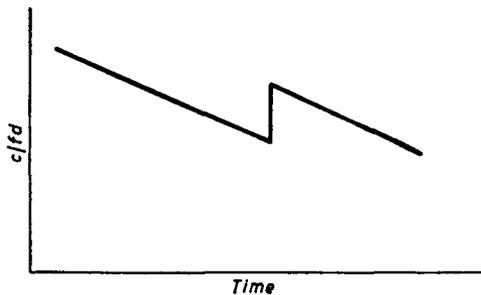


FIG. 2

of any effect which routing may have caused on the collision rate. Additionally it is possible to test statistically the agreement between the observed numbers of collisions and those which would be expected on the hypothesis of a  $c/fd$  rate with a regular downward trend. This test, the  $\chi^2$  test, shows that the observed scatter of points about the line is no more than one would expect by chance. The fact that the scatter is normal indicates that there is no need to look for an explanation of the low collision rate in the year before routing, nor for the rise in

the last two years (see pp. 538, 540); these could well have been due to chance fluctuations.

It is worth also setting down the results of another line of enquiry, which in the end proved abortive, to save others the task of repetition. A look at the graph in the frontispiece reveals that there is apparently a strong correlation between the *c/fd* and the number of fog days. If for the purposes of argument we adopt the hypothesis that the *c/fd* varies linearly with fog days it is possible to fit the best lines to the data for the two cases, before and after routing. When the  $\chi^2$  test is applied to this hypothesis, the fit between observation and expectation is suspiciously close, suggesting that this hypothesis may be a bit too clever.

The hypothesis was tested by the following method. If it were true that years with a large number of fog days had an expectation of a large *c/fd*, the same would certainly be true of especially foggy months. Mr. J. H. Beattie kindly supplied me with a copy of the monthly fog data which were used in preparing the article under discussion. I arranged the months in four groups depending on the amount of fog, group 1 being the least foggy and group 4 the most. The numbers of months in each group were adjusted to give as nearly as possible an equal total of fog hours in each group. Since the total period of fog is the same in each group it follows that, if the *c/fd* is independent of fog frequency, the same number of collisions would be expected in each group. But if the *c/fd* increases with foggi-ness, the hypothesis under test, the collision numbers would tend to rise from group 1 to group 4. The observed collisions were 24 in group 1, 39 in group 2, 26 in group 3, 24 in group 4. There is no rising tendency, and the hypothesis must be abandoned.

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## Dover Strait Routing

Captain G. L. Munday

As a serving ship-master I have made many voyages in an 18,000-ton deadweight tanker (and an occasional trip in 50,000 tons) through the Dover Strait to Continental and U.K. ports. I should like to supplement Commandant L. Oudet's article on the 'Reversal of the Traffic Flow in the Dover Strait' with a few comments from my own experience.

As Commandant Oudet states 'the present system is imperfect, incomplete and incompletely observed, but to improve matters, one should not destroy it but rather seek to improve and complete it'. On nearly every transit I have made through the Dover Strait, I have met an odd vessel proceeding contrary to the recommended routing. It is only fair to say some of these vessels may have just wandered from the coastal lanes, but there have been other instances of ships deliberately stemming the 'ship tide'.