asked to estimate the course of a target, most observers would draw a line similar to the hatched line in the figure; Mr. Harrison would seem to prefer the solid line extending between two points separated by a specified interval.

Mr. Harrison's remarks concerning data extraction are less open to question. Certainly, errors do exist in the range and azimuth data but their magnitude is debatable. Riggs[3] states that the error in C.P.A. due to all sources, including 15° roll, is about 0·15 n.m. at 4-mile range and about 0·30 n.m. at 8 miles. In other words about 4 per cent of range. Without ship motion the errors are about half as large as those given. Mr. Harrison seems to think that larger errors are more likely. Regardless of their magnitude, however, they exist equally in both manual and automatic systems.

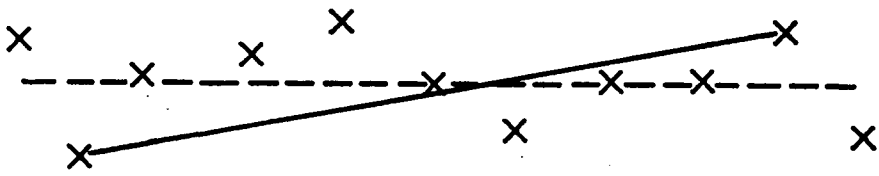

FIG. 1

Mr. Harrison quotes the results obtained by Shuffleton and Evans to suggest that target glint causes an increase in C.P.A. errors from 3 per cent of range to 9 per cent. This should not be considered to be a fundamental limitation however, since the centre of gravity of the echo can readily be determined by automatic means.

Finally, Mr. Harrison's claim that systems 'using current equipment and practice will only score 30 per cent' likelihood that the predicted C.P.A. will be accurate to $\pm\frac{1}{4}$ mile has no apparent basis. An examination of equipment at present in the field would indicate a significantly better performance. There is also reason to believe that the performance will improve during the next few years.

REFERENCES

1 Harrison, A. (1974). This *Journal*, **27**, 268.

2 Harrison, A. (1972). 'The risk of error in predicted CPA'. *IEE/IERE Conference*, 1972.

3 Riggs, R. F. (1974). 'The effects of sensor errors in certain marine collision avoidance and threat assessment systems'. *Navigation (U.S.)*, **21**, 16.

Plotter Display Philosophy

R. G. Rinaldi

(IBM Maritime Applications Systems)

In Captain F. J. Wylie's article, 'Maritime radar automatic plotter display philosophy' in the July 1974 issue of the *Journal*, he states that the IBM Maritime Application Bridge System (MABS) tracks only six targets for collision assessment

purposes. This statement is incomplete and I would like to clarify the impression left with your readers.

The IBM MABS tracks up to 21 targets continuously while performing either automatic or manual acquisition. However, since the MABS also prioritizes targets according to threat potential (based on C.P.A. and T.C.P.A.), only the six most threatening are displayed continuously on the alpha-numeric data display and on the PPI. Should the operator wish to obtain data on the fifteen targets of lower priority he can request them in groups of six, in descending order. Each group, six at a time, is displayed on both the alpha-numeric display and the PPI. After a fixed period of time the system automatically returns the display to the six highest priority targets; this is to insure that the most threatening targets are always displayed and that the operator cannot be misled. The operator also has the facility to place any target in the first group manually if he so desires, thereby making its data continuously available. Should the operator wish to determine which 21 targets are being tracked, he can command 'Mark all tracked targets' The system will indicate by identification number, on the PPI next to the target, which 21 targets are currently being tracked by the system.

Captain Wylie's comparison of systems is limited to the C/A function and only considers that aspect of the IBM MABS. MABS is an integrated system and its functions include position fixing by Decca, Omega and satellite, as well as route tracking, route planning and adaptive autopilot. These functions, including C/A, run concurrently in the computer. To update Capt. Wylie's information I may add that MABS is now in production.

V.H.F. Interference

Captain Ivan Downer

(Shell Tankers Ltd.)

HAVING read Professor Hugon's informative paper on 'Navigation in the French merchant navy' and in particular his remarks regarding the cluttering of the 182 kHz band, I would hazard a guess that he has not listened to the v.h.f. channel 16 band in recent years, when clear of the U.K. and continental areas.

In the open sea well away from land this channel is not often abused, but off the West African coast between about 13° N. and 22° N. the air at night is, more often than not, cluttered with noises like animal and bird calls for long periods on channel 16, and during the day with lengthy chitchat, possibly between foreign fishermen, on this and other channels.

The channel is cluttered to a lesser extent off the Comoros Islands, but on passing into the Persian Gulf all hell breaks loose on the air. Practically every shore station uses channel 16 as its working frequency, and there seem to be shore stations working from every nook and cranny on the coastline of the Gulf; this, coupled with the often extraordinary radio reception in that area, results in absolute bedlam from which nothing worthwhile can be understood. Here again animal and bird-like noises are common and, if during one of the infrequent periods of comparative silence, a ship should call a shore station or vice versa,