

# Letters to the Editor

## NAVIGATION AT SEA WITH A STAR LATTICE

SIR,—On a recent voyage to the West Indies and back I used the star lattice method described by Lieut.-Commander. R. B. Michell (this *Journal*, Vol. VI, p. 63.), with some slight modifications which it may be of interest to describe.

In order to facilitate plotting, a star lattice was constructed to the same scale as that used in Admiralty Chart No. 5015. The range of L.H.A. Aries used was  $4^{\circ}$  and it was found that this period of 16 minutes was ample for observations. The integral-degree parallel of latitude was sub-divided into minutes and seconds of time over a range of  $1^{\circ}$  L.H.A. Aries and this formed the base of the vector triangle. With the vector triangle constructed the D.R. track was transferred to the D.R. position with parallel rulers and the track drawn in across the lattice. The instantaneous D.R. position was then rapidly plotted using the following procedure:

1. Laying the rulers along the ship's course and speed component.
2. Moving the rulers until they cut the time-scale at the number of minutes and seconds after starting time.
3. Taking off with dividers the interval from the left-hand edge of the scale to where the rulers cross the D.R. track component.
4. Applying this interval to the D.R. position along the D.R. track (a case of simple proportion).

This method eliminates the use of a separate time-scale and when the chronometer 'starting time' is made an even minute the determination of the time interval is only mental arithmetic.

After practice it was found unnecessary to draw in the star azimuth lines. Once a sight was taken the calculated altitude was looked up, the total correction (previously noted down) applied mentally and the intercept obtained mentally. The position line was then plotted in the usual manner, the intercept being lifted from the appropriate latitude scale in Chart 5015. Thus all written work was kept at a minimum and it was found that the average time to prepare the lattice and plan observations was ten minutes and to obtain a fix after completion of sights, five minutes.

Whenever possible sights were taken of all six stars and usually the position lines formed a cocked hat of small extent ( $1'$  across at greatest width).

When insufficient sights were obtained from the stars tabulated for the range of L.H.A. Aries in A.P. 3270, additional position lines were obtained from *Polaris*, the planets or from other stars. For *Polaris* the Pole Star Tables, deriving L.H.A. Aries from the 'starting time', were used to calculate the latitude and for the planets or additional stars the azimuth and altitude were calculated and the intercept laid off from the appropriate point on the chosen latitude.

In order to make a lattice of more convenient size one was constructed to half the scale of Chart 5015 and was used with equal success but with some loss of clarity on the collector. A lattice of this size conveniently folds so that it can be contained in the cover of the tables and is thus always ready at hand.

The method has proved to be a great time and labour saver and affords very little opportunity for clerical errors to occur.

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Yours faithfully,  
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(Navigating Officer, Royal Mail Lines.)

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