Letters to the Editor

THE GENESIS OF THE E.A.N.T.s

SIR,—The paper entitled 'The Genesis of the E.A.N.T.s' by Anderson and Sadler (this *Journal*, Vol. VI, p. 333) is extremely interesting and presents a very clear picture of the basic principles of sight reduction and their application. I feel, however, that some comment is called for on Part III, Section 2—'Comparison of Methods'.

The authors state that '. . . the two great needs of the air navigator, as far as astro is concerned [are]:

(i) speed and simplicity . . .
(ii) flexibility . . . '

I suggest that speed and simplicity are not synonymous, and in the table comparing the various methods no mention is made of simplicity. Especially since 'astronomical navigation in the air . . . is now a stand-by aid only', the requirements would better be stated as:

(i) simplicity,
(ii) flexibility, and
(iii) speed.

The vital factor is that astro is now only a stand-by aid, and as such simplicity is the over-riding consideration. Flexibility is essential when considering military operations; the fact that speed is relegated to the last position does not indicate that it is unimportant. While, for example, E.A.N.T.s may be slightly faster to use than A.P. 3270 (and this point is open to argument) if a navigator who uses astro only occasionally is apt to have difficulty when using E.A.N.T.s they must be discarded in favour of the simpler A.P. 3270.

The table comparing the various methods indicates that obtaining a fix with the Astrograph is faster than with E.A.N.T.s, which is in turn faster than using A.P. 3270. Yet in practical air trials conducted at C.N.C.S., Shawbury, it was concluded that:

'(*a*) When the observations are spaced at 4-minute intervals and when each observation is commenced at the precomputed time there is no significant difference in the time required to obtain a fix with the Astrograph and the time required using A.P. 3270. If precomputation is not used the increase in the time to obtain a fix with the Astrograph is less than the corresponding increase in the time with A.P. 3270.

'(*b*) By using 3-minute intervals between observations the Astrograph can provide a slightly more rapid means of obtaining a fix than A.P. 3270. But it is doubtful whether navigators, using astro only occasionally as a stand-by aid, would be sufficiently in practice to want to take advantage of this capability. It is likely that they would prefer to use 4-minute shot spacing. . . .'

Again considering the table comparing the various methods, in which the most important factor of simplicity is omitted, E.A.N.T.s suffer in comparison with A.P. 3270 in every respect except speed—and I challenge that point as well. Yet in their conclusions the authors state that 'it is concluded that practically all the advantages of the E.A.N.T.s may be obtained . . .' All what advantages?

It will be obvious from the above that, in view of the prime requirements of astro being simplicity, flexibility and speed, I consider A.P. 3270 superior to any other method of sight reduction now in existence.

The ruler and computer described in the article for use with A.P. 3270 are very neat refinements designed to decrease the time taken to reduce and plot a sight. But Table I in the front of A.P. 3270 covers a normal fixing sequence and I must again return to the need for simplicity in this stand-by aid. Is the small saving in time (which will only result if the navigator is completely familiar with the instruments) worth the added complication?

Central Navigation and Control School,
R.A.F. Shawbury,
Shropshire

Yours faithfully,
C. L. Heide
Squadron Leader, R.C.A.F.

Mr. SADLER writes: In the absence abroad of Wing Commander Anderson, may I comment briefly on Squadron Leader Heide's letter?

The penultimate line in the table should not have been abbreviated to 'speed', as it clearly refers to both 'speed and simplicity'. These two qualities are not necessarily dependent, but there is, in our view, a sufficient relationship to justify the combination. To avoid misunderstanding, simplicity must here refer to the use, if necessary sole use, of the type of reduction analysed; simplicity of principle is not in question. As regards the assessment of the various methods of reduction in respect of speed, it would have been inappropriate to have considered special observing techniques.

Even with an auxiliary ruler, or other device, A.P. 3270 can hardly provide the simplicity and speed of the E.A.N.T.s when used with special charts for numerous, non-scheduled, star sights spaced throughout the hours of darkness; but there are other disadvantages.

In A.P. 3270, the Introduction has been deliberately restricted to a description of the basic simple and flexible method of use. Special techniques are merely mentioned so that the individual navigator may use them or not, as he desires; the ruler and computer are in precisely the same category. It is only the working navigator who can answer Squadron Leader Heide's last question; we are content to show what is possible.