FORUM

Some Notes on a Voyage Round the World

from T. C. Worth

Beyond is a 43-foot auxiliary Bermudian cutter, specially designed and built for a voyage round the world. Between August 1952 and September 1954 she sailed some 30,000 miles, the track being shown on the chart (Fig. 1). From Lisbon to Auckland we were four aboard, but from Auckland back to England there were only my wife and myself. The following notes record the various methods of navigation.

A 6¼-in. Henry Hughes micrometer sextant was used throughout. For reduction the A.N. Tables, the *Air Almanac* and a U.S.N. star identifier were used. Normally, three morning sights were taken, each worked out and the position lines plotted, which took about twenty minutes' total time. Meridian altitude was taken, and, if occasion demanded, afternoon sights and star sights. Under average conditions the position lines seemed to be accurate to within about three miles.

A Walker yacht log was towed and proved to be accurate to very close limits, except on three occasions when the rotor was bitten and bent by big fish; only one rotor was actually lost. D.R., particularly in the south Pacific, was always treated with suspicion owing to the lack of data on ocean currents.

Apart from island to island 'hops', some thousands of miles of coastal navigation was used up the east coast of Australia, East Africa and the Red Sea. Normal bearing and sextant angle fixes were principally employed, but great caution was necessary fixing on mountain peaks, owing to the difficulty in identifying particular peaks and the fact that not all peaks are correctly positioned on the chart. The pilotage inside the Great Barrier Reef was not easy, particularly as we were in a season of low visibility.

One lesson learnt was not to mix coastal navigation with celestial navigation —i.e. either keep right in to the coast and keep a careful and continual check on position, or else stand out well clear of the land, keeping position by sextant, and make a fresh landfall after travelling the required distance up the coast.

No account was taken of great circle courses as most of the westing was in low latitudes. Tables II and V in A.N.T. are a simple way of dealing with great circle courses and distances.

Although fitted with d.f., which I consider a very considerable asset in the English Channel where there is often low visibility and there are plenty of radio beacons, d.f. was not used in earnest throughout the voyage. Such a tool needs fairly constant use to understand its limitations and then have the appropriate confidence in its findings.

The lead line was the fundamental piece of equipment, particularly up the Australian coast. An echo sounder was *not* fitted. It would have been most useful, for example up the Australian coast, and would have enabled us to work closer to the coast, thus avoiding much of the contrary current. In the south Pacific, where there are usually some thousands of fathoms of water, or nothing, I do not think an echo sounder would have been much use.

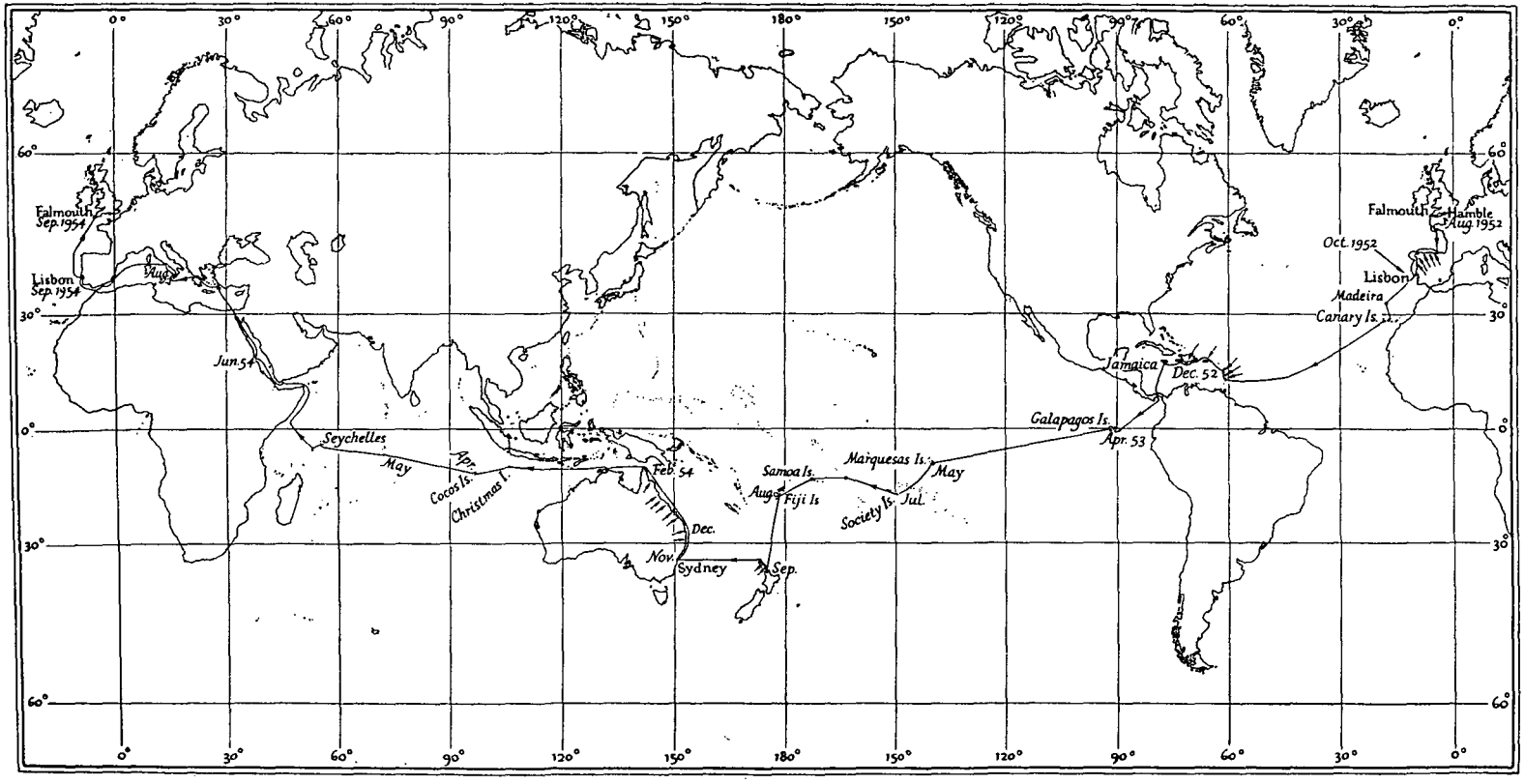

Fig. 1. The track of Beyond.

The Sperry Automatic Pilot was a very great aid to navigation, as it ensured that we were always on course, which is not always the case in a small vessel, short handed. It also enabled navigation and other duties to be carried out by the one person on watch; I considered it well worth two extra crew.

With a knowledge of coastal pilotage, and the working of A.N.T. (at both of which my wife also became fully proficient during the cruise), the voyage around the world did not present any undue navigational difficulties. Taking observations from a low deck in rough weather requires practice, and also judgment to know how much accuracy to expect from a particular sight. Perhaps the occasion when experience and judgment are most needed is when, after some days of overcast, one's position is uncertain, to know in what direction, and how far, one can move in safety before the weather clears. In other words, when lost, using one's head and not getting into a panic!

I was interested to learn of the simple method of navigation said to be used by the island trading schooners in the West Indies. Apparently no navigational instrument at all is carried except a pig and, if the vessel is lost, the pig is thrown overboard and apparently knows the way home.

The Use of A.P. 3270 for Surface Navigation

from A. J. R. Tyrrell

THE full value of A.P. 3270 (*Sight Reduction Tables for Air Navigation*, Vol. I, Selected Stars, H.M. Stationery Office) does not yet seem to have been fully appreciated by surface navigators. As well as increasing the speed with which sights can be reduced, the tables offer all the advantages of a star globe or planisphere in planning a series of sights. The navigator can thus concentrate on the most suitable stars for cut, magnitude and azimuth. Since observations can be planned for a time at dusk when the horizon is still firm and the star just visible through the telescope (or, at dawn, when the star is still visible and the horizon firm), a more accurate sextant altitude can be obtained.

When planning the sights it is useful to write down the integral degrees of L.H.A. Aries for each four minutes of ship's time over the period of dawn or dusk. The six selected stars can then be extracted from the tables for the appropriate time. It is convenient to draw a rough sketch showing the relative bearings of the six stars, preferably on a chart compass rose (the D.R. position and the L.H.A. for this purpose can conveniently be those of the mid-time of the expected period of twilight). Care should be taken when this period extends over two groups of stars, as a star may disappear from the first group and another appear in the second; this can be used to advantage on certain occasions, giving an extra star for observation, so long as the 'disappearing' star is observed before the time of the change-over; if this star is needed after the change-over, extrapolation can be used for a few degrees of L.H.A. Aries, assuming a constant change of altitude. If a planet, or Polaris, or more stars on or near the meridian are necessary to complete the plan, Vols. II and III of A.P. 3270 can be used.