Reviews

The Quest for Longitude. Proceedings of the Longitude Symposium held at Harvard University, Cambridge, Massachusetts, November 1993. Editor William J. H. Andrewes. Published by the Collection of Historical Scientific Instruments, Harvard University, Cambridge, Massachusetts. 437 pp. £49.95. ISBN: 0-9644329-0-0.

The story of the 18th-century search for a solution to 'the longitude problem' is one of seemingly endless fascination, the most recent spate of articles and books being occasioned by clockmaker John Harrison's three-hundredth birthday in 1993. This fascination surely extends beyond just an interest in the development of scientific instruments and methods, for few other technical problems have merited the popular re-telling of an old story such as was done, for example, in Dava Sobel's recent book *Longitude*.

Part of the attraction of the quest for longitude has to be the rivalry between the mechanics – the clockmakers – and the 'celestics' – the astronomers and mathematicians who were convinced that the better solution was the lunar-distance method. Of course, the mechanics, with their wonderfully-crafted timepieces, won out, and even though their instruments are used less now than in former times, their philosophical approach lives on in the electronic marvels that lie hidden behind every GPS display.

If anything, the defeat of the approach of the 'celestics' was as much at the hands of the Designer of the Universe as it was at the hands of the mechanics. In Newton's work, there was a promise, rediscovered by each new generation of students, that the secrets of the motion of celestial bodies like the Moon could be revealed by scribblings on the back of, say, Nevil Maskelyne's oft-used writing pad, a dinner menu. Only very slowly did mathematicians come to realise that even the simple three-body gravitational problem can scarcely be solved that way, yet alone the movements of the Moon, the unpredictability of which are well described in Ivars Peterson's book *Newton's Clock – Chaos in the Solar System*. A method for generating lunar-distance tables with the accuracy required by Captains Cook, Vancouver and Flinders was still fifty years or so away when the first Nautical Almanac appeared in 1763; the method is horribly complex, and the errors in those early Almanacs can be traced in the navigators' charts. The complication of correcting for the Moon's parallax too must have been for some a severe test of numeracy – even our hero Captain James Cook made the occasional mistake in his calculations.

The 437-page book *The Quest for Longitude* is a record of the Proceedings of the Longitude Symposium held at Harvard University, Cambridge, Massachusetts, in November 1993. And what an excellent job editor William J. H. Andrewes and his team have done. The many illustrations, about 250 in all, well over a hundred of them in full colour, are of just excellent quality – lots of dots per inch so that you can even look at the full-page reproductions of old charts with a magnifying glass and still see detail. Designer Pamela Geismar deserves special mention for the layout with its generous scholar's columns, 'footnotes' that become convenient sidenotes, nice dust jacket, and intelligent choice of fonts – all making it look good, as well as making it easy to read. Editor William Andrewes has also managed somehow to make the chapters flow, even though there are twenty different contributors, and, I was pleased to see, has thoughtfully added a contribution of his own that includes an explanation of how local

time is determined – something that is very often neglected and not obvious to those who have never used the methods described. Chapters are included on methods used less often by British navigators, such as the one that relies on observations of the positions of the Galilean satellites of Jupiter. Even cranks and opportunists have their say in Owen Gingerich's amusing review of 'nutty' solutions to the longitude problem.

The illustrations, as I say, are wonderful: forty-five or so of chronometers themselves, and that not counting a further sixty-five illustrations of their innards which fully reveal what works of art some of them are. The characters in the plot are also amply treated with nearly thirty high-quality portraits, most in colour, including one of Louise de Kéroualle, Duchess of Portsmouth and mistress of Charles II, who, the caption explains, was involved in the foundation of Greenwich Observatory.

Because the book is a compilation of the work of many, there is no one 'angle' on the chronometer-lunar distance rivalry, but the balance is clearly in favour of the clockmakers, as is undoubtedly their due. It is left largely to Derek Howse to give a somewhat dispassionate account of the ideas behind the lunar-distance method, and relatively little is mentioned of those like Charles Mason who worked with Nevil Maskelyne on the early Nautical Almanacs. Perhaps, the lunar-distance method loses, not only for other reasons, but because it is not nearly so photogenic as its one-time rival!

All in all, a very good book – if you do not have a copy, put it on your wish-list right away.

N. A. Doe

Man Is Not Lost. Group Captain F. C. ('Dickie') Richardson. Airlife Publishers, 1997. 272 pages. £22.95 Hardback. ISBN: 1-85310-8685.

I must declare a personal interest at the outset. As a sprog navigator in the RAF, in 1949 I was terrified by having a copy of *AP 1234* thrust at me with a stern command to 'learn that, lad'. Then I saw the *Alice in Wonderland* quotations heading each chapter and thought whoever wrote it couldn't be all that bad, although obviously he was a minor God. Little did I think that 40 years later I would actually meet him and that we would become firm friends.

Dickie was one of the few in the pre-war Air Force who recognised the importance of proper navigation. Perhaps it came from his experiences navigating himself in 216 Sqdn Vickers Victorias/Valentias across the wide and relatively unmapped expanses of East and West Africa during the late '30s. Today, it seems quite incredible that pilots like Dickie were expected to set off with nothing more than an airspeed indicator and a rather unreliable compass and fly four or five hours across desert to an almost unmarked landing strip. The first half of this book is an excellent account of a junior officer's life in the pre-war 'colonial' Air Force and is worth it for that alone. Frustrations galore, of course, but almost total personal responsibility once in the air and no excuses accepted. His account of how he and his crew were entertained by the French at what was then Fort Lamy is quite hilarious – five hours' flying to get there, then a nine-course lunch, followed four hours later by a full-blooded banquet that finished long after midnight. All in 100° heat and wearing full Mess kit!

In 1937 Dickie volunteered for the specialist navigation course when his Middle East tour expired. It made him realise that, despite having successfully flown himself around many of the wilder parts of Africa for four years, he knew almost nothing about navigation – and neither did most of the senior Air Staff of the time. Navigation was considered a specialist activity not normally undertaken by squadron pilots and in 1933

there were only 14 graduates of the course. The result was that navigation received little consideration in Air Staff decisions and there were curiosities like not allowing for a navigator's position in the initial four-engined bomber specification of 1936 in order to cut costs. Although Dickie was not alone in realising how essential good navigation would become in wartime, his insider's tale of how it eventually became an over-riding priority is quite fascinating. His part in setting up navigation schools highlights the fact that, in 1940, no good air navigation textbook existed, either in Britain or abroad. While the pre-war *AP 1234* had quite a detailed chapter on map-reading, essential for 'pilotage', and several admonitions to remember to take into account the effects of wind, that was about it navigationally, except for a single paragraph on night navigation reminding pilots how useful lighthouses and city lights could be! Dickie remedied this by single-handedly writing an almost totally new *AP 1234* in under nine months which became a standard work. Fifty thousand copies were printed, going into several languages and even the Luftwaffe made a translation for their own use.

Next he went to Coastal Command to command 502 Sqdn (Whitleys), then at Limavady. He was in at the birth of BABS, developed initially as an adjunct to ASV, and comments on the unreliability of the Merlin engines fitted to the Whitley which caused far more casualties than any other source. He then made another significant contribution to air navigation – the institution of a 'navigation drill' requiring a systematic pattern of fixing including the continuous maintenance of an air plot. The first thing this did was to show up rather dramatically the effects of navigators' fatigue caused by the navigator on long-endurance aircraft like the Catalina being expected to slog away for 15 hours or more unaided. Having the proof, Dickie used it to justify the establishment of a second navigator on all sorties of over ten hours, inevitably opposed at first on the grounds of cost! Oceanic navigation really was where the navigator became paramount and Dickie eventually obtained authority to appoint the first navigator ever as Captain of a Liberator – Robert Irving, who post-war became well-known as a conductor at the Royal Ballet and then at the New York City Ballet. In mid-1944 he further promoted the navigators' cause by supporting the case for a specialised Directorate of Navigation in the Air Ministry, only agreed even at that late date in the face of quite senior opposition.

Following D-Day, Dickie went to Shawbury to become Assistant Commandant and changed the name of the school from the Central Navigation School to the Empire Air Navigation School. Regrettably, by 1954, when I went there myself as an instructor, it had reverted to CNS and had had 'and Control' appended. It was only after reading this book, 43 years later, that I realised what an enduring effect his methods had on the instructional practices I was taught there. I still have a copy of the Notes issued to every CNS student, and comparing them to his edition of *AP 1234*, the similarities in technique are now obvious.

An excellent book and one that fills in many gaps in our knowledge of the development of navigational methods in the RAF. One may criticize almost complete blindness to the importance of navigation in the inter-war years but, once the deficiency was realised, the speed of change was quite breathtaking and one of the results was the post-war formation of this Institute. It is sad to see that today there are signs once again that the fundamentals of good navigation are sometimes being ignored in the interests of expediency – do we never learn?

It is a matter of pride that this Institute was presented with an early draft for comment and subsequently pressed for it to go into print. After Dickie's sad death in 1995, it fell to Humphrey Wynn to put it into publishable shape and he must be congratulated on doing an excellent job.

W. F. Blanchard