

Online Supplement to the Navigator's Newsletter, Issue 94, Winter 2006**Letter to Samuel Bawlf from George Huxtable.**

Thank you for sending that long letter of 24th August, which was forwarded to me by John Lewis; and for the trouble you have taken to put your arguments.

I'm pleased to say that in the meantime I have had a chance to read at your 2003 book in the Bodleian Library in Oxford, though not for long enough to give it a really thorough investigation.

One difficulty was that at certain points, where I would have wished to follow up the details, such as the encryption [*of Drake's maps and reports*], the only reference to be found was to your earlier book on the subject, of 2001, which was unfortunately not held in the Bod.

Having a copy of my original letter to Navigator's Newsletter, you will be aware that it was addressing not your book itself, but John Lewis' review of it.

As for your main thesis, that Drake traveled much further North than has been accepted, I remain unconvinced. I am no historian, however, and Drake isn't "my period", anyway (I'm more at home with 18th century navigation), so I would not presume to pronounce on that matter. It clashes, of course, with the anonymous few pages on the matter in Hakluyt, in vol VI of my 1927 Dent edition. I find that account most puzzling where it refers to the vessel being impelled to seek land due to the coldness of the air; this being in the Western Pacific, in early June! That seems unlikely, at a latitude of 43 degrees. Though I am unfamiliar with the climate of that region.

It was on the navigational evidence that Lewis was commenting, and to those comments that I was reacting. Celestial navigation (lunar distance in particular) is a subject on which I claim to have a thorough, though not a professional, knowledge.

Now for Bourne's "scheme" on the banks of the Thames, and your fig.2 [*included in Samuel Bawlf's summary in this newsletter*]. This was included in Taylor's edition of "A regiment for the sea", but had in fact been taken from another Bourne work, "Treasure for travellers". I have taken a look at an original printing of that at the Bod, and also at another volume, a facsimile of the original; William Bourne, *The treasure for Travailleurs*, Amsterdam 1979. This was also published in the US at the same time, as number 911 of the series "The English Experience". After a quick judgment, that modern facsimile appears to be the equivalent of the original in all respects, and should be more accessible and copiable.

Bourne was a gunner, not an astronomer. It's absolutely clear that Bourne's plan was presented, just as I had surmised, as an exercise in mapping by triangulation. It has no astronomical connotation whatsoever. It appears to have been carried out using a protractor instrument, described in detail by Bourne, which carried

a magnetic needle. So indeed, as asserted, it seems to be related to the magnetic meridian rather than to true North. I have no idea how much those diverged at that date.

Bourne's chapter 15, in book 1, is headed as follows (text and spelling modernized by me, but not very consistently)—

“The fifteenth chapter showeth unto you, how you shall make an instrument whereby you may describe a Region or Countrey, which you may call an Horizontall Sphere: and also how to take the plat of any ground, etc.”

and commences—

“Now furthermore, I think it convenient to show unto you the making of an instrument, whereby you may describe a whole Countrey at sundry stations or standings, which is very meet and necessary for all men that do service to their Countrey, and principally for Generals and Captains, and especially for all them that take charge to be leaders of men ...”

So Bourne was dealing with the art of military survey, as I had guessed. His text goes on to set down all the various azimuths of local landmarks recorded from his two observation points, at the centers of the circles shown on his plan.

It seems to be established, rather conclusively then, that there's no connection at all between what William Bourne did along the Thames and any astronomical observations that Drake may (or may not) have made. That connection appears as a straw, clutched at to back up the assertions made about Drake's "lunars".

As for the Oregon site, there seems to me to be no evidence whatever of any astronomical connection.

I cannot envisage any way in which azimuths laid out on the ground, at Oregon or the banks of the Thames, could possibly be used to measure any sort of lunar distance, which is an angle measured up in the sky at a slant angle to the horizontal, to establish the Moon's position around its nearly-ecliptic path. If that procedure is suggested, it's up to whoever proposes it to explain how that job is to be done. To do so, an understanding of the principles of the lunar distance method for establishing longitude is required. I see no evidence of that understanding, in the 2003 volume, or in the letter to me.

An endnote claims that mariners of the time would be quite accustomed to applying lunar parallax because it would be necessary to obtain position from altitudes of the Moon. Not so, of course: the Moon wasn't used for such a purpose because of the many difficulties in applying the necessary corrections. Pole star and Sun were what the mariners of the day would use; never the Moon.

Another endnote belittles the difficulties in predicting the Moon's position for lunar distance, pointing out that it's perfectly possible to back-predict the tides. The immense difference in the precision required for those two applications has not been appreciated.

I wrote that we should not accept any suggestion that a longitude was obtained from lunar distance without firm evidence to back it; that firm evidence still seems to be lacking. However, the suggestion has led to some interesting discussion and investigation, for which I am grateful.

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