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From Morikambe to Morecambe: Antiquarians, *Periploi* and *Eischuseis*

William D. Shannon

Morecambe Bay, between Cumbria and Lancashire, was identified as Ptolemy's *Morikambe eischusis* by Horsley in 1732. By the end of that century, thanks largely to its appearing on Yates' map, it had become accepted as the contemporary name for the bay, later giving its name to the railway and then to the town that grew up at its terminus. What has not been commented upon before is how rare the word *eischusis* is in Ptolemy, what exactly it means, and what its strategic significance was for the Romans in the north west. Using toponymic, geodetic and contextual evidence, the paper explores the two possible candidates for *Morikambe*, the one wholly in Cumbria, the other partly so, before concluding Horsley was right. It also proposes that another nearby *eischusis*, that of *Seteia*, should be interpreted as Hoyle Bank, associated with the important beach-market site at Meols.

I

MORECAMBE Bay, part in Cumbria and part in Lancashire, is the largest intertidal area in the UK, and is of international significance for wildlife. In August 2011 the Heritage Lottery Fund announced they had set aside £2 million for a major Landscape Partnership Scheme.[1] The application, by the Morecambe Bay Partnership, did not discuss the name of the bay, as it was not relevant to the bid. However, the route by which the place-name *Morikambe*, which first appeared in the *Geography* of Claudius Ptolemaeus (*Klaudios Ptolemaios*, Ptolemy) around AD 150, came to be the contemporary name for this bay is of some interest, and forms the first part of this paper.[2] The second part then looks critically at the evidence for associating the ancient name with the modern bay.

A visitor might casually assume that the town of Morecambe gave its name to the bay. In fact, the reverse is true, with Sheet 30 of the Ordnance Survey Six-Inch map, surveyed 1844, showing no sign of the town whatsoever, although about a kilometre or so to the north east of where the Midland Hotel now stands, a *Morecambe Hotel* can be seen in Poulton-by-the-Sands. Soon after, with the arrival of the Morecambe Bay Harbour and Railway Company, a sea-bathing resort grew up at the terminus, to which the name Morecambe was given informally at first, but subsequently being officially adopted.[3] However, if the town took its name from the railway, and the railway from the bay, where, when and how did the bay get its name?

Historically, it would appear that the sands which lay between Lancaster and Furness were known respectively as Lune, Kent and Leven Sands. Thus Leland in his itinerary just refers to *Lunesandes*.[4] Harrison, writing in *Holinshed's Chronicles* of 1586, reported that beyond 'Lunesands … we find a forked arm of the sea called Kensands'.[5] Saxton's map of Lancashire of 1577 names *Kent Sand* and *Leven Sand*, as indeed do its

numerous derivatives throughout the next 200 years. Speed's map of 1608, followed by others over the years such as Blaeu in 1648, or Moll of 1724, uses the variant *Ken Sandes* while Bowen's Large Atlas map of 1752 took an independent line by locating *Cartmel Wharfs* within the bay.[6] However, in 1774 a map of contemporary Furness was published upon which the name *Morecambe Bay* appeared, in addition to, but with more prominence than, *Leven Sands* and *Lancashire Sands*.[7] This map, bound into West's *Antiquities of Furness,* was said to have been surveyed in 1745 by Wm. Brasier, but copied in 1772 by T Richardson: and it is presumably the latter who inserted the name here (Figure 1).

In doing so he was broadly agreeing with the very first attempt to locate Ptolemy's places upon an outline map of Britain, made possible by the unprecedented level of topographical accuracy provided by Saxton's 1579 map of England and Wales. This was Ortelius' *Britannicarum Insularum Vetus Descriptio* of 1590, which marks what is clearly the river Kent as *Moricambe Flu*.[8] Around the same time, another Flemish cartographer, Plancius, again using Saxton's outline map, placed *Moricambe Aestuarium* within the present-day Morecambe Bay.[9] However, William Camden had already in 1586 published a different identification, naming Ptolemy's *Morikambe* instead as a small bay immediately south of the Solway, near Holme Cultram: and it

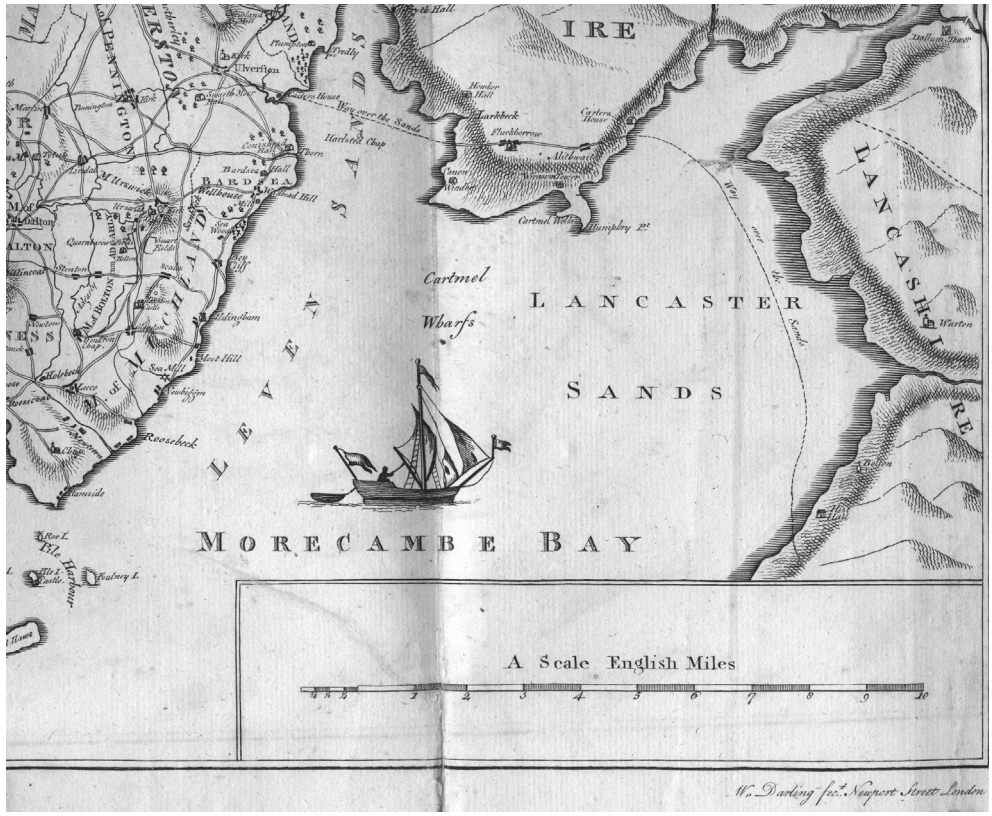

FIG. 1. Extract from frontispiece of Thomas West, *Antiquities of Furness* (1774). Surveyed in 1745 by Wm. Brasier. Copied in 1772 by T. Richardson. (Author's collection)

was his identification which was to hold sway for almost the next 150 years.[10] In the later English version of *Britannia* his reasons are given as:

> When the shore hath passed on right forward a little from hence, it bendeth so backe again with an arme of the sea retiring inward, that it may seeme to bee that MORICAMBE which *Ptolomee* setteth here, the nature of the place and the name do so just agree. For a crooked creeke it is of salt water, and *Moricambe* in the British tongue signifieth a crooked sea. Hard by this, David the first King of Scots built the *Abbey de Ulmo*, commonly called *Holme Cultrain*.[11]

This inlet, into which the rivers Waver and Wampool flow, is marked *Moricambe* on the next map of Roman Britain to appear, that of William Rogers produced to accompany the 1600 edition of *Britannia*. It also appears, marked as *Moricambe aestuar.* on Morden's map of *Britannia Romana*, which accompanied Gibson's revised and 'improved' 1695 edition of the *Britannia.*[12] That map in turn is probably the ultimate source of the same inlet being named *Moricambe* on Donald's map of Cumberland of 1774 – although it is possible that Donald was also reacting to the appearance of the name on West's map of the same year.[13] However, whilst Gibson seems to have accepted Camden's identification, Richard Gough in the next and greatly expanded edition of Camden announced instead that 'Ptolemy's Moricambe is Cartmel Bay', citing both West's *History of Furness* and also Horsley as his sources; while the fine map of Lancashire by Cary which accompanied the Gough edition clearly named the Kent and Leven Sands as the *Bay of Morecambe*.[14]

Although Ekwall stated this association 'seems to have been first made by Whitaker, History of Manchester, 1771', and this was echoed by Rivet and Smith, in fact, as Gough had noted, Horsley had beaten Whitaker to it in his *Britannia Romana* of 1732, reproducing a version of Ptolemy's Greek text with an English translation, and asserting that 'Moricambe estuary must be that in the northern part of Lancashire, into which the rivers from Kendal and Ambleside empty themselves'.[15] Moreover the map which accompanied Horsley's text, using Latin rather than Greek, showed the words *Moricambe aest.* in the vicinity of present-day Morecambe Bay, at the same time clearly locating Ptolemy's *Ituna aest.* at the Solway, and placing the next place south, *Setantiorum portus,* at the mouth of the Ribble.

For many antiquarians, these identifications were triumphantly endorsed when in 1756 a newly discovered copy of a Roman itinerary was published by William Stukeley.[16] This was said to be the work of a fourteenth century monk, Richard of Cirencester, and was accompanied by his copy of an original Roman map, which, like Ortelius' map of 1590, showed *Moricambe flu*, although here located between *Derventio flu* to the north (Derwent) and *Alauna flu* (Lune) to the south. Stukeley identified this as the river Decker in Lancashire, by which he probably meant the Keer, which rises on Docker Moor before flowing into Morecambe Bay at Carnforth. In a later work Stukeley published a slightly different version of Richard's map and text, showing *Moricamb flu* on the map, but instead naming *Moricambe aestuar* in the text, with the identification now changed to *Can River Mouth*, by which he presumably meant the Kent.[17] Unfortunately, all this was too good to be true. After years of growing doubts, both map and itinerary were unmasked as the forgeries of their 'discoverer', Charles Bertram, a brilliant young English scholar, at the time working in Denmark.[18] For at least half a century, though, Bertram's Richard of Cirencester had fooled much of

the antiquarian establishment including, for example, General Roy whose *Military Antiquities* of 1793 devotes considerable space to an analysis of Richard's work, quoting him as an authority over Ptolemy.[19]

It was perhaps no surprise then that the Manchester historian John Whitaker enthusiastically accepted Richard of Cirencester, and adopted the local identification of Morecambe in his idiosyncratic *History of Manchester* of 1771.[20] Whitaker was well read, and refers to Horsley amongst many other authorities. However, he placed especial reliance on Richard's itinerary, referring to the 'extraordinary illumination' it gave to the antiquarian, adding 'that the work is genuine needs no proof'.[21] Regarding the map, he was a little less fulsome, as he noted that 'it frequently contradicts its own itinerary', as a result of which 'it is but of little value'.[22] However, Richard's Seventh Itinerary, as interpreted by Whitaker, put what he called *Portus Sistuntiorum* at the mouth of the Ribble; and from this Whitaker concluded 'the immediate succeeding estuary of Moricambe in Ptolemy, which means the Great Bend or Haven, was the large opening of land of Lancashire ... into which the rivers Ken and Lune discharge their waters, as this is the only Great Bend before we come to the estuary of Ituna which is ... confessedly and clearly the mouth of the Eden'.[23]

Just a few years later, the Jesuit antiquarian Fr. Thomas West, in his *Antiquities of Furness*, referred to Whitaker having 'cut the Gordian knot' of the identification of Ptolemy's places, accepting that 'thus have we ascertained the bay of Morecambe', whilst adding in a footnote that the name is 'perhaps from two British words, *Moreb*, a haven and *Cain*, White or Beautiful; and so called from the white rocks on the Cartmel Coast'.[24] It is interesting to note that, the eighteenth century antiquarian world being a small one, two of the subscribers to West's volume were Whitaker and Gough. Gough then went on in his 1789 edition of Camden to endorse West's identification, while by 1799, Thomas Reynolds could write that the 'vast bay' which lies north of Lancaster 'has been generally considered as the Moricambe of Ptolemy. There seems no reason to dispute the truth of this opinion'.[25] The accompanying map of Roman Britain in Reynolds' volume marks *Moricambe Aest* in the appropriate location. Similarly, a map of Roman Britain in Wilkinson's *Atlas Classica*, dated 1800, shows *Moricambe Aest*. in the same place.[26] In 1823 Thomas Dunham Whitaker echoed Reynolds, stating 'I think there can be no reasonable doubt that the bay of Morecambe is the great estuary formed by the Kent and the Leven'.[27] However, elsewhere in his work he also felt able to refer to 'the bay of Morecambe' in a post-Roman context, without further explaining the term, in effect acknowledging that by then Morecambe was already in use in certain circles at least as the contemporary name of the bay.

This leap in the non-specialist use of the name had been made at least as early as *c*.1806, although the author of the *Topographical and Statistical Description* must have been let down by his handwriting, as it appears there as 'the Great Bay of Mencombe'.[28] Its acceptance as a modern place-name seems largely to have come about as a result of the success of Yates' map of 1786, the first map of Lancashire on the scale of one mile to the inch, which marks *Bay of Morecambe* – although Yates also names Lancaster Sands, Cartmel Wharf and Leven Sands.[29] Whether or not Yates had seen the map in West's *Antiquities*, or was directly influenced by Horsley, or John Whitaker, or indeed

Greek (transliterated)	Translated	Longitude	Latitude
Itouna eischusis	Itouna tidal flats	18° 30'	58° 45'
Morikambe eischusis	Morikambe tidal flats	17° 30'	58° 20'
Setantion limen	Harbour of the Setantii	17° 20'	57° 45'
Belisama eischusis	Belisama tidal flats	17° 30'	57° 20'
Seteia eischusis	Seteia tidal flats	17°	57°
Ganganon acron	Promontory of the Gangani	15°	56°
Toisobios potamou ekbolai	Mouth of the river Toisobios	15° 40'	56° 20'
Stoukkia potamou ekbolai	Mouth of the river Stoukkia	15° 20'	55° 30'
Touerobios potamou ekbolai	Mouth of the river Touerobis	15°	55°

FIG. 2: Extract from Ptolemy's *Geography*, II, 3, 2: The West Coast of Britain
After Rivet and Smith, p.134, Nobbe, p.68 and Stephenson, p.49. Note that Nobbe lists Toisobios before Ganganon, rather than after, as indeed had Horsley in 1732 (p.357). Nobbe also gives Segantion and Segeia as alternative readings for Setantion and Seteia. Stephenson, using a Latin version, gives Caeangorum instead of Ganganorum (Ganganon).

Richard of Cirencester, cannot now be determined. What is clear, though, is that from the date of Yates' map, it increasingly became the norm to make Morecambe a contemporary toponym. To a great extent this was because Cary, the map-publisher, incorporated Yates' work into his own maps, and so the name began appearing not just on Lancashire maps, but on maps of England as a whole, beginning with Cary's *English Atlas* of 1787, and then on many of his subsequent publications over the next 40 years.[30] Stockdale's 1794 map of Lancashire in Aitkin's *Manchester,* based on Cary, also names it *Bay of Morecambe*, as does Dix in 1816.[31] Greenwood's new survey of Lancashire in 1818, and Hennet's further survey of 1830 continued to give currency to what was clearly by now the established name of *Bay of Morecambe*.[32] It only remained for the Ordnance Survey to give its imprimatur on the First Series maps of 1847-52, using the version *Morecambe Bay*, which seems to have been growing in popularity from the 1830s, appearing on, for example, Scott's map of 1833, and then being adopted by the railway company.[33] Hedging its bets, though, the Ordnance Survey also marked the inlet between Waver and Wampool as *Moricambe*.

Before closing this section, reference should be made to a lithograph of a manuscript map made by the herald William Smith in 1598, published in Gregson's *Fragments* of 1817, which names this bay as *Morcalm Bay.*[34] This initially led the present author to suppose this might be the earliest 'modern' use of the name. Unfortunately, neither the original manuscript, nor the printed edition issued in 1603, nor its subsequent editions, have these words on them: instead, only the words *Ken Sand* and *Leven Sand* appear.[35] They would thus appear to have been an antiquarian insert on the part of Gregson himself, against the background of the general acceptance of this attribution by his date – which rather raises the question of how many other of his original sources did Gregson embellish?

II

Returning to Ptolemy's *Morikambe*, scholars from the late eighteenth century, through W. Thompson Watkin in the late nineteenth century, to Jones and Mattingly in the

late twentieth have continued to accept Horsley's attribution, generally without any real discussion of their reasons or the alternatives.[36] However dissenting voices have been heard, such as Strang who preferred 'Waver Bay', while David Shotter at one time also supported the northern location, though more recently has drawn attention to growing evidence regarding the importance of the southern contender, in the later occupation period at least, 'suggesting that there may have been a long history of naval activity (military and/or commercial)'.[37] Ultimately, of course, there can be no definitive answer. David Breeze has reminded us how very little is certain when it comes to identifications of places named by Ptolemy, with for example only four of the nine *poleis* within the territory of the Brigantes being 'definitely assigned to specific locations'.[38] Of the rivers and coastal places of the north west, from the Solway to Cardigan Bay, only the identities of two, *Itouna* (Eden) and *Stoukkia* (Ystwyth) can be said to be fixed (see Fig. 3).[39] Everything else is uncertain to a greater or lesser degree. Before attempting to reduce that uncertainty with regard to *Morikambe*, perhaps it is worth saying a little about Ptolemy and his *Geography*. The story of how the Greek text was transmitted from antiquity to late-medieval Europe, followed by the first printed edition by Erasmus in 1533, has been well told.[40] What is perhaps not always made clear is that no 'Ptolemaic map' as such has come down to us from antiquity. All we have are maps derived from Ptolemy's tables of latitudes and longitudes, of which the earliest known were made around 1300.[41] Ptolemy himself was an academic astronomer and geographer, and like Mercator or Ortelius fourteen hundred years later, was a collator not an original surveyor. His aim was an encyclopaedic, mathematically based, understanding of the whole of the earth, and he distinguished between geography, which was his subject, and chorography, the study of regions and individual countries – which was not.[42] It is most unlikely that Ptolemy had available to him actual readings of latitude for more than a tiny number of his 8,000 locations, and even fewer for longitude, which were calculated from a meridian located at the furthest western place then known, the Fortunate Islands.[43] The likelihood is that Ptolemy worked initially from a single roughly sketched-out world map, or a series of regional maps, upon which he superimposed grids of latitude and longitude, and onto which he then entered such information as he acquired from his various sources, possibly over many years. Sometimes it is clear he made wrong guesses, such as that which led to 'the turning of Scotland'.[44]

Having completed his map(s), he would appear to have copied out tables of derived grid references, which were then published with instructions allowing others to reproduce the maps for themselves. 'There is no more reason to imagine that Ptolemy published his *Geography* in a form that incorporated the maps than there is to think that he provided a star globe along with the *Almagest*'.[45] One problem with his grid references, though, is that they are based on a smaller globe than the one which we actually inhabit, such that a degree of latitude is actually 111km, compared with Ptolemy's 92.5km, while a degree of longitude at 54° N is 65.5km compared with Ptolemy's 51km.[46] In addition, the numbers (degrees and fractions of degrees) were written down using a system of Greek letters, which would have been prone to copying errors over the years; all the known Latin editions are themselves medieval or later translations from the Greek, giving rise to the opportunity for still more errors. The combined effect of all this is that no grid reference in Ptolemy can be taken as certain.

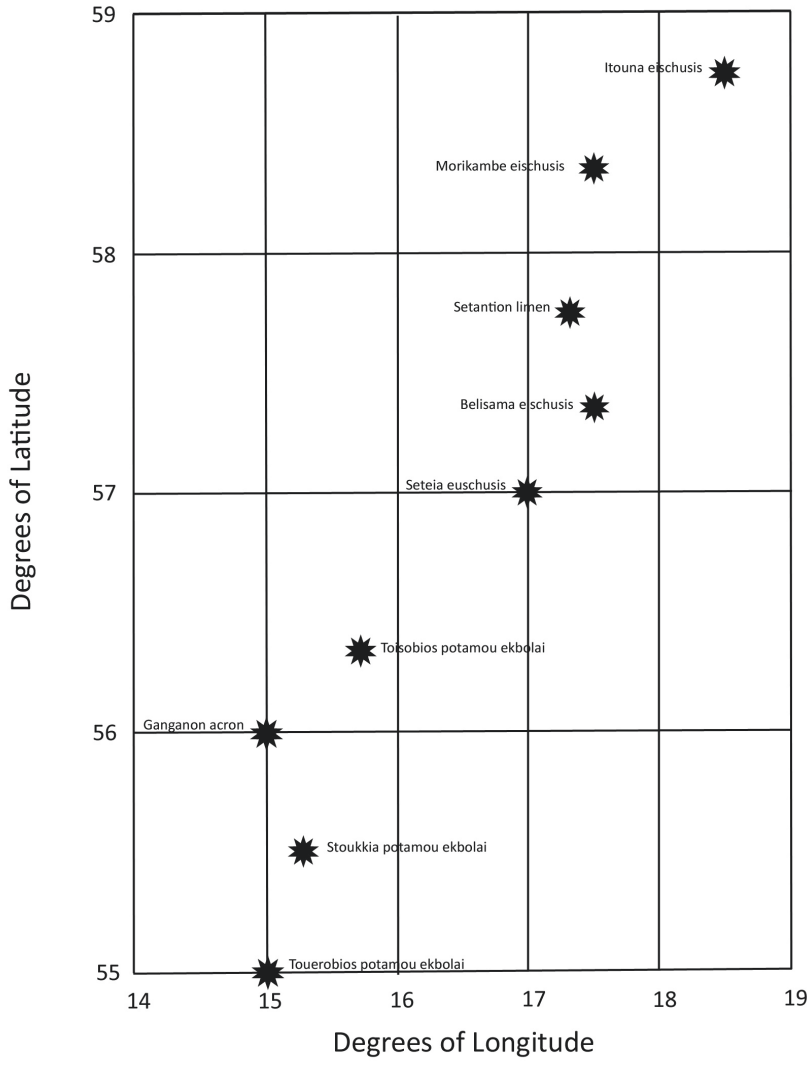

FIG. 3. Ptolemy's grid references for the west coast of Britain between latitudes 59° and 55°. (*Geography*, II, 3, 2)

For small map sections such as this, Ptolemy said it made no difference whether parallel lines or curved were used (Geog, II, Prologue). For the centre of Britain, he used a ratio of longitude (meridian) to latitude (parallel) of 11:20 (Geog, VIII, 3, 1) (Nobbe, p.196, Rivet and Smith, p.146). This ratio is used above, although the actual figure is nearer 11:19. Note that Rylands made a similar map (Rylands, *Ptolemy's Geography of the Coast* (1877-8), facing p.89).

There is no evidence in Ptolemy as to how the coastline should be drawn between these points. This is particularly important for locating Toisobios, as Ptolemy's coast is these days generally interpreted as leading back north east from Ganganon, (assumed to be the Lleyn Peninsula), then south to Stoukkia. Horsley, though, placed Toisobios on the north Welsh coast.

Regarding the nature of his source material, despite what has been written for example by Ferrar and Richardson or Strang, it should be understood that the classical world was not 'cartographically conscious' at the regional or strategic level.[47] Certainly, the Romans had *agrimensores*, but they did what the job description implied, they measured fields, not countries.[48] As Bertrand showed in his 1997 article 'Stumbling through Gaul', which deserves to be better known, Roman generals were perfectly capable of planning campaigns and fighting battles without maps – but Bertrand emphasised that in any case Roman 'mental maps' were different from ours, focusing on routes, not areas.[49] While the maplessness of the Roman world has perhaps been overstated, it is nevertheless probably true to say that the traveller, whether military or civilian, would not have had access to maps, but would not really have missed them, using instead the itinerary for land travel, and the *periplus* by sea, both of which were linear in their perspective, like modern satnavs.[50] Much if not all of Ptolemy's source material, or that of his predecessor Marinus of Tyre, will thus have been gathered not on maps but in a list format like that seen in the *Periplus of Scylax*, of the 4th century BC. This was concerned primarily with havens and seamarks, and the distance between them, with no directions being given, the assumption being that the vessel followed the coast.

> From Apis to the Tyndarian rocks is a day's sail. And from the Tyndarian rocks to the harbour of Plynus is a day's sail. From Plynus to Great Petras, a half-day's sail. From Petras to Menelaus a day's sail. From Menelaus to Cyrthanium a day's sail. From Cyrthanium the harbour of Antpygus is a half-day's sail ...[51]

So was there one or more *Periplus of the British Sea* which Ptolemy might have used for our coastal places? As Rivet and Smith have pointed out, unlike the names of the interior which are virtually all names of *poleis,* there are only four non-topographical features around the whole of the British coast – and these are names which themselves 'strongly suggest an official survey'.[52] Two are on the south coast: *Megas limen*, the Great Harbour, the sheltered area of the Solent and Southampton Water which may have had strategic significance early in the occupation – and *Kainos limen*, the New Harbour, probably Dover, later as *Portus Dubris* the headquarters of the British Fleet.[53] To the east is *Gabrantovicon eulimenos koltos,* the Gabrantovican Gulf, described not as a harbour but as being *suitable* as a harbour: while on the west, and presumably unlike the former actually in use as a harbour, is the enigmatic *Setantion limen*, the Setantian Harbour, of which more later. Although it has been widely assumed that Ptolemy's source for northern Britain was Agricola's army (and/or navy), it is conceivable that the source for these four harbours, and the places in between, dates from an earlier phase of Roman interest in Britain, prior to the Boudiccan revolt.[54] However, a later source is certainly required for points further north, the opportunity being provided by the circumnavigation of Britain carried out by Agricola's fleet after the battle of *Mons Graupius*, *c.*AD 83.[55]

Agricola's fifth campaigning year had been spent in south-west Scotland, after which the next two years were spent on the east, beyond the Forth.[56] The story told by Tacitus, and as interpreted by Hind in particular, is that the fleet proceeded on the seventh campaign up the east coast in 'combined operations' with the legions, then continued anti-clockwise around the north of the island, back to a previous base, passing en route the furthest north place they had reached up the west coast in the fifth campaigning year, a place they called *Trucculensis portus*, not named in Ptolemy,

from whence they returned home.[57] This harbour may well have been somewhere on or near the south shore of the Solway.[58] Whether Agricola's fleet made a *periplus* of this voyage is of course, unknown: but the list of gulfs, promontories, river mouths and estuaries around the British coast reads exactly like the sea-marks that distinguish *periploi*, with only the distances, in terms of days' sail, missing.

III

Turning now to the question of locating Ptolemy's *Morikambe*, essentially there are three methods that can be used – the toponymic (based upon Ptolemy's place-names), the geodetic (based upon his grid references) and the contextual (based on non-Ptolemaic local historical/archaeological/topographical evidence). The best identification will be the one which best satisfies all three. Beginning with the toponymic, modern scholars such as Rivet and Smith have broadly accepted Camden's etymology, interpreting the name *Morikambe* as comprising the British *mori*, 'sea', and *cambo*, 'curved', thus 'curved sea' or 'curve of the sea', although Mills preferred Old Welsh *mawr* 'great' and Celtic *camas*, 'bay'.[59] The former interpretation in particular is too general to distinguish between the contenders: however, to the place-name Ptolemy added the Greek topographic element εἴσχυσις , *eischusis*. This is not a common Greek word, Liddell and Scott's *Greek-English Lexicon* giving an example only from Ptolemy, suggesting perhaps that Ptolemy may have coined the word himself, or at least was instrumental in its wider transmission.[60] The word seems to be formed from *eis*, meaning 'towards, into, coming in': and *chusis*, meaning 'a pouring forth, a flood, a stream'. Together, they mean 'a flooding in', which is perhaps an attempt to describe a feature unknown in the Mediterranean world, an extensive area of tidal flats, where twice a day the land becomes sea, and *vice versa*. The extreme rarity of this feature elsewhere in Ptolemy's work does not appear to have been noted before: but a review of all 8,000 or so places listed in the *Geography* shows the word used just 15 times – 14 of them in Britain.[61] Elsewhere in the world, river mouths (*potamou ekbolai*), bays and harbours abound – but not estuaries. This can only mean that Ptolemy's British sources were particularly aware of or concerned about this feature in a way that others, elsewhere in the world, were not.

One of the first things Tacitus in the *Agricola* says of Britain is:

> Nowhere does the sea hold wider sway: it carries to and fro in its motion a mass of tidal currents, and in its ebb and flow it does not stop at the coast, but pushes deep inland ...[62]

Pliny said that Pytheas reported tides in Britain rising 80 cubits (say 120ft), which by any definition of a cubit is too great by a factor of up to three, the highest tides in Britain, in the Severn estuary, being at maximum 15 metres (49ft).[63] There must therefore have been more than a little misinformation abounding in the classical world about the estuaries and tides of Britain; but the importance of both to the Roman military is clear from the well-known story of how Caesar lost his invasion fleet and had to call off the first invasion of Britain.[64] The importance of over-sands routes were then revealed during the Claudian invasion, when the Britons crossed the Thames estuary 'with ease since they knew precisely where the ground was firm and the way passable' – while the Romans got into difficulties: however, they were quick learners and not

many years later caught the Ordovices by surprise when Agricola's army crossed over the Menai Strait to invade Anglesey, using flat-bottomed boats for the infantry while the cavalry forded and swam across.[65] Regarding Agricola's subsequent campaigns, section 20 of the *Agricola* mentions Agricola's legions reconnoitring estuaries and forests (*aestuaria ac silvas*): in section 22, the Tay estuary is named as the furthest point north reached in the third campaigning year: while in section 33, Agricola, addressing his troops before *Mons Graupius*, recalls the long road they had travelled, the forests they had threaded their way through, and the estuaries they had crossed (*evasisse silvas, transisse aestuaria*). In the *Germania*, by contrast, the word does not appear at all. Thus for Agricola, or his biographer, it would appear that, to some extent at least, estuaries defined the British campaigns.

What, then, did Tacitus understand by *aestuarium*? The word derives from *aestuare*, meaning (of water) 'to heave and toss, surge, boil', while *aestus* means 'seething, surging, boiling', but refers, in particular, to the ebb and flow of the tides.[66] Ptolemy's 'a flooding in' may in fact be a new coining by him to translate this Latin word. It is interesting to note that the Lowland Scots name for the Solway was *the flude of Esk*.[67] However, the English word 'estuary' makes its first appearance in Leland's *Itinerary* (1538), which suggests it was a direct borrowing by him from these classical authors.[68] Unfortunately it has subsequently come to mean in modern English merely the mouth of a large river, which is not at all what is conveyed by either the Greek or the Latin words, where the 'flooding in' of the tide is the defining factor, a feature which can apply equally to off-shore sandbanks, a bay fed by a number of rivers, a firth or a strait such as Menai, as well as to a riverine estuary; and which is perhaps best translated as 'tidal flats' or 'sands'. Indeed the lack of fit between the word Ptolemy used in association with *Morikambe* and our current understanding of 'estuary' seems to have allowed Ortelius to hypothesise a *Morecambe flu*, but also more recently led Rivet and Smith to conjecture 'it may be that he [Ptolemy] has misunderstood a *sinus* or gulf as an *aestuarium* or estuary', suggesting both here and for *Metaris eischusis* (The Wash), that 'the reference can hardly be to the estuary of a single river'.[69]

In the conquest of the north, Agricola, like Cerialis before him (AD 71-4), used 'combined operations'.[70] As the maps in David Mason's account of the Roman navy in Britain vividly show, this involved the navy keeping in close touch with the advance of the legions.[71] Knowing the key over-sands routes where the army could cross major rivers without the need for bridges, and knowing where the navy could beach safely, would have taken on considerable strategic significance; and Ptolemy's 14 *eischuseis*, or at least the ten which lie in the northern half of the country, should probably be seen in that light. It is certainly noteworthy that no estuaries at all are named along the south coast, while four of the six on the east coast lie north of the Gabrantovican Gulf, and likewise six of the eight on the west are north of the *Seteia*. This latter has been generally assumed to be the estuary of either the Dee or the Mersey, but to explain the puzzle of why only one estuary is named by Ptolemy rather than two it is not necessary to go to the lengths of the various old authors who assumed that in Roman times the Mersey must have flowed into the Dee south of Wirral.[72] Instead, an idea put forward by Robert Gladstone in a fairly obscure publication in 1923 is worthy of serious consideration, namely that Ptolemy gave only one name to cover

both Dee and Mersey because 'Ptolemy's work was essentially of a practical character, and the only good anchorage in those parts for sea-going ships was in Hoyle Lake'.[73] Indeed, going further than this, the present paper now proposes that *Seteia eischusis* actually refers to the tidal sandbanks in Liverpool Bay, particularly Burbo Bank and Hoyle Bank, both in the vicinity of the long-established beach market or 'emporium' of Meols at the top of the Wirral, associated with the safe haven of Hoyle Lake which could have been used for overwintering the Roman fleet.[74] Certainly it would appear that these banks continued as important features for sailors for at least another 1,000 years, as a fifteenth century 'rutter', the early-modern equivalent of a *periplus*, advised ships coasting from Anglesey to Chester to 'take yowre slawhte on the mainlonde on Walis [Wales], Rotlande [Rhuddlan] and the Red Banke in Chester Water'.[75]

Whether the sands up the western coast north from *Seteia* were first noted by the military as a result of the circumnavigation by Agricola's fleet, or whether they were already well known at least as far north as *Itouna* from the earlier campaigns of Cerialis, either way the likelihood remains that the information for this stretch comes from a naval source. As to whether that helps us with the identification of *Morikambe,* perhaps one way to answer that is to look at what was possibly the next major survey of this coast by a naval man, Capt Greenvile Collins' marine chart of *St Georges Channell*, of 1693. His chart notes compass bearings and depth soundings all around the coast from Cornwall to Carlisle: but what is most striking is the almost continuous run of sandbanks or tidal flats he depicts extending from *Hyle Sand* off the Dee via *Preston Sand* to *Ken Sand*, features which appear nowhere else on his charts to anything like the same extent.[76] It is perhaps not too fanciful to see in those three sands what Ptolemy's source(s) meant by the three north-western *eischuseis* of *Seteia, Belisama* and *Morikambe.*

IV

Turning now to the geodetic evidence, it is wholly unreasonable to expect scientific accuracy from grid references derived nearly 2,000 years ago from a range of different, and perhaps incompatible, sources. Attempts to reinterpret this data into a form which can be simply overlaid onto a modern Ordnance Survey map are doomed to failure.[77] The possibility has to be faced that lists copied and recopied by hand many times may be very corrupt indeed. Unfamiliar names and numbers are particularly prone to corruption: yet in the case of Ptolemy's grid references, the numbers may to some extent have been self-correcting, as certain types of errors would have immediately stood out due to the logic of the lists, whereby for example the coastal places of Britain are listed from north to south (see Fig. 2), while the places of the interior are listed under tribal areas, within which they generally run from left to right and from top to bottom. There is, however, another problem, in that while a *polis* can be readily understood as a point on a map, it is far less clear as to what, and where exactly, Ptolemy meant when he wrote down his grid reference for, for instance, *Itouna*. We therefore have to accept that any attempt to locate any place based solely upon its Ptolemaic grid reference is equally doomed to failure. However, as apart from the names themselves this is all Ptolemy has left us, some effort has to be made to see what can be extracted from these intransigent data (Fig. 3).

One method is not to attempt to identify places from the grid references themselves, but to use the relationships between those points, focussing on distance rather than direction, similar to the method used by Rivert and Smith, although for coastal locations rather than their *poleis*.[78] The 64 points around the island for which we have grid references were therefore listed, and the difference of latitude and longitude between each place and the next anti-clockwise was calculated, taking Ptolemy's length of a degree of latitude as 500 stades, while a degree of longitude was eleven-twentieths of that figure (see *Geog*, 8:3:1). These figures were then squared and summed, the square root of that sum being the 'crow-flies' distance. This averaged 368 stades, or say 46 Roman miles in a straight line between any one point and the next – which is not very different from the stations in the *Periplus of Scylax*, which work out at about 400-500 stades for a day's sail in the Mediterranean.[79] The variation around Ptolemy's average was quite large (standard deviation 158 stades), but not so large as to take us beyond the realm of a day's sail (or row), except in the single case of the distance of 743 stades along the North Wales coast from *Seteia* to the Gangani promontory (Lleyn peninsula). This variance of more than two standard deviations from the mean, assuming there is not a particular error in Ptolemy's data, suggests that there is something different going on at this specific location.[80]

Turning to the four stations north of *Seteia*, and using the 'crow-flies' distances, together with a conversion factor of 185 metres to the stadion, the distance from *Setaeia* to *Belisama* is 216 stades (40km). Taking Hoyle Bank as a starting point, this would take one to the Ribble off Warton, which is reasonable. From there to the Setantian Harbour is 213 stades (39km), thence to *Morikambe* is 295 stades (55km), and on to *Itouna* is 345 stades (64km). This means Ptolemy's reported distance from *Belisama* to the Harbour is twice the actual distance from the Ribble to the mouth of the Wyre, often claimed as the site of the Harbour. Similarly 55 kilometres from the Harbour to *Morikambe* does not make sense if the Wyre and Morecambe Bay are meant – but equally makes no sense for the northern contender either, nor indeed for any other point between them. It follows that there has to have been an error in the transmission of the grid reference for the Harbour. It is here suggested that this came about because Ptolemy was trying to reconcile two different but overlapping data sets, and made some wrong assumptions. This will be considered further below, but for now it is best to ignore altogether the reference to the Harbour, and use instead the distance from *Belisama* to *Morikambe,* 500 stades (92km), and thence to *Itouna,* 345 stades (64km). The straight-line distance from *Belisama* to *Itouna,* at 140kms, is pretty well spot on if measured from the Ribble to the upper reaches of the Solway. However, 92km from the Ribble takes you some 30km past Morecambe Bay, and well up the Cumbrian coast: although it should be pointed out, even if it looks like special pleading, that all it takes to correct it is to assume that at some stage a copying error placed *Moricamb*e at the correct longitude, but one-third of a Ptolemaic degree of latitude too far north. On the other hand, as the northern Moricambe lies only 16 or so kilometres from the furthest point which could possibly have been meant by *Itouna,* while it is more than 130km from the mouth of the Ribble, there is no way the northern contender can be reconciled with Ptolemy's data at all. Thus the evidence, such as it is, tends to favour the southern contender.

Before moving to the next stage, we must return briefly to the question of the Setantian Harbour. Other than this single mention in Ptolemy, there is no evidence anywhere in classical writing or inscriptions for the existence of a people called the *Setantii*. Nevertheless antiquarians and others ever since Camden have debated the people and their tribal affiliations, their location, and that of their harbour, without reaching any agreed conclusion. However, as one of only three working harbours named in the survey, and the only one on the west coast, it must have been of some strategic significance to the Romans. It is here suggested, very tentatively indeed, that the confusion over its location lies with Ptolemy's sources. Faced with two sets of data, one new, listing points along the north-west coast south from the Eden to the Dee, and the other older, listing points around the south-west and Wales north and east as far as the Dee, Ptolemy did not spot that there was overlap, particularly as the southern set often had significant gaps between points. The northern set ended at *Seteia eischusis* (Hoyle Bank), while the southern set ended at the *Setantion limen* (Hoyle Lake): but both actually referred to the same place, the most important late-prehistoric and Roman maritime site on the whole west coast, namely Meols.[81] And if, as has been suggested, the place-name in both cases relates to the 'wayfarer' goddess *Sentona*, then she would seem to be a good choice of protectress for what was in effect a major international port.[82] Certainly this would appear to be a far better explanation of the name than the recent suggestion that the name as we have it comes from a copying error, and that the initial letter should be M not S, resulting in a tribal name *Metantii* meaning 'the reapers'.[83]

V

The third and final avenue to explore is the non-Ptolemaic archaeological/ historical/ topographical evidence regarding each of the two bays. First, although the description a 'curve of the sea' could apply equally to both, it has to be said that the southern one is the more dramatic feature. In addition, the topographic element *aestuarium* or *eischusis* appears to apply far more directly to the southern bay. However, the question should be asked as to what each was like in Roman times. Taking the southern one first, there is no reason to suggest it was dramatically different from now, although sea levels 1,800 years ago were possibly 1.2m higher, making the sands if anything even more extensive.[84] As to the northern one, Clare stated that the evidence is mixed regarding Roman sea levels, concluding that 'the coast north of Maryport has seen little change during the last two thousand years'.[85] Nevertheless, it is possible that the bay was only created in its present form by an incursion of the sea *c.*1301 which destroyed the port of Skinburgh, and led to the foundation of nearby Newton Arlosh.[86] Bellhouse, however, argued against those who had claimed that the inlet had been dry ground in Roman times.[87] Yet although Bellhouse has been cited in support of the northern location, in fact neither in his 1962 article nor in his 1989 book does Bellhouse mention Ptolemy at all, other than to say the name Moricambe is 'an antiquarian revival, like Morecambe Bay'.[88] Whether the 'missing' milefortlets, to which the numbers MF 6 to 9 were given, ever existed round the edge of this inlet is impossible to say, but now seems unlikely. Regarding the date of Roman activity in the area, there is no certainty that the fort at Kirkbride, overlooking the Wampool, is Cerialian: it may well actually date to a generation or so later, while the milefortlets themselves are clearly

Hadrianic in date.[89] However, regarding dating evidence for the southern contender, finds of pre-Flavian *aes* coins around the northern parts of Morecambe Bay (Barrow, Cartmel, Great Urswick), not to mention a Neronian gold coin from near Ulverston, may suggest Cerialian activity in this area, though of course such coins frequently appear in later hoards too, and so are not absolute dating evidence.[90] A Cerialian date for the foundation of Roman Lancaster is certain, though, to which can be added the possibility, to put it no stronger, that Cerialis' army would have used the cross-sands routes from Lancaster into Cumbria: whilst, although not recognised by Margary, the existence of a Roman road across the Furness and Cartmel peninsulas, as suggested by West in 1775, cannot be discounted.[91] Moreover, as Shotter has recently pointed out, the evidence is growing for commercial activity in the Roman period, particularly in the Silverdale/Arnside area.[92]

By contrast, the immediate vicinity of the northern Moricambe may not have been a very welcoming spot in the Roman period, one to be avoided rather than crossed. Certainly, in the middle ages Holme Cultram abbey stood like an island in a wetland landscape of mosses and marshes, its foundation charter referring to *totam insulam de Holmcoltram.*[93] All in all, although none of this contextual evidence can be thought of as anything other than at best indicative, taken with the geodetic and toponymic arguments, the overall balance of probabilities confirms Horsley' identification rather than Camden's. The southern bay, which began to be called Morecambe from the late eighteenth century, seems more likely than not to have been that *eischusis* which Ptolemy's source called *Morikambe*.

bill_shannon@msn.com

Aknowledgements

I dedicate this work to Ben Edwards, with whom I had discussed some of these ideas just prior to his untimely death in February 2011. I wish to thank Professor David Shotter for his advice and encouragement, and for his comments on an earlier draft.

Notes and references

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12. William Rogers, 231 (plate 85) in Shirley, *Printed Maps 1477-1650:* Morden 11, in Rodney W Shirley, *Printed Maps of the British Isles 1650-1750* (British Library, 1988)
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15. Eilert Ekwall, *The Place-Names of Lancashire* (Manchester University Press, 1922), 176: John Horsley, *Britannia Romana or the Roman Antiquities of Britain* (London, 1732), 357, 372
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79. Nordenskiold, *Periplus*, 9
80. The texts used by Rivet and Smith, Stephenson, Jones and Mattingly, the Ordnance Survey Map of Roman Britain, and most early maps from the Bologna edition of 1477 to Waldsemuller of 1513 show *Toisobios* on the west coast of Wales, not the north coast. However, Horsley and Nobbe, probably Camden, and some other early maps used texts which placed it between *Seteia* and *Ganganon*. The *Monumenta Historica Britanncia* (1848) favoured the former, but gave the latter as a variant. Rylands drew attention to the problem but concluded the west coast interpretation was to be preferred. See T. Glazebrook Rylands, 'Ptolemy's Geography of the Coast from Carnarvon to Cumberland', *Transactions of the Historic Society of Lancashire & Cheshire*, **30**, (1877-8), 80-92
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82. Rivet and Smith, 456. This goddess-name may also be found in *Trisantona*=Trent, Rivet & Smith, 476-478
83. Andrew Breeze, 'Three Celtic Toponyms: Setantii, Blencathra and Pen-y-Ghent', *Northern History*, XLIII, 1, (March 2006), 161-165
84. M. J. Tooley, *Sea-Level changes in North-west England during the Flandrian Stage* (Oxford: Clarendon, 1978), 198
85. Tom Clare, 'Coastal change and the western end of Hadrian's Wall', in *Romans on the Solway: essays in honour of Richard Bellhouse*, CWAAS Extra Series, xxxi (2004), 39-51
86. English Heritage National Monuments Record 9637 (Skinburgh) is a possible medieval port visible as earthworks on air photographs. The accompanying text states that there was a small port there used for victualling the English Fleet, but by 1305 the site had been washed away and the approach road destroyed. The application to build a chapel at Newton Arlosh by the monks of Holm Cultram, dated 1304, can be seen in William Dugdale, *Monasticon Anglicanum*, (London, 1846), vol v, 595
87. R. L. Bellhouse, 'Moricambe in Roman times and Roman sites on the Cumberland coast' *CW2,* lxii, 56-72

88. Shotter, *Romans and Britons in North-West England*, 88: R. L. Bellhouse, *Roman Sites on the Cumberland Coast* (Kendal, CWAAS, 1989), 33
89. David J. Breeze, *Handbook to the Roman Wall, J Collingwood Bruce, 14th edn.*, (Newcastle: Society of Antiquaries of Newcastle upon Tyne, 2006), 50
90. Shotter, *Roman Coins*, 75, 114
91. Shotter, *Romans and Britons*, 30: Ivan D Margary, *Roman Roads in Britain II* (London: Phoenix House, 1957); West's *Antiquities*, viii-x. See also Watkin, *Roman Lancashire*, 216
92. Shotter, 'A Roman Coin Hoard from Morecambe Bay', (2011), 233. For the medieval and later period, see Leonard Smith, *Kendal's Port: A Maritime History of the Creek of Milnthorpe* (Arnside: Lensden Publishing, 2009)
93. William Dugdale, *Monasticon Anglicanum*, (London, 1846), vol v, 595