

Maritime Information relating to the Ayrshire Coast, and Pre-dating the Publication of Local Admiralty Charts.

Note. This was a talk, lasting approx. 50 minutes, given to the Largs Probus on Tuesday 6th November, 2001.

At the time, the talk was prepared as a hand written document, and is filed with my Shearwater papers. The following account is in note form, and will be filed on my hard disc under "HistShear", and a printed copy will also be held in the Shearwater papers.

I used no slides or overheads for this presentation, but did have a display of relevant charts etc. from my collection.

W. Laing November 2001. First used at Large Probus Club Meeting 13/11/01

INTRODUCTION.

Precise Admiralty Charts for this area only came in the 1830-1845, under the auspices of Admiral Beaufort, Hydrographer to the Navy ; he is really only known today for his scale of windspeeds, still used in maritime weather forecasts.

Comparison of the early and current Adm. Charts of this area shows the following

- a) the early version is in black and white; the latest in colour,
- b) new features like the Marina and the Hunterston and NATO piers are not on the 1840 chart; BUT
- c) THE IMPORTANT SAFETY FEATURES like depths, rocks, tidal info., bearings of leading lines, bottom features, etc. are on both the early and current charts, showing how meticulous the early surveyors were, despite their lack of modern sophisticated electronic equipment [details of hand soundings].

The central focus of this talk is about the different types of maritime info. that were available to the mariner in the days up to the beginning of the 19th. Cent. that would aid safe or safer navigation.

This has to be seen against the understandable reluctance of local pilots, who must have existed from the days that sailors ventured into, for them, non local waters ; there was no point in involving a scribe (the pilots would have been most likely illiterate) to record relevant info. on local maritime features, or even prepare a rough sketch chart, because such things could be copied and sold; and the poor pilot would lose his pilotage fee.

This attitude was prevalent at the time ; the trade guilds jealously guarded their trade secrets, chose their apprentices from connected families, governed their trade, and so local politics, to their own advantage, and you might ask "What has changed through the centuries !!!".

So what were the items of information that were available from early times, and were an aid to navigation, and so a contribution to the reduction of the appalling loss of life at sea.

These can be grouped as follows;

- a) tidal information
- b) land maps
- c) descriptions of harbours

d) government involvement in procuring/ providing navigational data [often driven by national matters such as the threat of invasion, or, in the case of Scotland, rebellion].

e) Private production of sea charts, either by commissions from sea going organisations or by using data accumulated, but not worked up, during government service.

There as one other major source of information that could have been used to alleviate the problems of the pre-19th. century mariner. From very early days, naval commanders had to keep logbooks, and in the mid 1700's, they were also commanded to record and submit to the Admiralty navigational details arising from their voyages. This info, was stored in many rooms in the Admiralty, but it was not indexed or worked up in any systematic way. When, in the late 1700's the office of Hydrographer of the Navy was created, some attempt was made to sort out the mess, but little use was made of the existing information until Beaufort started the detailed U.K. survey. Just prior to that, official charts did appear of overseas coastal areas, so there was the ridiculous situation that more was known about the coasts of Africa, Australia, and North America than about the U.K. home waters.

TIDAL INFORMATION.

Tidal information was not incorporated in early European navigational procedures, because these limited procedures had been drawn up for Mediterranean waters, and in that area there are virtually no tidal effects that would influence the limited navigational techniques used in that enclosed sea.

Going through the Pillars of Hercules, Roman and Phoenician traders would have had a great surprise; they could have anchored in 3 to 4 metres of water, and found themselves aground six hours later. Following their usual practice, they would anchor at night, and only sail in the daylight, proceeding from cape to cape; this is the reason why the portalan charts of the time show shorelines that look like a series of adjacent bays. Remember, there would be no fixed lights on shore to give any guidance.

However, seasoned mariners would begin to recognise patterns in this "up and down" phenomenon; they would notice that

- a) the procedure was very regular,
- b) the time between high an low water [and the reverse] was about 6 hours, and
- c) there would be two high and two low tides per day, on average.

Further observations over a much longer period of time would reveal more about the tidal cycle; it would have been noted that

- a) the tides seemed to get a little bit later every day,
- b) the height of both high and low water varied between maximum and minimum values over a monthly cycle, and
- c) most importantly, for any given location, when the moon was full, and it was the time of a high tide, the moon was ALWAYS on the same true bearing.

We can translate this last statement into "local" terms, and say for Largs that when the moon is full, and it is the time of high tide, the moon is always on a south

westerly bearing. This south westerly bearing is known as the Establishment of the port of Largs.

All this could be worked out for the anchorage where the vessel was located, but the sailors would not know the times of the tidal sequence for the next "un-visited" port or anchorage they wished to call at; in these days there were no Nautical Almanacs, and so no little tables of daily high tides in the local newspaper IL

As more info, was recorded for a given extensive section of coast, say from Cape Trafalgar to Cape Finesterre, the mariners would realise that that a given high tide progressed from South to North, and that intelligent guesses could be made about the establishment and time of tides for ports to the north of a port where the establishment was well known.

As virtually all of the mariners of these days would have been illiterate, it was not possible to carry all of this detailed and systematic information in their heads ; however, the mariners were lucky because another profession was very interested in these repeating natural sequences, which seemed to be inextricably associated with the movement of the moon. This profession was the clergy, for whom the precise timing of Easter, which was a very important feast day in the church calendar, was essential, but had to be calculated for each individual year, because the dating was really a lunar phenomena, and so subject to minor variations.

The clergy were, by the 14th century, publishing lists of ecclesiastical events, which contained, in part, the timing of lunar events. A Breton printer, called Guillaume Bruscon, realised that these lists could, in fact be reduced to contain those elements of information that were required to generate tidal information. In effect, he created a tide table. He realised that such a printed table, based solely on letters and words, was not helpful to the illiterate mariners, so he devised a form of presentation that could be readily understood by these men.

The presentation consisted of two elements ; a) crude maps of sections of the west coast of Europe, showing the location of the main ports ; a curved line ran from each port to a small printed compass card, the line joining the card at a compass value equivalent to the establishment of the port, and b) a series of circular diagrams that displayed the day of the month, the phase of the moon, the time of spring and neap tides, and the times of low and high water. In other words, the mariner had all the tidal information he needed, in an easy to interpret way, to allow him to make safer journeys on his trade routes.

These printed tables became available early in the 16th century, and the idea rapidly spread through the maritime communities of north west Europe. Our local interest in these Brouscon tables arises from the fact that the most northerly reference to a port in his series of maps is to the Cumbræ, reflecting the extensive wine trade that took place between Gascony in south west France and the west coast of Scotland.

In the early days of trading under sail, a place like the Largs Channel, and especially the east side of the Big Cumbræ, was ideal for dodging a foul tide, and the Brouscon tables would tell the mariner the timing and strength of the tide of the day ; it would be for this reason that the Cumbræ are mentioned, as the end point of a wine trip would be the Tail of the Bank.

Less than ten examples of Brouscon tide tables are still in existence; there is an excellent example in the Pepys Library at Magdalen College, Cambridge. This

copy is signed by "F. Drak", suggesting it had been owned at one time by Francis Drake. This copy is No. 1 in the unique Pepys classification system, where the smallest book in the collection is No. 1, and the largest, which is an atlas is No. 3000.

So much for the first useful bit of printed practical navigational information for our local area !.

LAND MAPS.

There were land maps long before there were sea charts.; however, these maps were very imprecise, not all sectors of a "finished" map had actually been mapped, so these early maps were a bit "by guess and by God".

These poor land maps were O.K. for land travellers, in that something was always better than nothing, but if the land traveller was lost, he could sit down, sort out the situation, and so be "lost, but alive !". On the other hand, a sea traveller, if lost while using a dodgy map could be "lost, but probably dead !". As such, land maps, whether old or new, are not much use to the mariner, but there is a relationship between land maps and sea charts that is worth exploring, especially in our local area.

In many cases, and very often in the U.K., the coastal outline shown on a properly mapped land chart can be the starting point for a sea chart, but as we shall see later the situation in parts of the west coast of Scotland, including the Largs area was quite different.

Serious mapping and charting in the U.K. came about in an interesting way. After the 1745 rebellion, which was a very near run thing for the Establishment in London, the Duke of Cumberland called his Army and Navy commanders together to discuss the campaign, this very action being unusual and indicative of the concerns that were around at the time. To the annoyance of Cumberland, these military commanders had harsh comments to make, saying very clearly that they would not fight another campaign in Scotland unless there were quality charts and maps of the areas, especially in the north and west. It is no coincidence at all that, as a result of these comments, Colonel William Roy, of the newly founded Board of Ordnance, was ordered to prepare the first detailed land map of the mainland of Scotland, and that, almost at the same time, a civilian marine surveyor from Orkney, called Murdo MacKenzie was called by the Admiralty to complete the survey of the coasts of the U.K., by initially surveying the west coast of Scotland, and so linking up with earlier surveys that had done the coast of England and Wales, way back in the 1680's. These very early charts by Greenville Collins were not very accurate, having no consistent mathematical rigour; nevertheless, these charts were still in use up to the 19th. Century!!

The interesting story about the maritime charting of the Largs area comes in the early part of the 19th century. By this time, the Government had established an Ordnance Survey organisation to take charge of all land mapping, and the Admiralty had established the post of Hydrographer to the Navy to create what we now know as the series of Admiralty charts. Both these Government departments used rigorous mathematical and navigational techniques to ensure the fundamental accuracy of their work.

In most parts of the country, the first Government surveyors were the Board of Ordnance people, who did the land map, followed by the naval surveyors, who started at the "Ordnance" coastline, and worked out to sea. This did not happen in

the Clyde area, or in the west of Scotland in general, because, in the 1830/40 period, the London authorities were having great trouble in Ireland gathering land taxes, because the Irish landowners believed that the relevant land maps were very much out of date. The authorities decided to counter this minor revolt by transferring all the military surveyors to Ireland to revise the maps ; the net result of all of this in the local Largs area was that the naval surveyors were the first government surveyors to work in the area, and, as a result, the first government maps of Largs and Millport were done by the surveyors working from the Admiralty survey vessel, "Shearwater"; and there were accurate Admiralty charts of the area before there were accurate Ordnance Survey maps.

DESCRIPTIONS OF HARBOURS.

After the availability of tidal information, and some help from land maps, what was the next source of information of use to the mariner ?. A case can be made for the recording of information about harbours and safe anchoring areas ; after all, in the early days before harbours and marinas, safe natural harbours and anchorages were of vital importance to mariners. There was a considerable amount of information about harbours on both sides of the English Channel, partly because of the concentration of naval activity in that area, but also because these harbours were well fortified, and that required mathematical skills common both to surveying and the design of fortifications.

Such harbour and anchorage information was not readily available for our local area until the 18th. century, but there does exist an English document from the mid 16th .

that gives some details for the Ayrshire coast; why was such information, titled "The Military Report" gathered and reported ?

The Military Report is divided into three geographical areas, namely Carrick, Kyle, and Cunningham. For each of these areas, the original writer, who is believed to have been either "Warden clerk, or one of the other officers of the opposite march of England", gives details of places suitable for fortification, as well as information concerning the landowning families, their ability to raise local troops, and the value of certain church properties. It is in the sections dealing with fortification that the maritime information is located. The Report is believed to have been written between 1563 and 1566.

About the time of the writing of the Report, the English authorities, especially their advisors on the Western March, deemed it appropriate to investigate the feasibility of invading the Sherifdom of Ayr, an undertaking of far greater dimension than the "run of the mill" border skirmishes, which were endemic at the time. To contemplate such a deep incursion, with a non-existent road system, it was necessary to think in terms of supporting the adventure by sea-borne supplies. This type of procedure must have been practised by the English to support their operations on the Western March, which were centred on Carlisle. It would appear from references in the Military Report that there was a well established sea route from Beaumaris in Angelsey, via the Isle of Man to the Solway Firth to bring supplies to Carlisle, probably using one of the southern Solway havens as the final port of discharge. Initially, it would seem quite simple to extend this sea-route to the Ayrshire coast, but there was an obvious shortage of pilotage information on the Ayrshire ports, hence the maritime content of the Report.

Why invade Ayrshire? At the time, Scotland was in turmoil. Mary, Queen of Scots, was on the throne. She was a practising Catholic, and a former Queen of France, but she was not persecuting the reformed Church of Scotland. Some of her closest Scottish advisors were Protestants, but her marriage to Darnley in 1565 was conducted under Catholic rites. This marriage was not approved of by Elizabeth of England, and led to the break up of the "Amity" between Scotland and England in 1565. To some Catholics in England, Mary was considered to have a legitimate claim to the throne of England, and so Elizabeth saw her as a political threat. The establishment of Scotland was split into two parties, those for the Queen, and those for the State. The latter were Protestant in belief, and tended to be pro-English, while the former were Catholic, and seen to be connected to France. The Queen's party included many landed families, such as the Kennedys, the Cunninghams and the Montgomeries, with their power base in Ayrshire. Elizabeth had no wish to see England caught in a "two front" war with France should the Catholic families in Scotland become troublesome, so a pre-emptive strike into the heart of the Queens party in the west of Scotland seemed an admirable objective. If the lands could be wasted and held, control could be exercised on the estuary of the Clyde, including the Scottish naval port of Dumbarton, thus preventing any naval link up between the French and the Queen's supporters in the west of Scotland. This would seem to explain the naval, military and political thinking behind the intelligence content of the Military Report.

MARITIME DATA IN THE MILITARY REPORT.

An examination of the Military Report reveals maritime data that can be

grouped under the following headings;

Distances

Lochryan to Girvan	16 "myles"
Girvan to Turnberry	5 „
Dunure to Doonfoot	4
Doonfoot to Ayr	2
Ayr to Isle of Man	84
Ayr to Beaumaris	130
Ayr to Lamlash	14
Ayr to Irvine	8

It is not clear if these distances are direct "point to point" measurements, or if they take into account deviations of tracks, or, in the case of sea routes, moving from headland to headland. One other distance is given in the Report, but in this instance it is definitely a landward measurement; the Report states that "from Edinbrought thys towne (Ayr) ys thre score myles strait ground" Freely translated, this suggests that "Ayr to Edinburgh is 60 "myles" as the crow flies !"

Directions

No numerical compass bearings are given in the Report, but some very general directions are given, using only the main compass points;

Carrick is NORTH of Lochryan
Dunure is SOUTH of Doonfoot
Doonfoot is SOUTH of Ayr
Cunningham is NORTH of Kyle
Irvine is NORTH of Ayr

There is one other example of a general direction, namely

"Within xiiij myles over foranenissts the same towne (Ayr) In the yle of arrane, Lyeth the yle and woode of Annualashe".

The Scots word "foment", as used in the 16th. century, meant "opposite", so this passage translates freely to;

"14 miles opposite (i.e. west of) Ayr, on the island of Arran, lies the island and wood of Lamlash".

In the 16th century, what is now referred to as Holy Isle, was called the island of Lamlash.

Haven details

The Military Report gives details of four Havens on, or near, the Ayrshire coast. At the time of writing the Report, no haven would have extensive harbour works, although a rudimentary quay did exist at the mouth of the River Ayr. At this time, a haven was often just a partly sheltered river mouth or bay; the mouth of the river Ayr was not a well protected haven, and it is significant that the Report writer refers additionally to an off shore anchorage, as well as the river haven. In the context of havens, the writer describes the Carrick shore as "an iron coast", thus describing the coast between Lochryan and Ayr as inhospitable, because of a lack of sheltered anchorages.

The Report gives the following specific details, as rendered into modern English;

GIRVAN MOUTH

"At high tide, vessels of up to 40 tons can enter";

[Comment; such a vessel would draw about 5 feet, suggesting the haven bar had a maximum cover of about 1 fathom at high tide].

AYR

"The haven is at the mouth of the river Ayr, adjacent to Ayr town. There is an offshore anchorage 2 miles from the town of Ayr. The haven mouth has a sand bar, with 3.5 and 2.5 fathoms, at high and low water; The haven can always be entered on a rising tide in calm water. The Ayr haven is far superior to that at Irvine";

[Comment; a tidal rise and fall of 1 fathom seems small, but the value can be significantly different under river flow and wind conditions].

LAMLASH

"This haven, 14 myles west of Ayr, on the east coast of Arran, is an excellent anchorage, and is protected in all weathers."

IRVINE

"This is a poor haven, but is only 8 miles north of Ayr. The haven has a bar, with less than 2 fathoms at high water. The haven entrance is narrow, and banked on both sides";

[Comment; the banking makes it an awkward entrance for a sailing vessel; the Report writer basically does not recommend Irvine as a haven, especially when Ayr is relatively close by].

SPECIAL COMMISSIONS AND REPORTS

Charts and pilotage notes were prepared for special occasions. Each of these occasions is worthy of a talk in their own right, so, in concluding this short account on "things navigational" before Admiral Beaufort and his skilled cartographers came on the scene, I will mention briefly a few of the well known accounts.

In 1540, James IV decided to "sort out" the warlords/clan chiefs on the West Coast of Scotland. He visited the area with a naval squadron, dispensed drink freely, placed the local dissidents in chains, and eventually had them deposited in Edinburgh Castle to repent their sins. Freedom was only granted when these chiefs agreed that their eldest sons should be educated in lowland schools.

A complete description of the Scottish coasts was prepared for this naval venture by a Scottish pilot called Alexander Lindsay. This description, or rutter followed a format that was well established in western Europe, and contained information on distances, magnetic bearings, and tidal information, including the establishments of ports and anchorages. This rutter exists to this day in several forms, with a French version being associated with a very good general chart of Scotland from a French source and dated about 1560. Just how this chart had been prepared has not been established ; but the chart was deemed to be good enough to be the frontispiece for Scottish marine atlas of the late 1700's.

About the late 1600's, Charles II commissioned a Captain Grenville Collins to chart the U.K home waters. This was done in the form of a running survey of relatively low accuracy, covering the Solway firth, south to the Channel, and right up the east coast to the Northern Isles. The very difficult Scottish west coast was not attempted ; these Collins charts, despite the poor accuracy were still being used 100 years after their creation.

A well known Scottish marine cartographer, Murdo MacKenzie, working in the mid to late 18th. century, and using elementary trigonometric measurement techniques. produced the first accurate chart of the Orkneys and the Pentland Firth. He did this at the commission of the Dutch East India Company, and then at the invitation of the British Admiralty, he produced a series of detailed charts of the west coast of Scotland, so filling in the blanks of earlier series of charts. This work of MacKenzie is very important in that it was the start of accurate marine surveying in British waters, and is the forerunner of the Admiralty series of charts.

Several master mariners, both from naval service and the merchant marine produced charts for private gain. For example, Murdo Downie, a sailing master in naval service used his experiences of naval service on the Scottish east coast to produce a set of charts that were of reasonable accuracy ; these charts, however, were only made after he left naval service. In a similar vein, Captain Joseph Huddart, a captain in the British East India Company, published a very detailed chart of the west coast of Scotland and England in the late 1700's, between a very lucrative series of voyages to the East. He did not use triangulation, but did establish a series

of astronomical fixes of well known locations as a basic grid for his chart. This type of "private" cartography was on a relatively small scale, but was important in that it led to precise techniques being developed, and, in a sense, made it impossible for the Government to prevaricate much longer on the issue of creating a national series of trustworthy maritime charts.

We have come a long way from early French tide tables, Elizabethan military reports, tentative coastal surveys, and freelance mariner's charts, but we have reached the early 19th. century, and Admiral Beaufort and his hydrographers have commenced the detailed charting of all of our home waters ; we can now safely leave from the marina and make for Rothesay, knowing that we have an up-to-date chart, and can use it sensibly !!.

W. Laing

Nov., 2001.