

**ESSAY ON THE  
HYDROGRAPHY OF  
THE MERSEY ESTUARY**

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Essay on the hydrography of the Mersey estuary by Graham H. Hills

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**GRAHAM H. HILLS**

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BY  
GRAHAM H. HILLS,  
MAJESTY ROYAL NAVY,  
ASSISTANT MARINE SURVEYOR, LIVERPOOL.

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[ENTERED AT STATIONERS' HALL.]

## PREFACE.

THE collection of the materials from which the following pages result, was undertaken at the commencement of the past winter, under the idea that the then contemplated changes in the Authorities of the Port would furnish a fitting occasion for submitting to them a Report upon the past and probable future condition of the Estuary. As the time of those changes approached, it became evident that the original purpose could not be accomplished in a form sufficiently condensed for reading at the sitting of a Board or Committee, and the work was pursued with the view of preparing a paper for one of the local scientific societies; but when completed, conceiving it perhaps too lengthy for that purpose, and that the subject on which it treats is one of more especial interest to the authorities in whose service the author is engaged, the manuscript was submitted to the Marine Committee of the Mersey Docks and Harbour Board, with a request, seconded by the Marine Surveyor, that it might be printed for private circulation. The illustrations are on a scale too large for publication, but will be gladly exhibited by the author; and if the treatment of the subject should be found to possess sufficient interest, they can be readily reduced to a convenient scale for a small Atlas to accompany the Essay.

GRAHAM H. HILLS.

LIVERPOOL, 12th May, 1858.

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AMONG the many points of interest concentrated in Liverpool, none surpass in importance those arising from considerations connected with the history of her port. Dating her commercial greatness from a recent period, our cognizance of its capabilities and disadvantages has gone hand in hand with her advance in commercial prosperity, and the consequent demands of nautical traffic: hence, in tracing the hydrography of the Mersey, our researches are baffled at a date comparatively recent by the failure of authentic records; anterior conditions being evidenced through collateral sources, until, in the receding vista of time, our vision is lost amidst speculations involving geological conditions belonging to an earlier era of the world. Chorographic descriptions, leading up to England's earliest historic ages, leave no other inference than that such as it now appears it then existed. The first light of history dawning upon the scene, shows the ancient tide, in solitary majesty, rolling on these silent shores, and the first germ of this vast city planted beside its waters, near 800 years ago, presents to our view the same grand natural features which now we witness.

Those features consist of a large inland basin, fed by tributary streams, issuing through a narrow gorge into a bay of the sea; whose shores are fringed with banks of sand, alternately covered and uncovered by the reflux of the waters, as indicated in the

chart of modern date (Sheet 1), where the entire coast from Ormeshead in Wales, to St. Bee's Head in Cumberland, is seen with its sandy border, broad towards the central portions, narrowing toward the extremes, and aggregating in every inlet and indentation of the coast; such, too, are the features exhibited in the small chart (Plan I. Sheet 2,) extracted from the earliest existing authentic hydrographic records of our coasts, and bearing the date of 1687. Our history previously to this must be gathered from incidental mention, in connection with places and circumstances belonging to the neighbourhood, as no records of those times, strictly hydrographic, have come down to us.

At the date just named, Liverpool had already attained a prominent position as a commercial port, chiefly from its trade with Ireland, and there were in all probability then extant hydrographic delineations of its port, but of a rude description, such that even, if preserved to us, it is doubtful if they would have contained any but that general information which we derive from other sources, and would not have been susceptible at this time of critical examination. This will be apparent when it is remembered that it was only towards the beginning of the seventeenth century that hydrography was reduced to any thing like a science. About the year 1550, the mode of projection which still bears his name first occurred to and was adopted in "An Universal Map of the World," published by Gerard Mercator; but it was an English mathematician, Mr. Edward Wright, who first applied it to sea charts, and reduced the principle to a mathematical law, which he gave to the world in a treatise published in 1599.<sup>1</sup>

The earliest existing authentic hydrographic delineations of the Mersey estuary we have referred to, are found in a work entitled "Great Britain's Coasting Pilot,"<sup>2</sup> published in folio, in London, in 1693, by Captain Grenville Collins, R.N., hydrographer to the King. The one already particularised is a general chart of the coast. Another, No. 30 in the same work, also dated 1687,

<sup>1</sup> *Phil. Trans.*, 1766 to 1763, p. 218; "Correction of certain Errors in Navigation, exemplified in the Voyage of the Earl of Cumberland to the Azores." By E. Wright, 1599.

<sup>2</sup> A perfect copy of the original edition of 1693 is in the Liverpool Library, at the Lyceum, Bold Street.



(Plan II.), placed on Sheet 2, beside the former, is on a considerably larger scale. They both belong to a series comprising the coast of Great Britain, from Shetland down the east coasts of Scotland and England, the English south coast, and the Bristol and Irish Channel coasts, with some ports in Ireland. Since 1599, a period had intervened which in this country was one of frequent political and social convulsion, tending to hinder our advance, and to give to other maritime people opportunity to surpass us in the development of maritime science,—illustration of which is found in Captain Collins's preface, where he states that the work was undertaken by order of King Charles, moved "by his great love for the noble art of navigation, and his being made aware that there were in existence only Dutch charts of our coasts, or copies of them, and those very incorrect;" and his Majesty having given the author the command of a yacht for the purpose, we are informed in another part of the work, that he completed the survey in the following order:—In the years 1681-2, Dover to the Land's End; 1683, the Islands of Scilly, the Severn, and Milford Haven; 1684, from Harwich to Edinburgh; 1685, from Edinburgh to Orkney and Shetland; 1686, from Milford to Chester; 1687, Liverpool, Carrickfergus, Dublin, Kinsale, and Cork. This sequence, in which we find Liverpool among the last, is interesting, as showing to some extent, by the order of the work, the relative importance probably attached to the several subdivisions of the survey; and also as a proof of the critical value of the work, in evidencing its methodical arrangement. In this view, the time occupied relatively to the magnitude of the undertaking, and the means available in its progress, are requisite to be taken into account. Also, it is important to note the object proposed by the author himself, which he conveys to us in his preface, where it is stated, "the intent of this survey is *only* to give directions to mariners to sail along the coast of Great Britain, and how to carry a ship into any harbor, river, port, road, bay, or creek, with safety; and how to avoid *dangers known*." I have italicised the words "*only*" and "*dangers known*," because, while limiting his purpose, they partly indicate the method to be pursued in the execution of the work, which would consist, not in a minute search for unknown dangers, but

in testing certain depths of water, in verifying the position of known dangers, and the direction of leading lines and clearing marks by the compass, which as yet formed the best resource for trigonometrical measurements at sea; and, lastly, in collecting information by local inquiries. The reliance placed upon the latter is shown, where Captain Collins gives as a reason for not having surveyed the entrance of the Thames, that pilots were there so numerous that it would be more safe to trust to their guidance, thus permitting local information to supersede the necessity for a survey. This, of course, was not the only consideration that weighed with him: another, doubtless, would be, the comparative benefit to be derived from the more speedily completing the survey of other ports where pilots were deficient. Again, in another place, he prefaces a table of Bearings and Distances with, "Courses and distances are better demonstrated in maps than this way; but at the instigation of some seamen I have done this."

In the original of the chart (Plan II.) the whole of the river Dee up to Chester is included. I have omitted so much as was beyond the confines of our subject, but scrupulously preserved that relating to the Mersey estuary. In the chart, the Mersey is necessarily introduced, from its position, approximate to the Dee; similarly, in the descriptive portion of the work, the mention of the Mersey is only incidental or secondary: thus, in connection with Hoylake,<sup>1</sup> it is stated that "Here the great ships that belong to Liverpool put out part of their cargo till they are light enough to sail over the flats into Liverpool. There is a channel near Formby to go into Liverpool, where is three fathoms at low water; but this place is not buoyed nor beacons, and so not known. The ships lie aground before the town by reason of the strong tides that run here; ships that ride afloat ride up at Sloyne, where is less tide."<sup>2</sup> This quotation, with one leading line for sailing through the Rock channel, is the whole information given respecting the port of Liverpool.

Turning from the natural features, it will be observed that the

<sup>1</sup> Spelt Highlake.

<sup>2</sup> A marginal note is appended in the original: "King William (III.) and the English army embarked at this place (Highlake) for Ireland."

only artificial aid to navigation shewn on this chart is the Rock Perch, occupying the site of the present Rock Lighthouse.

In 1709,<sup>1</sup> twenty-two years subsequently to the date we have been considering, was obtained the act of Parliament under the authority of which was commenced the first of the Liverpool docks, and which conferred on the Liverpool corporation powers to erect landmarks and to place buoys in the channels. Eight years later (1717), the money raised for these works being spent, the dock yet unfinished, and no beacons nor buoys having been placed, another act was passed granting an extension of powers, the corporation undertaking at the same time to place two landmarks and three buoys in or at the entrance of the Formby channel, and two buoys on the Hyle sand, one at the N.E., the other at the N.W. spit of that bank, and to complete the buoying and marking of the channels by 25th December, 1718. The execution of this undertaking must have concentrated inquiry upon the estuary, and it would have been expected that an authoritative record of its then condition would have been handed down to us, especially that the completion of the buoying and landmarks would have been indicated by a fresh survey. My inquiries have not detected any hydrographic records relating to this interesting period; and it seems probable that, as previous undertakings respecting the docks had failed in regard to time, so perhaps the completion of this may also have been deferred for some years.

In 1730 a chart was published in London, having the following title, "A Correct Chart of the Harbors of Chester and Liverpool: humbly dedicated and presented to Joseph Taylor, Esquire, member of y<sup>e</sup> Hon<sup>ble</sup> House of Commons, by his obliged and humble servant, C. Prica."<sup>2</sup> This chart presents no evidence of the progress of the undertaking respecting the Formby landmarks, and, on inspection, proves itself worthless as a record, being a veritable copy from Captain Collins's chart, scarcely disguised by unartistic embellishment. The sailing directions appended are word for word those quoted from *Great Britain's Coasting Pilot*, as to the "great ships unloading" in Hoylake and Formby channel being unknown.

<sup>1</sup> Baines's *History of Liverpool*, p. 400.

<sup>2</sup> An original is in the Corporation Surveyor's office, Town-hall, Liverpool.