BY THE OLD HYDROGRAPHER

'As it Was'

The history of charting the estuary of a navigable river to enable shipping to safely enter port is inevitably long and continuing as the channels, and the shoals which confine them are constantly changing both their location and their depth. The River Thames, wherein is to be found the Port of London, is no exception; perhaps the major question facing the surveyor here is why the swatchways, which provide access through the Long Sand for vessels entering the port from the south east, are so unstable. Each, in turn, slowly appears, deepens to provide a passage, and after fifty years or so closes, to be succeeded by another opening a few miles distant.

In 1514 King Henry VIII granted a Charter to the Brethren of Trinity House at Deptford on the River Thames as a Guild for the protection of shipping which gave them authority to arrange harbour pilotage, to establish seamarks and lay navigation buoys around the English coasts.

Rectification
Readers will be aware that the titles under the two charts in this Column by Phil Barton in Hydro international Vol. 7 No. 7 were inadvertently reversed. This error is regretted.

Murdoch Mackenzie junior and his cousin Graeme Spence were surveying for the Admiralty off Plymouth in 1744 when they were urgently requested to repair, with their small vessel Bird, to search for a channel which would enable laden ships to enter with safety the Thames from the south-east.

North of Margate Sand the two surveyors found a channel as the result of a detailed survey which was notable for the regular cover of their depth soundings resulting from the first use of the station pointer to plot exactly positions at sea using two horizontal sextant angles between three fixed marks onshore.

The newly found channel was named â€˜Queenâ€™sâ€™ and was marked by buoys laid by Trinity House. Captain Cook, setting out from the Thames for his final voyage to the Pacific, was one of the first seaman to use this channel.

A hundred and thirty years later when Admiral Beaufort became Hydrographer of the Navy in 1829 he decided that a major survey of the River Thames and the estuary was required. He appointed Commander Frederick Bullock to undertake the work. His first vessel for the task was small 295 ton paddlewheel streamer named Echo, with a crew of twenty including two engineers and three stokers.

The survey was to be on a scale of six inches to the nautical mile. Bullock began at London Bridge connecting his own riverside triangulation to that of the Ordnance Survey now available; he ran sounding lines, about a cableâ€™s length apart up and down each reach of the river, with checking cross lines wherever the irregularity of the depths denoted shoaling.
Frederick Bullock laboured on for 17 years working downstream, past the river entrance at the Nore, and on out through the estuary to the open sea thirty miles further; by which time he had been provided with a new and larger paddler HMS Porcupine, built at Deptford in the Thames she was 350 tons with a crew of 45 men.

Each winter Bullock laid up his ship for docking and repairs while he drew his fair sheets. Every spring he received almost identical instructions from the Hydrographer concluding â€“ â€˜That when you resume the survey you are to immediately examine a small portion of the last yearâ€™s work and report whether any changes have taken place in the outline or depths of the shores and banksâ€™. Beaufort had recognised the instability of the hydrography of the River Thames and its estuary.

The influence of both tidal streams and winds shape the scoured channels and the controlling sandbanks throughout the estuary. There are two massive tidal streams involved, one of which enters the North Sea between Scotland and Norway and finally runs directly south west into the Barrow and Black Deeps; the other enters the southern North Sea from Dover Strait and pours over the Long Sand to fall into the Deeps two hours after the north east running stream is on the ebb.
The incoming stream from Dover Strait tends to break through the Long Sand in places to form swatchways which often develop into navigable channels, through which laden vessels may pass when the channels have been sufficiently surveyed and marked with buoys. But these swatchways are forever slowly changing giving the hydrographers a never ending task.

Following the discovery of the Queenâ€™s Channel, a deeper Princeâ€™s Channel was found further north; then, over the years the major swatchway became in turn the South Edinburgh, then the North Edinburgh, and finally, today Fishermanâ€™s Gat is the buoyed channel of entry from the south east. Its first minor furrow was discovered in 1810 by a master RN working for the Hydrographer who gave it the name â€˜Thomas New Channelâ€™.

After World War II when dredging in the River Thames was resumed to open up the Port of London to its maximum capacity the silt was carried in hoppers to the Black Deep for disposal. The Chief Harbour Master, aware of the strength of the flooding south west tidal stream, began to wonder whether the waterborne silt got back into the River before the returning hoppers! He referred the question to the

Hydrographer of the Navy.

After an internal study the Hydrographer sent a brief reply on 3rd October 1946 inferring that as the Black Deep was more them 20 miles from the river entrance and that the maximum rate of the flood stream was about two knots the fetch of the stream would be little more than 10 miles. Suspended matter dumped at the commencement of the ingoing stream would not be carried for a greater distance.

Glancing at a small scale chart of the Thames Estuary I note that the Surveying Service of the Port of London Authority is responsible for monitoring the whole of this complex area as far east as a north south boundary line running from the Old Lighthouse on the Gunfleet to the eastern end of Margate Sand. Remembering as a young surveyor, boat sounding in the Edinburgh channels in a north easter which always seemed to be blowing I venerate the PLA hydrographers.
