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the Thames Basin”

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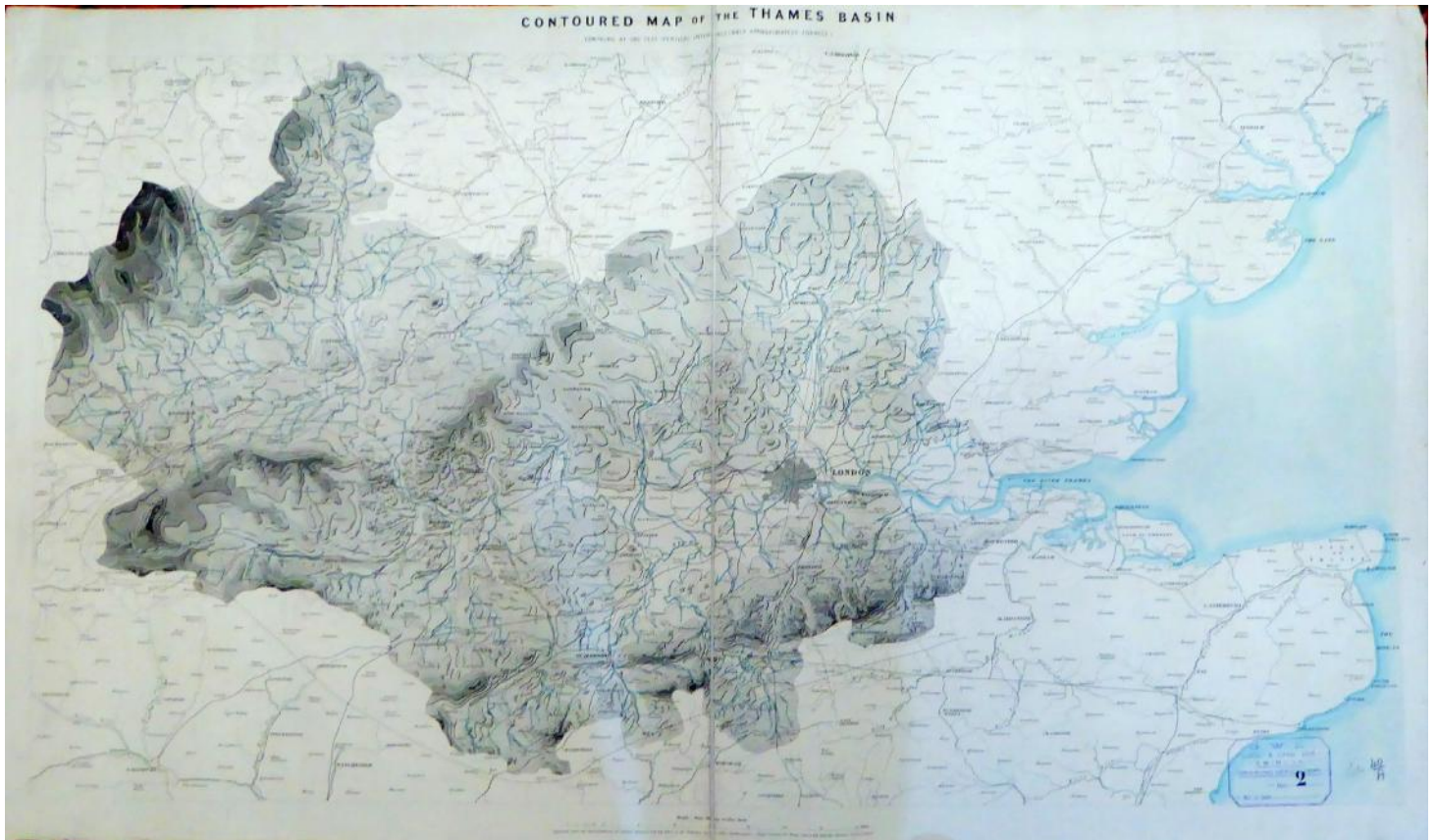
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The Society publishes a wide range of books and booklets on historic OS map series and its journal, *Sheetlines*, is recognised internationally for its specialist articles on Ordnance Survey-related topics.



An uphill struggle: the contoured map of the Thames basin

Bill Henwood

When invited to speak about the 1870 *Contoured Map of the Thames Basin* at the Midlands group meeting in September 2018,¹ I posed four questions: why was it produced, what does it depict, how was it compiled, and what might it tell us about the progress of the Ordnance Survey at the date of its publication?

The first of these was answered by the late Tim Nicholson in *Sheetlines* in 1991.² In the third quarter of the nineteenth century, London and other major cities in England were experiencing rapid population growth, coupled with rising industrial and per capita domestic use of water. Fears that demand would outstrip supply led to a Royal Commission on Water Supply which sat between 1867 and 1869. 66 maps, plans and diagrams accompanied the Commissioners' report, eight being produced by the Ordnance Survey. The *Contoured map of the Thames basin* is one, *Rivers and their catchment basins* another.³

The *Contoured map* is at quarter-inch scale (1:253,440), in landscape format, about 38 x 21 inches within the neat line (*see above*). It covers the Thames catchment area and its estuary, extending to Orford in Suffolk and North Foreland in Kent.

¹ *Sheetlines* 113, 4.

² Tim Nicholson, 'A Mid Nineteenth Century environmental crisis', *Sheetlines* 31, 12-18.

³ For the latter, see Richard T Porter, 'Mapping river basins', *Sheetlines* 112, 42-5 and Michael Spencer, 'Rivers and their catchment basins', *Sheetlines* 113, 37-41.



Enlargements of London and the Chiltern escarpment as depicted on the map

Depiction of detail is selective. London is drawn to scale and its size is as on the original One-inch Old Series sheets 1 and 7, published in 1805 and 1822 respectively. Later revision of sheet 1 showing the growth of east London and the docks has not been incorporated, which is odd, considering the reason why the *Contoured map* was being produced. All other settlements are identified by small open circles, but many are unnamed.

Railways are represented by single lines, with the network as at about 1860 rather than 1870.⁴ Rivers are shown by fine single or double lines, and major streams are named; those within the Thames Basin are hand-coloured in pale blue, as is the sea. Canals have double lines; most are named but uncoloured. Other than in London, no roads are shown. A variety of solid and dashed lines, and circles, denote relevant geological and hydrographic information.

Within the Thames catchment, whose boundary is marked by dashes, relief is shown by layering and 'shaded' or 'illuminated' contours.⁵ Layering in engraved shades of grey begins at 100 feet, darkening progressively at 200, 400, 500, 600, 700, 800 and 1000 feet, the last of which is almost black. Combined with contours accentuated on south-east facing slopes, the desired three-dimensional effect depends on the optical illusion produced by lighting from the north-west, but the topography of south-east England is not helpful. The Cotswold and Chiltern escarpments face north-west, with their dip slopes trending south-east. The effect works better on the south facing escarpment of the North Downs and in The Weald.

Printed beneath the map title, 'Contours at 100 feet vertical interval (only approximately correct)' is an understatement: their accuracy varies markedly. The Cotswolds correctly rise to 1000 feet, though their slopes, and those of the North

⁴ Railways shown include: Henley on Thames branch (opened 1857), Chipping Norton branch (1858), Watford to St. Albans (1858), Sittingbourne to Sheerness (1860), and Faversham to Whitstable (1860). Absent are: Abingdon branch (1856), Luton to Dunstable (1858), Welwyn to Hertford (1858), Welwyn to Luton (1860), Chappel to Halstead (1861), and Whitstable to Herne Bay (1861).

⁵ Shaded or illuminated contours had been tried before, on One-inch maps of Edinburgh in 1858 and the Lake District in the 1860s. See *Sheetlines* 2, 6; 3, 10.

Wiltshire Downs, are very generalised. But near Oxford, Wytham Hill and Shotover Hill, both over 500 feet high, are entirely absent, while the steep escarpment of the Chilterns, which crests at over 800 feet in places, is shown only as a gentle climb to 600 feet, with no attempt to reflect the intricate hachures of spurs and combs on the Old Series One-inch map. By contrast, both the heights and slopes of the North Downs and adjacent areas are depicted quite accurately, such precision extending as far west as the Goring Gap between Oxford and Reading.

Materials to compile the map were limited. OS did not produce a quarter-inch series until the 1890s, so it had to be drawn from scratch. The main source will have been the Old Series One-inch. Resurvey for the New Series and larger scales had just started south of London but little, if any, new information would have been available. Another source does, however, appear to have been employed: the six-inch scale 'Surrey Hills' maps, surveyed, with contours, by the Royal Engineers in the early 1860s. Printed by OS, these cover an east-west strip across not only Surrey, but into Hampshire and Berkshire.⁶ Their use would explain the greater accuracy of heights and contouring of the hills in these areas.

As Tim Nicholson recorded, the map's production was beset by delays and complications, and it did not appear until over a year after the Royal Commission report that it was supposed to accompany.⁷ With many settlements marked but unnamed, and little apparent effort to mould contours to the Old Series hachures, one might conclude that the map was completed in some haste.

The map's print run is unknown, but by 1873 it was on public sale for four shillings. In 1909 Stanford's could supply it cased for 7/6.⁸ It was still listed (and still at four shillings) in the 1924 OS catalogue.⁹

What can the *Contoured map of the Thames basin* tell us about the progress of the Ordnance Survey in 1870? Without a quarter-inch base map or a survey with levels, it seems to have relied largely on some of the earliest Old Series One-inch mapping, to which railways had been added. Use of the 'Surrey Hills' material allowed greater detail and accuracy over a small proportion of the map, but this only served to highlight the paucity of information and consequent inaccuracy of contouring elsewhere. If the map had been commissioned a decade later, it would have been a different story, as most of the Thames Basin had by then been re-surveyed and contoured. And if catchment areas in the north of England had been required to be mapped in 1870, the relevant detail was already available. So, it was, perhaps, the right map, but of the wrong place and at the wrong time.

⁶ I am grateful to Dr. Richard Oliver for a discussion on these maps as likely source material for the Contoured Map. Three sheets were printed in facsimile by the Reproduction Division, Military Survey in 1997. See also Richard Oliver, 'The relationship of the 'Surrey Hills' Six-inch to the 1:2,500', *Sheetlines* 32, 2.

⁷ Nicholson, op cit.

⁸ *A Résumé of the Ordnance and Geological Surveys of England and Wales* (London, Edward Stanford, 1909), 43.

⁹ *Catalogue of Maps and other Publications of the Ordnance Survey* (Southampton, 1924), 22.