

SIGNALLING FROM NORWICH TO THE COAST IN THE NAPOLEONIC PERIOD

by J. F. Fone

Coastal signalling stations

Beacons and signalling stations have been established around the coasts of England whenever there has been a threat of invasion. The classic case was in the reign of Elizabeth I when news of the approach of the Spanish Armada was given by beacons along the south coast. In the 18th century, however, the enemy was no longer Spain but France. In 1795 Holland had virtually become a vassal state of France and, gradually, the Scandinavian countries were drawn into the war. Thus the naval action shifted from the Mediterranean and the English Channel to the North Sea and the Baltic. The need for beacons had never been greater. The *Norwich Mercury* reported, in 1797, that the signalling stations were working and were capable of transmitting a message over 90 to 120 miles in half an hour¹. Each station consisted of no more than a mast for hoisting up flags or balls and bundles of furze and tar for signalling at night².

A naval yard was established at Yarmouth in 1796³ and a Port Admiral was appointed in 1801⁴.

The signalling stations were taken over by the Admiralty in 1797 and Nicholas Vass, master carpenter at Portsmouth Dockyard, was put in charge of them throughout England⁵. This was a formidable task, not only because of the area and difficulties of travelling, but because, when away from Portsmouth, he had no administrative support. Sometimes, when he was touring the country, he would report to the Navy Board; a few days later, in sending another report, he would include an item which he had reported previously. When he returned to Portsmouth he had a clerk to write his letters and he signed them. Presumably he kept a copy of these.

On the 5th October, Quarter Sessions decided to ask Central Government if they could recover the expense of the Stations⁶ as they had been taken over by the Admiralty.

Vass reported that the function of the stations had changed from giving warning of an invasion, to receiving messages from naval vessels and passing them on to the Port Admiral⁷. He reported, among other things, that the mast at Trimingham was in the centre of the village, and when viewed from the sea could be confused with other buildings and was not readily visible⁸. Some adjacent stations were not inter-visible, as was the case between Winterton and Yarmouth, where an additional station was required at Caister⁹. In the case of Blakeney and Beeston they were on either side of a valley and were not inter-visible as the mist lingered, sometimes for as long as two days, and he recommended an additional station at Salthouse¹⁰. Stations in Norfolk were established at Holkham, Blakeney, Salthouse, Beeston, Cromer, Trimingham, Happisburgh, Winterton, Caister and Yarmouth¹¹.

When the stations were taken over by the Admiralty, they were manned by the Sea Fencibles, and naturally the service personnel required houses in which to live¹². Vass employed Mr James Fox of Wells¹³, and Mr John Green of Yarmouth to build these¹⁴. The establishment of a station was two signallers, a mid-shipman and a Lieutenant, but only men unfit for sea service could be employed¹⁵. An interesting memoir by a Lieutenant in charge of a signalling station has been published by the Naval Record Society¹⁶.

There is no doubt that England took the threat of invasion seriously in 1803. The *Norfolk Chronicle* reported 'Signal flags and tar barrels, were stationed around the coast, on all Church Towers, and other lofty edifices, to give intelligence in the event of the enemy landings'¹⁷. The

Lord Lieutenant was ordered 'on the approach of the enemy all waggons and carts and stores of corn, likely to fall into their hands to be removed or destroyed'¹⁸.

The Admiralty Telegraph

The British Army had always sent despatches by messenger but, in 1794, outside Menin, Col. Congreve noticed that the angle of the sails of a windmill sometimes changed and that this was always followed by a movement of French troops¹⁹. He pointed this out to the Rev. John Gamble, who was a man who liked mechanical puzzles. He investigated all signalling systems and came to the conclusion that the shutter system was the best. He designed a system of five shutters, each three feet square, one above the other and pivoted about a central horizontal axis. When a shutter was in the horizontal position the observer at the next station could see the sky, or other background, beyond it, in contrast to the dark surface it presented when vertical²⁰.

Gamble had his findings printed and submitted twelve copies to the Admiralty, and twelve copies to the Navy Board²¹. About the same time Lord George Murray submitted a similar system to the Admiralty, but his had two vertical lines of three shutters. The model he sent with his report is now on exhibition in the National Maritime Museum at Greenwich (Plate I).

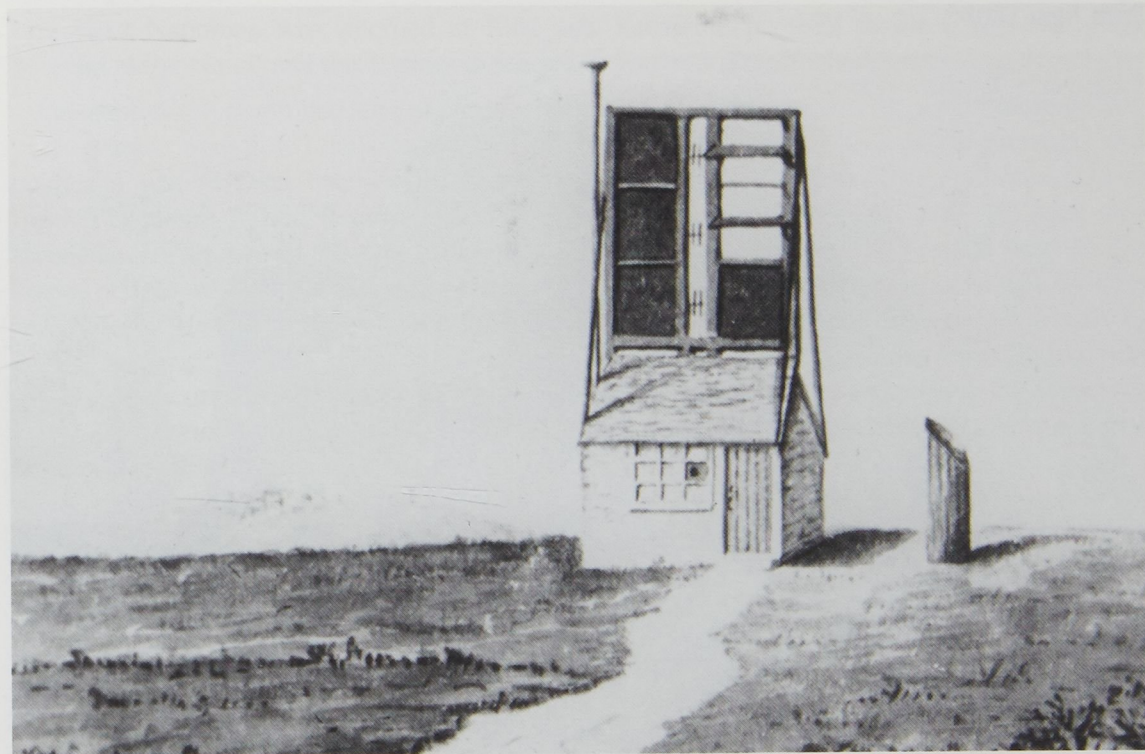


Plate 1

The Admiralty Telegraph showing upper two windows on the right hand side open.

Murray's system was accepted and he received a reward of £2000²². In 1796 the Admiralty obtained approval of the Privy Council to erect a line from the Admiralty to Deal with a branch to Sheerness, and another one from the Admiralty to Portsmouth²³. Gamble was furious; he wrote to the Navy Board and offered to build the line to Portsmouth for less capital and lower maintenance costs than Lord George Murray, but the Navy Board was already committed and

they refused to budge²⁴. Gamble made one more attempt to get some recognition for his work but failed. He then wrote a most comprehensive treatise on signalling²⁵.

George Roebuck, who had surveyed the lines to Deal and Portsmouth, was made superintendent of telegraphs, and in 1801 was asked to survey a line to Yarmouth. He reported that the direct line was impracticable as the land was well-wooded, and suggested a line via Shooter's Hill, London, Aveley, Laindon to Norton Cold in Essex and then along the coast, making use of the existing stations²⁶. Nothing came of these proposals. The letter was endorsed, presumably at the Navy Board, 'To be suspended', probably in view of the Peace Treaty signed on the 1st October. In 1808 Roebuck was asked to report again. He completely reversed his previous decision, possibly because of his experience gained in the operation of the Deal and Portsmouth lines. They were often interrupted by London smoke and coastal fogs²⁷. From the Admiralty he went west to Chelsea and built a station on the opposite wing of the hospital to the one previously used for the Portsmouth line. He then turned north to Hampstead, Elstree, St Albans, to Dunstable sited at 796ft where the line turned east to Lilley Hoo at 602ft, Baldock at 405ft, Royston, the Gog Magog Hills, King's Chair Newmarket, Icklingham, Barnham, Carleton Rode, Wrenningham and on to Mousehold²⁸ where there was another sharp turn to Strumpshaw and Yarmouth South Gates²⁹ (Plate II). Roebuck reported the line completed on 25th June 1808³⁰.



Plate 2
Showing Shutter Telegraph

The method of operation was for one man to observe the previous station through a telescope, and call out the position of the shutters, the second man would adjust his shutters to cor-

respond, the third man would record the time and shutter positions. The journals were sent to Roebuck every week or fortnight, and he checked them against the next stations' journals for errors and delays³¹. Huddleston thought that none of these journals had survived³², but it was subsequently discovered that some from the Gog Magog Hills station were still in existence³³. On reading these one cannot help noticing how susceptible the system was to interruption from fog or mist. Tuck says³⁴ that, in the worst financial year, 1839-40, the Portsmouth line was prevented from working for 113 days because of bad weather. Urgent messages were sent from the Admiralty, by messenger, to Chelsea or even Putney.

The Norwich line was remarkable in two ways. Firstly, the distances were greater than any previously used; St. Albans to Dunstable, from Royston to the Gog Magog Hills and from thence on to Newmarket, were 11.3 miles, 11.7 miles and 11.7 miles respectively. Secondly, there were three right-angled bends; at Chelsea, Dunstable and Norwich. There has been much controversy about the difficulty or even impossibility of reading frames at these angles. Some have said that it would have been necessary to have two frames³⁵. It is probable from the evidence in the *Times* newspaper³⁶ which stated that 'the shutters for the Norwich line are much bigger than usual', that they were set at 45 degrees and that the horizontal dimension was increased. Messages over the 19 stations from the Admiralty to Yarmouth took 17 minutes³⁷.

In 1814 Napoleon was interned at Elba and Yarmouth reverted to the command of the Admiral at the Nore³⁸ and the Yarmouth telegraph line was discontinued.

The shutter telegraph had three main disadvantages. Firstly, it relied on good visibility, secondly it was susceptible to errors, as Roebuck found it necessary to check all the journals³⁹ and, finally, it was slow as every word had to be spelt out. The volumes of Admiralty Digest (ADM12) at the Public Record Office contain many reports of people offering what they claimed were improved systems. John MacDonald, in his book in 1808⁴⁰, said how disillusioned people were with the system. He devised a frame of 12 shutters, four vertically by three horizontally. He said, rather naively, that it would be possible to use the existing frames by adding another line down the side and another row across the top. This, of course, led to more combinations. In addition to the letters and numbers, he devised a vocabulary of over 1000 words and phrases. He gave numerous examples of messages which reduced the number of movements, sometimes by a factor of five. The only amendment that the Admiralty accepted was from Commander Owen, who invented a semaphore with three arms⁴¹. This was mainly used from ship to ship.

The Coastal Semaphore

In 1812 the Admiralty adopted a semaphore system on land, for the first time, when they established a series of stations from Deal to Yarmouth⁴². This necessitated having HMS *Namur* standing by to carry messages across the Thames estuary, and HMS *Warwick* at the estuary of the Blackwater-Colne⁴³. The Yarmouth station was on the roof of the Naval Hospital⁴⁴.

The Commercial Telegraph

In 1763 the Liverpool merchants established a telegraph line from Holyhead to Liverpool to give notice of the arrival of their ships⁴⁵. In the narrow sense of the word this was not strictly speaking a telegraph as it could not send messages, but only transmit prearranged ones. This was very successful and was copied in a number of other places. Lt. B.L. Watson R.N. constructed a number of these, notably from the mouth of the Humber to Hull⁴⁶. It is said that he was involved in a Norwich line⁴⁷. Extensive searches locally have failed to produce any evi-

dence of this, but Bayne reports⁴⁸ 'The line from Norwich Castle to Strumpshaw Mill, Filby church and Yarmouth was working on 29 September 1803, to give warning of any danger'. From contemporary drawings in Norwich Castle this does not appear to have been the shutter or the semaphore system. In 1805 a meeting was held in Norwich to establish a commercial telegraph to Yarmouth with stations at Filby and Strumpshaw⁴⁹. The City Corporation agreed to contribute three pounds a year for three years, providing the telegraph lasted that long⁵⁰. The Yarmouth Assembly agreed on 24 November 1805 to 'pay the proprietors five guineas in consideration of the great utility'⁵¹. Watson continued to establish stations around the coast, and founded a firm with which ship owners could register any vessel for twenty shillings a year, and have its position reported whenever it passed one of his stations⁵². Although Yarmouth is shown as one, no pictures of his characteristic stations with a local connection appear to have survived.

The End of the Visual Signalling Systems on Land

Watson's system ceased to trade after his London headquarters were burnt down in 1843⁵³ but its days were already numbered because the electric telegraph was a serious challenger. Methods of sending messages using static electricity had been demonstrated for hundreds of years⁵⁴. In 1753 Morrison exhibited a telegraph using 25 wires; when he touched one end of a wire with a charged rod little pieces of paper under the other end danced. Even he thought this was not practical but was persuaded by the President of the Royal Society to publish his discovery; he would only do so over his initials⁵⁵. Gamble in 1797 dismissed the electric telegraph as having no practical use. This was probably true while the system relied on static electricity. This was changed in 1800 when Volta expounded the theory of a battery⁵⁶, but it was not until 1836 that a practical battery was invented by J.F. Daniels.

The way was now open for a practical electric telegraph. In 1837 Wheatstone and Cooke took out a patent⁵⁷. This was at the time of the railway mania, and they visualised its importance for safety on railways rather than transmitting messages. In 1844 the electric telegraph was established between Yarmouth and Norwich, and although owned by the railway, private messages were transmitted⁵⁸. This spelt the end of visual signalling between fixed places on land.

December 1994

ACKNOWLEDGEMENTS

Crown copyright material in the Public Record Office is reproduced by permission of the Controller of Her Majesty's Stationery Office. Plate I is reproduced by courtesy of Lewisham Local Studies Centre and Plate II by courtesy of Norfolk County Council Library and Information Service. I am deeply grateful for the help given and patience shown by the staffs of the Public Record Office, the Library at the National Maritime Museum and the Local Studies Library, Norwich.

1. 14 October 1797, p3. col. 1.
2. Public Record Office (henceforth PRO) ADM 49/117, 'Instructions to Lieutenants superintending Signalling Stations, Article XIII.
3. PRO ADM 12/71, cut 50/2 dated 15/2/1796.
4. PRO ADM 1/1424, Note in the Index Book.
5. PRO ADM 106/2747 dated 10/2/1797.
6. Norfolk Record Office (henceforth NRO), Minutes, 223v.
7. PRO ADM 49/109, 94, dated 31/8/1804.
8. PRO ADM 49/109, 92, dated 22/8/1804.

9. PRO ADM 49/115, 57, dated 9/12/1805.
10. PRO ADM 49/109, 107, dated 11/8/1804.
11. PRO ADM 49/110, 1, E-F.
12. PRO ADM 106/1747, Navy Board Minute dated 6/10/1802.
13. PRO ADM 49/109, 124, dated 24/2/1804.
14. PRO ADM 49/109, 8, dated 16/12/1803 and ADM 106/1650, dated 13/6/1804.
15. PRO ADM 49/110, 10.
16. Admiral Sir R. Vesey Hamilton, G.C.B. and John Knox Laughton (eds), 1896, 'Recollections of J.A. Gardiner', *Navy Record Society*, XXXI, 263.
17. *Norfolk Chronicle* dated 24/9/1803, p. 2, col. 2.
18. William Finch-Crisp, 1871, Chronological Retrospect of the History of Yarmouth, 25.
19. John Gamble, 1797, An Essay on the Different Modes of Communication by Signals, 60.
20. John Gamble, 1795, Observations on Telegraphic Experiments.
21. Gamble, 1797, 71.
22. PRO PC2 144 dated 8/8/1795.
23. PRO PC2 146 dated 29/7/1796.
24. PRO ADM 12/71, cut 59/11, dated 26/1/1796.
25. Gamble, 1797.
26. PRO ADM1/49997, 145, dated 18/4/1801.
27. PRO ADM1/4998, dated 7/12/1807.
28. Norfolk Research Committee Bulletin, 1983, 8.
29. H.V. James, 1978, 'The London-Yarmouth Telegraph Line 1806-1814', *Norfolk Archaeology*, XXXVII, 126-129.
30. PRO ADM 1/4999, letter 297.
31. PRO ADM 1/4998, 250, dated December 1807, and 298, dated January 1808.
32. A. Huddleston, 1911, 'The Coastal Signalling Stations and the Admiralty Telegraph', *Mariner's Mirror*.
33. The Rev. J.T. Munday, 1973, 'The Yarmouth and London Telegraph', *Norfolk Archaeology*, XXXV, 512-513.
34. G. Tuck, 1924, 'The Old Telegraph', *Fighting Forces*, 481.
35. G. Wilson, 1976, The Old Telegraph, 14.
36. *The Times*, 25 March 1808.
37. A.D. Bayne, 1849, A View of Norwich, historical and topographical, 332.
38. PRO ADM 12/167, cut 1.1, dated 23 May.
39. PRO ADM 1/4998, 298, dated 10/1/1808.
40. John MacDonald, 1808, Telegraphic Communication.
41. PRO ADM 106/2518, warrant 108, dated 14/12/1807.
42. PRO ADM 49/115, 29, dated 27/4/1812.
43. Wilson, 1976, 65.
44. H.P. Mead, 'The Admiralty Telegraph and Semaphore', *Mariner's Mirror*, XXIV, 192.
45. Wilson, 1976, 68.
46. Wilson, 1976, 83.
47. Wilson, 1976, 86.
48. Bayne, 1849, 325.
49. *Norwich Mercury*, 30 March 1805.
50. NRO, Norwich Assembly Book 12.
51. NRO Y/C19/16.
52. B.L. Watson, 1842, Code of Signals.
53. *The Times*, 13 September 1843, p.3, col. 4.
54. Harry G. Sellars, 1927, 'A Brief Chronology for Students of Telegraphy and Post', *The Telegraph and Telephone Journal*, 64, quoting an example in 1650.
55. Scots Magazine, February 1783: see printed note stuck in the British Library's copy for details of his name.
56. J.J. Fahrie, 'The Electric Telegraph to the Year 1837', 217-219.
57. J.L. Kieve, 1973, The Electric Telegraph.
58. Advertisement in *Norwich Mercury*, 6 June 1844, p. 2, Cols. 1 and 2.