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Signals at sea

Flag signalling:

Prior to the 17th century, the general means of communication within a fleet was through word of mouth. The Admiral summoned his Captain's to communicate his plans by flying a banner of council. The Captain's would then be rowed across to the flagship to receive instructions and orders.

There were international flag conventions understood by all nations: a yellow flag indicated sickness and quarantine, a red or "bloody" flag was a sign of battle and a white flag signalled a truce. When a ship surrendered, its flag was hauled down and the victor would hoist their own ensign having boarded the captured ship. It was legitimate to hoist false colours in time of war to confuse or entice the enemy within reach but the ship was not allowed to engage or commit any hostile act whilst under false colours.

1653 saw the first record of a system of communication between ships using flags in the Royal Navy. Instructions for the "better ordering of the fleet in fighting" were issued by Generals-at-Sea Robert Blake, Richard Deane and George Monck. This system of flag signalling only used the ensign (white flag), the union jack, a red flag, a blue flag and a pennant (a narrow tapering flag). An Admiral could convey various orders to his fleet by hoisting the flags in different positions. With so few flags, the amount of signals that could be made was extremely limited. By the end of the seventeenth century, Admiral Russell introduced five more flags: white, yellow, striped red and white, striped red, white and blue, and the Genoese ensign (a red St. George's cross on a white background). With a variation of hoisting along with the firing of a particular number of guns, it was now possible to make twenty-one manoeuvring signals for the purposes of battle tactics.

During the eighteenth century, signalling was greatly increased by the addition of parti-coloured flags and the introduction of a signal code. In 1790, Admiral Lord Howe issued a code using a numbering system greatly increasing the flexibility of flag signalling. In this system, there were ten basic numeral flags, from 0-9, that could be used singularly or in combination (read from top down) and had the same meaning wherever they were hoisted. The flag number corresponded to an instruction or order held within the code book – a kind of dictionary of signals. Modifications to the flags were made during the French Revolutionary wars and a new signal book issued in 1799.

Although this system provided a wider range of signals than ever before, signals were still limited to those listed in the book. In 1803, the 1799 book fell into enemy hands and the Admiralty were forced to find a new signalling system to restore the security of ship to ship signals. Prior to this in 1800, Admiral Sir Home Popham had devised a new signalling system by expanding the numerical system with an additional twenty-five flags to represent the alphabet. This meant that even if the intended message was not in the code book, it could be spelt out letter by letter using the "alphabet" flags. The Admiralty adopted this system in 1803 to replace the captured code. The most famous example of this system was Nelson's "England expects" signal at the battle of Trafalgar where 'duty' was spelt out using Popham's letter flags as there was no particular code for this word. In addition, Lieutenant Pasco



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famously suggested to the Admiral that as his intended word “confides” was not in the code book, it would be quicker to substitute “expects” which was.

After a decade, Popham found that the commonly used ten numeric flags were limiting and spelling out additional words letter by letter made rather long signals. To combat this, he then devised a system where alphabetic flags were hoisted in combination with the numbered flags to represent a code that was then deciphered through “telegraphic signals” or “marine vocabulary” code books. For example: the flags A.8.9 meant ‘the enemy’ and flags 5.A.8 meant “approaching”. Hoisted in combination, these communicate that ‘the enemy is approaching’. This new system allowed 11,000 three flag signals to be made and many more if four flags were used. The vocabulary system was issued to and used by the Navy from 1813.

Flags could not be used during the night or in foggy conditions. Instead, night signals were sent using four or fewer lanterns, placed in vertical or horizontal lines or in squares or triangles. Signals in fog could only be sent using gunfire. The number of firings and the timing of them provided different meanings.

Telegraph or Semaphore:

Communications from the Admiralty to ships and home ports were sent by stagecoach or horse and via despatch vessels if the ship was at sea. This was a slow process, taking weeks or months if the despatch was for ships at sea or on a foreign station. There was no way of giving instant advice or orders even in time of war. Although investigations to solve long distance signalling started in the eighteenth century, it was not until the Napoleonic wars that the Admiralty began to take interest in them. Initially, the French succeeded in setting up a telegraph system, devised by Claude and Abbe Chappe, to communicate with their army from Paris. This used levered semaphore arms attached to a beam fixed to masts or towers around 10 miles apart. The beam and arms were moved using ropes and set into positions to represent letters and numbers. The main difficulty of this system was in achieving the correct angle with three moveable parts for a specific letter or number in order for the signal to be interpreted correctly.

In Britain, the Royal Navy had signal towers around the coast from Sheerness to Lands End. These could only transmit set signals by using a combination of ball flags. These sent messages across land rather than from ship to ship. In 1795, Reverend John Gamble invented the shutter telegraph. This was a vertical board with five shutters mounted vertically that could be opened and closed allowing thirty-one different signs to be sent. He carried out successful trials at Portsdown Hill, near Portsmouth. Unfortunately, he arrived back at the Admiralty to find that Lord George Murray had come up with the same idea but with an improved shutter system to his. Murray’s system used six shutters in two columns and was able to send sixty-three signs. Successful trials of Murray’s system were carried out on Wimbledon Common in September 1795 and became the preferred system for the Admiralty.

By the end of January 1796, fifteen stations up to eight miles apart had been built between the Admiralty in London and Deal, Chatham and Sheerness. Messages from Dover via Deal were said to have reached London in seven minutes. The Portsmouth line was the next to be completed in August 1796 and consisted of ten stations. Signals from Torbay and Plymouth were reported along the old coastal signal stations and then telegraphed up the line from Portsmouth to the Admiralty. In 1805, the Admiralty decided to set up a line to Plymouth, branching off from

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Portsmouth. This line had twenty-two stations and was completed by July 1806. It was recorded that a message from the Admiralty took three minutes to get to Plymouth and be acknowledged by return - a round trip of four hundred miles. In 1808, a line to Yarmouth was opened. The shutter lines were always considered a temporary wartime system and in 1814, the Admiralty closed the Yarmouth line and sold the eight stations on that line for £817. By the end of September, the coastal signal stations and the other shutter lines were closed for reasons of economy.

When Napoleon escaped from Elba in 1815, the coastal stations were reopened but used a three-arm semaphore based on the French system. The Admiralty now decided that a permanent system using semaphore rather than shutters should be set up. In 1820, the experimental Chatham line was made permanent and extended to Deal and Dover. In 1822, the Portsmouth line was restored and in 1826, the Plymouth line was begun. It was not completed as, by then, the electric telegraph had been invented replacing the land semaphore system. The old shutter sites were unsuitable for the new telegraph system and new buildings were built.

In 1838, Wheatstone transmitted electrical signals between London and Birmingham. The Admiralty became interested and by 1844 had signed a contract with Wheatstone and the London and South Western Railway Company to install and maintain an electric telegraph line between London and Gosport. Wires were laid following the railway tracks to the Royal Clarence Victualling Yard in Gosport, and then by a cable under Portsmouth Harbour to King's Stairs in Portsmouth Dockyard. In 1847 the electric line was extended and the semaphore system was redundant by the end of the year.

From 1866 sea-going semaphore was derived from modifying the three arm shutter system for use with two arms. This system could then be used with hand flags instead of mechanical levers and proved the fastest form of ship to ship signalling within its limited range. In 1867, Captain Philip Colomb found that Samuel Morse's code of dots and dashes to send messages were suitable to be translated into flashes from a lantern. Using long and short flashes to represent the dots and dashes, ship to ship night signalling was greatly improved.