

THE EVOLUTION OF SIGNALLING AT SEA BY FLAGS

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Opportunity is of great advantage in all things, but especially in war; and among the several things which have been invented to enable men to seize it, nothing can be more conducive to that end than signals.

[Polybius (204 B.C.)]

The employment of the signal flag is first recorded in dim antiquity. In the year 480 BC, at the Battle of Salamis, the Greek commander, **THEMISTOCLES**, ordered an improvised flag, a red cloak, to be displayed; this pre-ordained signal ordered the outnumbered Greek ships to turn 90° and ram the enemy ships instead of fighting alongside as was customary: A tactic which resulted in the rout of Xeres' fleet and a halt to the threatened Persian invasion. The skill of the captains of these vessels, and the manoeuvres of the ancient fleet must have been taxed to no ordinary degree. Attention to signals from the Admiral was constantly required to avoid collision. The captain was responsible for everything that occurred in connection with his vessel and the story of the unfortunate SCYLAX who missed a signal and who in consequence was lashed to a port hole with his head outside and his body inside the vessel shows that punishment for missing signals was sometimes summary as well as severe.

The first recorded use of the flag in English seas is contained in the Bayeux Tapestry which shows a blue bordered white banner super-imposed with a gold cross. This flag, it is thought, was used as a flag of command to denote the ship carrying William the Conqueror to England in 1066.

The flag of command is again prominent in the Battle of Dover Straits in 1217 when **HUBERT de BURGH** put an end to the threatened French invasion having cut the banner of Eustace the Monk from his ship causing the remaining French ships to flee in consequence.

It is not until the reign of Edward III that evidence is found of the use of the true flag being used as a means of conveying information or communicating orders. In the Black Book of the Admiralty can be found certain codes of Maritime Law, written in old French. This book contains the flag signal to be employed by an Admiral to call council of captains. This flag was white, superimposed with a red cross which today is used in the Royal Navy to denote the presence of an Admiral.

During Elizabeth I's reign instructions issued to Raleigh, Howard and Essex for their expedition against Cadiz in 1596 contains, amongst others, the following orders and signals:

'It shall not be lawful for any second ship to follow chase unless the Admiral of the Squadron shall hang out two flags one above the other. If three ships are to give chase three flags were to be hung out. If it shall seem inconvenient the Admiral will halt the chase by hanging out the Flag of Council, the chase being misliked and that all give over and keep their course.'

In 1653 a great improvement in flag signalling occurred and a code of instructions, with accompanying flag signals, was issued by the 'Right Honourable the Generals and the Admirals of the Fleet'. These instructions contained the signatures of Blake, Deane and Monk. The flags utilised were:

- A weft of the Ensign

- A Pendant

- Three flags red, white and blue.

Monk, and Blake in the last action at Santa Cruz, used the red flag flown at the fore topmast to signal 'Engage the enemy' this signal being accompanied by the 'shooting off of two guns'. This time honoured 'blood red flag' was, degraded to a mere numeral (No 1) in 1790, and disappeared from signal books in 1799.

The Commonwealth code, as it was known, was further expanded in 1665 under the guidance of the Duke of York, later James II. In a supplementary order of that year a red and white striped flag, which is often conjectured to be the basis of the United States flag, is listed as the signal to indicate 'give chase'. These instructions were further expanded and then printed, being it is believed, the first printed naval instructions.

In 1673 the first 'proper' signal book was produced. Hitherto signals had been embodied in the actual instructions; the appropriate flag being described in the text, now for the first time, a coloured drawing of each flag, arranged in order, with its appropriate meaning and position of hoist, in parallel columns was available. The flags used were much more numerous. The set comprising:

The Union Flag

The Standard

Blue and White Ensign

The Dutch Ensign

A red and yellow striped flag

A red, blue and white flag

A pendant

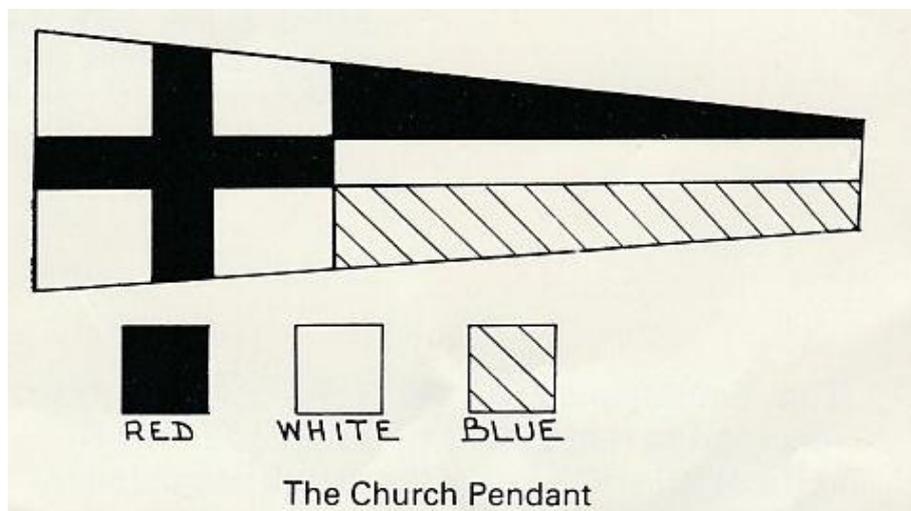
A red and white striped flag

A red and white diagonally striped flag

A white flag superimposed with red cross

In some copies the last four are omitted but a yellow and white diagonally striped flag is mentioned as a signal for Fire ships in others.

An interesting addition to these flags took place in the Dutch wars. It was the custom that Divine Service was held in opposing Fleets before commencement of battle. To indicate ships were at prayers a pendant incorporating the English and Dutch Ensigns form and colours was hoisted; the pendant being known as the Church Pendant. This pendant, in its original form, is still in use today to denote Church Services being held in the Royal Navy ships.



In 1714 a private venture by one Jonathan Greenwood printed and issued, the first actual printed signal book in pocket size. The author states that 'each signal is represented by a drawing of a ship flying the flag ~ or flags at the proper place the purport being added underneath', a method already in use in the French Navy. Although the instructions were regarded as confidential it would appear that the signals were not as the work is described as being 'designed to supply inferior officers who cannot have recourse to the full printed instructions'.

The next signal book, again a private venture, was published in 1746 by John Millan, price 2/6 plain, 4/- coloured. In this edition the flags are set out along the top of the page and the relevant meanings placed underneath. The only new flags appearing here were:—

- A White cross on a red ground
- A blue and white horizontally striped flag
- A red and white horizontally striped flag.

In a manuscript signal book of ten years later is found the earliest representation of a 'chequered' flag. This contains Hawke's auto-graph and is probably the one he used at the Battle of Quiberon. This signal book also contains detail of a blue flag with six white balls and a blue and white flag in five horizontal stripes. Later the white balls were replaced by a single white square in its centre, this flag remains in use today and is known to many as the Blue Peter. By Rodney's time this flag at the main-mast had become, and has remained ever since, the flag signal to recall ships' crew from ashore. The blue and white striped flag developed into the 'Preparative' of Nelson's signal 'Prepare to anchor' which he made after his more famous signal at Trafalgar.

After Quiberon the development of signals became rapid and even more flags were invented to keep pace. These can be seen in the signal book used by Rodney in his sea fight with De Grasse in 1782 which depicts the following flags.

- Red and white chequered
- Blue and white chequered
- Red and blue chequered
- Red and blue — two horizontal stripes
- Blue and yellow — two horizontal stripes
- Blue, red and white horizontal stripes
- Red, white and red horizontal stripes
- Blue, white and red horizontal stripes
- Blue and yellow chequered
- Red pierced with white (ie small square of white in centre)

White pierced with red
Yellow and Blue vertical stripes
White and red vertical stripes
White with blue diagonal cross
Yellow with blue cross
Blue and Yellow in six stripes

In this book we reach the culmination of the old system of denoting the signals by a large number of different flags each having a different meaning according to the position in which it was displayed.

The development of tactics and fleet organisation and the consequent increase in signals had been so rapid during the latter half of the 18th Century that the old methods had become inadequate.

In 1746 there were 16 flags in use to express 144 signals, by 1780 there were 50 flags each hoisted on an average in seven different positions providing for about 330 signals. Twenty five years later at Trafalgar the signal book contained upwards of 400 signals not including those in **POPHAM**'s code which is discussed later.

So long as the signals were few in number and the flags available were of a few, strongly contrasting designs the old system had the advantage of simplicity but when the signals were many and flags were less different simplicity gave way to complexity.

It must be appreciated that these flags had to be distinguished not only in a fair breeze but also in a dead calm with flags hanging limp and had also to be recognised against the sun where colours were not obvious, hence two conditions were, and are, essential. First, the colours must be quite unlike, and secondly the design of the flags must be simple. In practice the colours were limited to red, blue and yellow, plus black and white. It was found that when two of

these colours were shown in one flag they should be of one of the following combinations: Red and white, yellow and blue, blue and white or black and white; this with 50 odd flags would have been impossible.

The first steps to rationalise the flag system were taken in about 1778 by **KEMPENFELT**, **HOWE** and **KNOWLES**, each working more or less independently. The claim of Admiral Knowles to have discovered the 'signals by numbers' is considered contentious since a French officer, **BOURDONNAIS**, had invented a similar system some twenty years before. However Knowles claim to have discovered the Tabular method suggested, it is said by the design of the chessboard, may hold good. Knowles signals were not adopted in the Navy but as we find tabular flags used in Howe's signal book the method can be explained.

A chequered table is ruled out each side having a convenient number of squares then choosing the same number of flags these are laid out in order along the top and down the left hand side. The signal numbers are then placed in the squares of this table. For example supposing three flags, red, white and blue are available, they might be arranged hence:

	Red	White	Blue
Red	1	4	7
White	2	5	8
Blue	3	6	9

Thus the signal corresponding to 6 will be a white flag over a blue one.

The simple numery method invented by Bourdonnais and finally adopted by Howe was to assign one flag to each number from 1 to 9 and 0 so that by combining the flags any desired signal number could be produced. Knowle's method was more complicated but despite this Howe used a similar system until 1799 when it was discontinued.

Some time before 1777, probably whilst Howe was in command of the N America Squadron, he compiled a signal book on the old plan of single flags. A year or two later, in consultation with Kempenfelt, he drew up the first of his codes employing Bourdonnais' numbered system. Signals were divided into those for the Admiral and those for private ships.

About that time Kempenfelt produced his own numery code, and was in advance of Howe in that he did not separate private ship signals but included all in one series of more than 400 numbers. Further development of the code ceased in 1782 on Kempenfelt's tragic death in the *'Royal George'*.

From 1783 to 1788, Howe held office as First Sea Lord and elaborated a new signal book abandoning the Tabular method and reverting to the simple numery code and for these numerals he chose the flags that were afterwards, in their transposed meanings, used at Trafalgar.

In addition to the numeral flags the following flags were employed:—

White cross on red ground — Affirmative

White with red border — Arrival

Union - to call officers

Blue and yellow chequered — Rendezvous

Red and white, yellow and blue and their inversions — Four quarters of compass

Blue and white striped — Preparative

White flag —

1. Truce
2. Open Secret instructions
3. To take effect at close of day

To illustrate the use of the latter two flags we may take Nelson's signal at Trafalgar, 'Prepare to anchor at close of day'. The signal consisted of 4 flags:

Preparative

No 6) Anchor as soon as convenient

No 3)

White flag

A code for signalling, or other purposes, is like a language, it requires constant updating to utilise new words. Thus the need for a more flexible method of communication than that of set sentences had been long felt.

Rodney and Howe had found it almost impossible in the face of the enemy to convey concise instructions to their captains. In bad weather ships could not get close enough for the voice to carry, while launching a boat was out of the question; even when verbal communication was possible much time was lost in ships closing each other.

Steps to remedy this 'speech impediment' were first taken by Sir Home Popham. The first edition of his code consisted of nearly 1,000 words chosen by Popham from a dictionary. When the exact word was not to be found in his vocabulary the one most nearly synonymous was to be adopted but should this not suffice provision was made for words to be spelt out.

Thus in preparation for Nelson's famous signal when Pascoe told Nelson that 'confides' was not in the vocabulary, he suggested the 'one nearest synonymous' namely 'expects' as this could be expressed by 3 flags whilst 'confides' required 11 flags in eight hoists. Duty however had to be spelt out. The sentiment of the signal had been sufficiently spoiled by the substitution of 'expects' for 'confides'; the further substitution of 'best' or 'utmost' would have ruined it completely.

In 1803 a second part consisting of nearly 1,000 less useful words, and a third consisting of nearly 1,000 'sentences' were added to Popham's Code.

When the words of a message had been chosen from the vocabulary and their corresponding number written down for the signalman it remained to translate them into flags. All that was now required was a flag to denote whether the signal hoisted was to be decyphered from the Signal Book or by the Vocabulary Code. For this purpose Popham designed a telegraph flag; this was hoisted in a conspicuous position prior to making the signal taken from the vocabulary and left flying until completed.

Thus Nelson used Howe's numeral flags in conjunction with Popham's vocabulary at Trafalgar. His historic signal was made at 1156 am on October 21 1805 in twelve hoists. All but the last word 'Duty' were produced from Popham's code each being allocated a three figured number whilst 'Duty' had to be spelt out in full using the numerical alphabet. This alphabet had two peculiarities, I and J were bracketed as one letter, and V actually preceded U. Nelson's signal ran thus: **ENGLAND (253) EXPECTS (269) THAT (863) EVERY (261) MAN (471) WILL (958) DO (220) HIS (370) D (4) U (21) T (19) Y (24).**

Nelson's other notable signals made on the same day started at 7 am when he ordered his fleet to 'PREPARE FOR BATTLE' this was achieved by hoisting No 13 which was taken from the signal book. At 1140 he signalled 'I intend to go through the end of the enemy's line to prevent them from entering Cadiz', employing Popham's code, and at noon signalled 'Prepare to anchor after close of day'. This was followed at 1220 when No 16, 'engage the enemy more closely', was hoisted and left flying until shot away during the sea battle.

The longer messages were made in several hoists at a time the order of reading being first main, second fore, third mizzen, fourth gaff.

Popham produced a revised and updated vocabulary in 1816 which was later issued by the Admiralty as the Official Vocabulary Signal Book. Eleven years later the books were further revised and issued in 3 volumes; the first being known as the General Signal Book which contained evolutionary and battle signals, the second containing words and general sentences for which alphabetical flags were used, and the third, night and fog signals.

With these flag signals we reach the final development of form and though there have been frequent revisions of content the general style has remained remarkably constant, most of the signal flags still being used well into the 20th century.

Apart from certain simple and traditional signals no recognised code for merchant ships existed up to 1817 when Captain Marryat's code came into general use. Most of Marryat's flags were embodied in the code but the vowels and X, Y and Z were omitted. The reason for omitting the vowels was in the Victorian sense typical of its age namely every rude word, both English and foreign, would otherwise appear in the code and thus to prevent equally rude seamen from making objectionable words by flags, vowels were eliminated. In 1900 the code, now known as the International Code was

augmented by the eight missing letters. The present International Code printed in nine editorial languages was issued in 1969. The flag section consists of single letter signals allocated to significations which are considered urgent important or of common use. Two letter signals from the General Section and three letter signals beginning with M for the Medical Section.

From 1857 until recently Signalmen of the Royal Navy had to cope with two separate sets of alphabetical flags, those of the commercial or International code and those of the Naval code. In 1901 twelve flags were of the same design in both systems but with only one, letter O, was common to both. Therefore a Naval 'bunting tosser' had to remember that flags A, B and C in the naval code were Y, W and Z respectively in the merchant code etc.

The standard of flag signalling probably reached its height between 1890 and 1910 and a great deal of attention was paid to it; flag signalling in its speed, accuracy and scope had reached its peak. The rank of Signal Boatswain was created in 1890, the first batch of these experienced and valuable officers being appointed on March 6 of that year.

It was customary in the flagship for a signal to be sent up with flags rolled in small bundles so it was impossible to see their composition until the signal was 'Broken Out' and its purport sprung on the Fleet. This was a most striking and spectacular operation but during the last decade before the 1914—18 war the breaking out of signals was all but dispensed with.

The decline in flag signalling was attributable to the inception of the electric morse lamp and the development of wireless telegraphy both of which could of course be employed by both day and by night.

By the beginning of the 1914 war great proficiency had been obtained in manoeuvring the Fleet by short range wireless and this proved of great assistance at night and in fog. The signals could be passed in seconds, the flag' equivalent being passed by 'buzzer' from the bridge to the wireless cabinet and immediately transmitted over the air. As soon as the manoeuvre was to be executed a long dash was transmitted (this being equivalent to a flag signal but hauled down) to the wireless operator and the executive signal passed out to the Fleet.

At the outbreak of World War II the British naval code consisted of twenty-six alphabetical flags, ten numeral pendants, twenty-six special flags and fourteen special pendants in addition to the International code flags, making a total of 126 flags and pennants. It is readily apparent that this state of affairs did not lend itself to easy intercommunication between the RN and the USN. Certain war time arrangements were made and worked reasonably well. Eventually it was decided to revise the naval code, which closely resembled that used by the USN, but with certain additions, resulting in a total set of 78 flags. This was brought into force in the RN on December 1 1948.

On January 1 1952 yet another change took place when the Signal Books for use in NATO came into force. The alphabetical flags in naval use now are the same as used in the International code, as indeed are the numeral pennants, though special flags and pennants are employed making a total of seventy flags and pennants.

In this electronic computerised communication era the use of signal flags has decreased even further and up to a few years ago flag signalling all but followed the fate of semaphore being relegated to the RN history books; but as the art of radio communications prospered, technology being a two edged weapon, it was painfully discovered that radio signals were a prime means of disclosing information and intentions to an eavesdropping enemy and that the

medium was not unsuited for 'spoofing', as placing bogus intelligence into an enemy's radio communications became known. In consequence the use of voice radio is now held to an absolute minimum and visual signalling including short flag signals are now back in vogue; radio being held until the last moment when its greater capacity and speed make its use to a commander vital.

Several amusing stories are told in the Service concerning flag signals. On one occasion King George VI, whilst on the bridge of HMS Rodney, overheard the Flag Lieutenant ordering the speed of the Fleet to be changed to 6 knots. The signal for altering the speed of the guide in that era was flag G or when phoneticised flag GEORGE. Thus the order to the Flag Deck was 'hoist GEORGE SIX' this was ignored by the King, but when the order 'execute GEORGE SIX' was made, ie carry out the manoeuvre, it is said he visibly winced.

Another old favourite concerns a very small warship, alone in mid Atlantic having been detached from a convoy and commanded by a very young inexperienced captain. The young captain seeing a large and friendly RN cruiser appearing over the horizon hoisted the Church Pennant over the Interrogative Pennant. The cruiser captain, seeing his signal and not understanding its purpose, closed the small warship and enquired rather acidly what his strange signal implied. The reply — 'God where am I?' No doubt the cruiser captain put him in his place— in more ways than one.