Gun-signals arc susceptible of variety both in number and in disposition. The only distinct variation which can be made in this disposition, is by means of the time elapsed between the discharges. This will easily admit of three va­rieties, slow, moderate, and quick. Half-minute guns are as slow as can easily be listened to as appertaining to one signal. Quarter-minute guns are much better, and admit of two very distinct subdivisions. When the gunners, there­fore, are well trained to this service, especially since the em­ployment of firelocks for cannon, intervals of fifteen or twelve seconds may be taken for slow firing, eight or ten seconds for moderate, and four or five seconds for quick firing. If these could be reduced to one-half, and made with certainty and. precision, the expression would be incomparably more distinct. A very small number of firings varied in this way will give a considerable number of signals. Thus five guns, with the variety of only quick and moderate, will give twenty very distinguishable signals. The same principle must be attended to here as in the flag-signals. The most simple must be appropriated to the most important ordere, such as occur in the worst weather, or such as are most liable to be mistaken. Quick firing should not make part of a signal to a very distant ship, because the noise of a gun at a great distance is a lengthened sound, and two of them, with a very short interval, are apt to coalesce into one long-con­tinued sound. This mode of varying gun-signals by the time must therefore be employed with great caution, and we must be very certain of the steady performance of the gunners.

Note, that a preparatory signal or advertisement that an effective signal is to be made, is a very necessary circum­stance. It is usual, at least in hard weather, to make this by a double discharge, with an interval of half a second, or at most a second.

Gun-signals are seldom made alone, except in ordinary situations and moderate weather ; because accident may de­range them, and inattention may cause them to escape no­tice, and, once made, they are over, and their repetition would change their meaning. They are also improper on an enemy’s coast, or where an enemy’s cruisers or fleets may be expected.

Signals by lights are either made with lights simply so called, that is, lanthorns shown in different parts of the ship, or by rockets. Lights may differ by number, and by posi­tion, and also by figure. For the flag ship always carrying poop or top-lights, or both, presents an object in the dark­est night, so that we can tell whether the additional lights are exhibited about the mainmast, the foremast, the mizen- mast, and the like. And if the lights shown from any of these situations are arranged in certain distinguishable si­tuations in respect to each other, the number of signals may be greatly increased. Thus three lights may be in a verti- tical line, or in a horizontal line, or in a triangle ; and the point of this triangle may be up or down, or forward, or aft, and thus may have many significations.

Lights are also exhibited by false fires or rockets. These can be varied by number, and by such differences of appearance as to make them very distinguishable. Rockets may be with stars, with rain fire, or simple squibs.

By varying and combining these, a very great number of signals may be produced, fully sufficient to direct every general movement or evolution, or any ordinary and import­ant service. The Chevalier de Morogues has given a spe­cimen of such a system of night signals, into which he lias even introduced signals of address or direction to every ship of a large fleet ; and has also given signals of number, by which depths of soundings, points of the compass, and other things of this kind, may be expressed both easily and distinctly, He has made the signals by rockets perfectly similar in point of number to those by lanthorns, so that the commander can take either ; a choice which may have its use, because the signals by rockets may cause the pre­sence of a fleet to be more extensively known than may be convenient.

The commander-in-chief will inform the fleet by signal, that guns, or perhaps rockets, are not to be used that night. This signal, at the same time, directs the fleet to close the line or columns, that the light signals may be bet­ter observed.

It is indeed a general rule to show as few lights as pos­sible ; and the commander frequently puts out his own poop and top-lights, only showing them from time to time, that his ships may keep around him.

The signal lanthorns on board the flag ship, and a lan- thorn kept in readiness on board of every private ship, to answer or acknowledge signals from the commander-in-chief, are all kept in bags, to conceal their lights till the mo­ment they are fixed in their places, and the preparatory or advertising signal has been made. The commandcr- in-chief sometimes orders by signal every ship to show a light for a minute or two, that he may judge of the position of the fleet ; and the admiral’s signal must always be ac­knowledged by those to whom it is addressed.

It is of particular importance that the fleet be kept toge- gether. Therefore the leading ships of the fleet, on either tack, are enjoined to acknowledge the signals of the com­mander-in-chief by a signal peculiar to their station. Thus the commander-in-chief learns the position of the extremi­ties of his fleet.

In framing a set of night signals, great attention must be given to their position, that they be not obscured by the sails. The nature of the order to be given will frequently determine this. Thus, an order for the rear ships to make more sail, will naturally direct us to exhibit the signal at the mizen peek ; and so of other pieces of service. Lan­thorns exposed in groups, such as triangles, lozenges, and the like, are commonly suspended at the corners of large frames of laths, at the distance of a fathom at least from each other. Attempts have been made to show lights of different colours ; but the risk of mistake or failure in the composition at the laboratory, makes this rather hazardous. Coloured lanthorns are more certain ; but when the glasses are made of a colour sufficiently intense, the vivacity of the light, which at no time is very great, is too much diminish­ed. Besides, the very distance changes the colour exceed­ingly and unaccountably.

III. Of *Signals in a Fog.*

These can be made only by noises, such as the firing of cannon and muskets, the beating of drums and ringing of bells. Fog signals are the most difficult to contrive of any, and are susceptible of the least variety. The commander- in-chief is principally concerned to keep his fleet together; and unless something very urgent requires it, he will make no change in his course or rate of sailing. But a shift of wind or other causes may make this necessary. The changes which he will order, it will be prudent to regulate by some fixed rule, which is in general convenient. Thus, when a fleet is in the order of sailing upon a wind, and a fog comes on, the fleet will hold on the same course. If the wind should come a little more on the beam, the fleet will still keep close to the wind. Certain general rules of this kind being agreed on, no signals are necessary for keep­ing the fleet together ; and the ships can separate or run foul of each other only by difference in their rate of sailing, or by inaccurate steerage. To prevent this, the command­er-in-chief fires a gun from time to time, and the ships of the fleet judge of his situation and distance by the sound. The commanders of divisions fire guns, with some distinc­tion from those of the commander-in-chief. This both in­forms the commander-in-chief of the position of his squad­rons, and enables the private ships of each division to keep in the neighbourhood of their own flag ship. On board of