as will bring her parallel to F’s course, and within a pro­per distance, when she can run up close alongside of F, and engage on equal terms ; or, that she should shoot a- head, then veer, and run down on the weather bow of F, as in fig. 46, till she can force the chase to bear away to leeward, keeping close by her, on equal terms, taking care in both cases not to put it in the power of F to bring her broadside to bear on her without retaliation.

Fig. 47 is employed by Mr Clerk to illus­trate the different procedure of a French and a British man of war in firing, the former at the rigging, and the latter at the hull of the enemy, with their effects. Let F represent a large ship desirous of avoiding a close engage­ment, but lying to, to receive with advantage an enemy’s ship B, of equal force. Suppose that F, by firing at the rigging of B, may have carried away some of the principal stays, seve­ral of the windward shrouds, a fore-topmast, or other rig­ging of less consequence, without having wounded a single man ; and suppose a second ship, consort to F, receiving an enemy’s ship like B, but firing only at her hull, so as to kill thirty or forty men, without damaging her rigging. Now, when F and her consort wish to avoid a close engagement, it is evident that the ship B which has lost part of her rig­ging, is much more disabled from coming to close action than her consort whose rigging is entire, though she may have lost a great number of her men.

By the scheme at fig. 48, it is intended to illustrate the impossibi­lity of one ship being exposed to the fire of many ships at one time. Let I, H, F, H, I, represent five ships in line of battle ahead, about a cable’s length, or 240 yards, a- sunder, and suppose the length of each ship to be forty yards, so that the whole space between the head of one ship and the head of that next adjacent equals 280 yards. Let the perpendicular line FK, ex­tending from the beam of F six cables’ lengths, or 1440 yards, be divided into six equal parts. It is evident that any ship stationed at E in the line FK, 720 yards distant, cannot long be exposed to the fire of more than the centre ship F of this squadron. For if we suppose that H and K, ahead and astern of F, can bring their broadsides to bear on E, by putting themselves in positions for that purpose, they will not only disorder their own line, but one will leave her head and the other her stern exposed to a raking fire from the opposite ships BB in the enemy’s line. If B can suffer little from the two ships H, H, at the distance of 720 yards, it is evident that she will suffer still less from these ships as she approaches nearer the enemy’s line. Again, if instead of a cable’s length asunder, we sup­pose the ships I, F, I, two cables’ length asunder, to bear on the ship B, it is evident from the figure that in this case B will not be more exposed to the fire of I and I at the distance of 1440 yards, than she was to that of H and H at half that distance ; and so in similar cases.

In explaining the principles on which we are to judge of the advantages or defects of different modes of bringing ships to action, Mr Clerk supposes a fleet of ten, twenty, or more ships, of eighty guns each, drawn up in line of battle to leeward, as at F, fig. 49, and lying to with an intention of avoiding an action ; while another fleet, as B, of equal number and force, also drawn up in line of battle three or four miles to windward, wishes to make an attack, and come to close quarters on equal terms. The fleets being thus disposed, should the fleet at B attempt running down to attack the fleet at F, each ship standing head on to the opposite ship in the lee­ward line, it is to be expected, from what we have already stated, that the attacking ships will be disabled at least in their rigging before they can come to close action ; but suppose that the com­mander of the weather fleet, though his ships have been disabled in their rigging during their course *a a a* to leeward, fig. 50, has made them bring to at a great distance, but suffi­ciently near to injure F, this latter fleet, which has been endeavouring to a- void an action, will now bear away with little in­

jury to a new station, as G, and there remain out of the reach of B’s shot, and this fleet must repair its rigging before it can make another attack.

Again, suppose that the fleet B, instead of standing head on, were to run down in an angular course, as in fig. 51. It is plain that if any ship in this an­gular line should be crippled, her defect in sailing will occasion a confusion of several of the other ships in that line. It may be said that the stoppage of one ship ahead will not necessarily produce a stoppage of every ship astern of her, because they may run to leeward of the disabled ship ; but we must observe that by this time the ships ahead in the van A may be engaged, and consequently, not having much head­way, are nearly stationary, so that each ship astern, in at­tempting to bear down as at D, D, may be confined to a certain course, and must run the risk of being raked in coming down before the wind, and consequently of being disabled before coming up with the enemy.

Thirdly, the van of the fleet B having attained their sta­tion at A, abreast of the van of F, fig. 52, and having be­gun the action, the van ships, of F, with a view to retreat, may throw in a broadside on the van of B, and then bear away in succession, as at H, followed by the rest of the fleet F, which, after exchanging broad­sides with the van of B, may draw up in a new line two or three miles to leeward at 11, fig. 53.

Suppose, again, for further illustration, that B, fig. 54,