NAVAL TACTICS.

PART II.

INTRODUCTION.

In the first part of this work, it has been established, upon the clearest conviction, that the intention of our enemy, the French, in their mode of encountering our fleets, has constantly been to disable the rigging, and, if possible, to avoid the bringing their ships to a close engagement. It has been shown, no less clearly, that an Admiral, commanding an opponent fleet, and being in pursuit anywhere from the windward quarter, may have it in his power to bring the enemy either to give him battle on equal terms, and in a close engagement, or otherwise to force him to abandon a number of his ships, let him be as shy, as artful, and cautious as he will. In this second part, after the same manner, we shall endeavour to demonstrate the practicability of forcing also an attack upon such an enemy, and with equal success, from the leeward quarter. And as in the first part it has been proved, that the fleet to windward, by ma...
ing the attack, will, by this, have attained a superiority over the fleet endeavouring to avoid the attack; so, there can be little doubt it will be found, that a fleet, by making the attack from the lee-ward, must also attain an advantage over an enemy, who is delirious of avoiding the attack by making off to windward. *

---

* Great part of this subject, the attack from the leeward, having been executed almost twenty-six years ago, and immediately after the 27th July 1778, already a part thereof has been introduced in illustration of the action of that day. —Vide Part I. Observations, Keppel's Engagement, page 103.
NAVAL TACTICS.

The ATTACK of FLEETS from the LEEWARD.

DEMONSTRATIONS.

SECTION I.

OF FLEETS WORKING TO WINDWARD.

The following demonstrations, upon the working of fleets to windward, although perfectly known to all seamen, yet as they may afford some information to others not conversant on that subject, it is hoped they will not here be thought superfluous.

1. (Plate I. fig. 1.) Let us suppose a fleet of ten, twenty, or more ships to windward, as at F (Plate I. fig 1.), endeavouring to avoid being brought to an engagement; and another fleet of an equal number of ships some leagues to leeward, as at A, ardently desirous of getting up with F, and bringing him to an engagement:
ment: If every ship of the fleet $F$, to windward, shall be found to sail equally well with every individual ship of the fleet $A$ to leeward, then, unless some change of the wind or some accident shall take place, each fleet, in turning to windward, having uniformly kept their boards proportional, the distance between the two fleets will continually remain the same as at first setting off; and the fleet $A$ to leeward will never be able to get within reach of his antagonist $F$: That is, the board $A$, to be made by the fleet $A$, making the same angle with the perpendicular line $W\ W$ (the line of the wind), as the board $F\ G$ to be made by the enemy $F$; and as it will be performed in the same time and with the same speed, the distance between the two fleets, when they shall have arrived at the points $B$ and $G$, will be the same as when they were at the two points $A$ and $F$, the places where they set off.

Again, supposing both fleets shall tack at the same time, and get upon a starboard course, $B\ C$ and $G\ H$, then the two fleets, when they shall have arrived respectively at the points $C$ and $H$, the distance between them will still remain proportionally the same as at first setting off; and the fleet $A$ will never be able to get up with, or reach, the fleet $F$, his antagonist.

But if the wind, during the course of a few days, should make some change, and if some rigging should be carried away by an overpress of sail, which are accidents not to be prevented for any considerable time with fleets supposed to be engaged in a struggle of this kind; it is evident that such accidents will be of more
more dangerous consequence to the fleet endeavouring to get off to windward, than to the fleet in pursuit from the leeward. As, for example:

Let us suppose the enemy's squadron in its progress to windward from H to F (Plate I. fig. 2.) that one of their ships, from being crippled, had fallen to leeward, as at the point G; is it not evident that she must be cut off by the very next board, which part of the squadron A shall make, as at G; or otherwise, that the squadron K, upon bearing away, or shortening sail, as at H, to protect this crippled ship, by falling within the reach of the squadron A in pursuit, must immediately be forced to come to action? Whereas, on the other hand, should any ship of the squadron A come to be crippled, and fall to leeward, as at B, she will still continue to be under the protection of the squadron A, and will not thereby be exposed to the fleet of the enemy.

Again, upon a supposition that the wind may change in the course of a few days, the following demonstrations will show, that a wind from few other points of the compass will make a change unfavourable for the squadron to leeward.

Let us suppose two ships, the one several miles to windward at F (Plate II. fig. 3.), endeavouring to get off, and the other in pursuit from the leeward at A; and let the wind be at west at W.

To show the effect of changes of wind upon these two ships, let this change be from west to north, at NN, in one instant; then the
the ship A, which was several miles to leeward when the wind was at west apparently, will lye up with her course towards B, to windward of the ship F, now that the wind has got about to north, and evidently will have a course so much farther to windward (vide H G), though the distance between the two ships A and F may remain nearly the same.

Again, let A and F (Plate II. fig. 4.) be two fleets; and let the wind, in passing from west to north, have changed so gradually, that each fleet has had sufficient time to lye up and keep to the wind with the whole of their respective ships, extended in line of battle ahead, mutually as the wind shall shift: Yet, still in this case, the fleet A, which was 7 miles to leeward when the wind was west, will now have got to windward, the wind having come fully shifted to the north, as may be seen by course last of F, at the line H I, and course last of A, at the line C D.

For, if the fleet A can lye up to the wind two points at the station A, it will be able to lye two points up at the station P, when the wind shall have changed two points, and will do the same at Q, and the same at the station R, and also at S, when the wind has got full to the north.

In like manner, by the fleet F keeping the wind two points at the similar stations, and at the same rate of motion on the different and equal boards; the two fleets, when the wind shall have got to the north, will still be at the same distance from one another
another as before; but the fleet A, which was to leeward, will now have got far to the windward.

Fig. 4. Again, upon a supposition that the wind, in passing from west to south, has changed in like manner, so gradually, that each fleet shall have had time to lye up, as per lines I, M and T, U, then the fleet M, when the wind shall have come to the south, and the ship Z, will be found as far to the windward of the ship U, as when the wind came round by the northern quarter.

From all which it may be conceived, that the leeward fleet in pursuit, by a steady perseverance, will some way or other at last get up with, and force an attack upon the enemy going off, either by getting to windward of him, or by fetching some part of his fleet from the leeward; and as this must be accomplished either while the opponent fleets shall be running upon the same tack, or when they shall be brought to pass each other on contrary tacks, the Attack of Fleets from the leeward quarter will naturally divide itself into two separate cases; and let the one be called, the Simple Attack, the other the Cross Attack.

1st. By the Simple Attack, let it be understood to be that case, when the fleet A to leeward shall be able to fetch some part of the enemy to windward, and on the same tack (as per Fig. 5, plate III.)

2d. By the Cross Attack, let it be understood to be that case, where the two opponent fleets shall be brought to pass one another on contrary tacks, as A and F (Fig. 6, plate III.)
With respect to the first of these, the Simple Attack, few examples can be produced; for the French commanders, upon an apprehension of the smallest risk of being overtaken from the leeward, have hitherto found means to throw the fleets under their command on the opposite tack to that of the fleet in pursuit *.

But whether this shall have arisen from the enemy's anxiety of avoiding a shock, or from a natural consequence attendant on the necessary movements of two fleets on such occasions, certain it is that the meeting, or rencontre of adverse fleets, upon opposite tacks, have been more frequent than the rencontre of fleets on the same tack; and of which meeting, on opposite tacks, there are four examples before us: That of the 27th July 1778, two others of the 15th and 19th May 1780; and, lastly, that of the 12th April 1782.

Which last, the 12th of April, though perfectly decisive in the end, was in the beginning of the battle so far alike, and of the

* Admiral Arbuthnot on the Chesapeake.
fame nature with the three first, that the adverse fleets having met, and the leading ships of the enemy having gained the wind, (as in fig. 7. plate III.), the two fleets ranged past each other in opposite directions, each ship giving and receiving their mutual fire until the line of battle of the one fleet was completely extended abreast of the other, (as per fig. 8. plate III.); that is, when B, the van of the one, had got abreast of G, the rear of the other mutually. Of these several actions, the three first already have, in some measure, been described. With respect to the fourth, the 12th of April, the attention it requires is such, it would be improper to bring it into view until the whole subject on the attack from the leeward shall be completely discussed. In the mean while, by way of introduction to this design, it will be necessary to look back and recapitulate a few of the remarks formerly introduced, (Part I. p. 103, beginning No. 10.)
RECAPITULATION OF A FEW OF THE REMARKS ON THE
BATTLE OF USHANT, OF THE 27TH JULY 1778.

“Let us suppose two adverse fleets in contention to get to wind-
ward the one of the other; and, by dint of failing, or by a
change of wind, that the leading ships of the enemy F (fig. 9.
plate III.) shall have gained the wind of the fleet A; it seems
evident, if the van, or any part of the leeward fleet A, was to con-
tinue the line of, their first course A B, and were not all to bear
away, as per course C C (fig. 10, plate IV.), that, with great ad-
vantage, the enemy’s line of battle might be cut in twain (as at
G, fig. 11, plate IV.), and have thereby their rear II separated
from their van F (as per said fig. 11.) Again, by such an attempt,
the course of all the enemy’s ships, after of this attack, would
thereby be so far stopped, or retarded, that a close engagement
with the enemy’s whole line must be the consequence; or other-
wise their rear G, of necessity, must be abandoned by the van F,
(as per fig. 12, plate IV.)

“Perhaps it may be said, that the risk or danger of an attack
of this kind might be greater than the advantage proposed. To
which it is answered: As soon as ever we shall have the spirit
and readiness to make the experiment, conviction will follow,
that the risk and damage to shipping making the attempt will be
found to be less than in any other mode of attack whatever.

Again,
NAVAL TACTICS.

"Again, upon taking the subject in another view, suppose, for example, that two, three, or more ships (fig. 13. plate IV.) are passing each other in opposite tacks, at the rate of five miles per hour; then will the velocity of the transit be equal to ten miles per hour; or, which is the same thing, let us suppose, for the sake of demonstration, the one fleet at rest, and the other in motion, at the rate of ten miles per hour; then each ship of the squadron in motion will pass through 880 feet in one minute of time.

"According to which, then, each ship of the squadron A will pass each ship of the enemy F, with the interval between ships included, in one minute; that is, the will make a transit of 880 feet, or 300 yards (the general allowance of space for ships drawn up in line of battle) in one minute.

"Therefore, if the two fleets did pass one another on the 18th of July 1778, at the rate of 5 miles per hour, and if it were possible that the loading of a ship's guns could be repeated once every minute of time, still each British ship could be exposed to the fire of each French ship during the space of one quarter of a minute only; that is, while the two ships were in direct opposition; and as there were 26 ships of the enemy, each ship, on the whole, could be exposed to a cannonade of six minutes only. And if the fleets had passed each other at the rate of two miles and a half per hour (a motion absolutely necessary to make a ship answer the rudder well), each ship could then be exposed to a fire of 19 minutes duration."

By
By such investigation only can it be explained, how two adverse fleets, amounting to 30 ships of the line each, carrying above 36,000 men, after having been brought in opposition of battle, and mutually sustaining a furious cannonade from above 4000 guns, besides musquetry; how, I say, they have been brought to be separated again without effect, without the smallest apparent decision; that is, without the loss of a ship on either side, and sometimes with scarcely the loss of a man, though the renounter has often been said to have been within pistol-shot.

From all which it must be concluded, that the most artful management of fails, the closest approximation, or the most spirited cannonade, will avail nothing under such circumstances; and that it is in vain to hope that ever anything material can be effected against an enemy's fleet keeping to windward, passing on contrary tacks, and delirious to go off, unless his line of battle can be cut in twain, or some such other flop can be deviled, as has already been described.
CROSS ATTACK.

SECTION III.

MODE OF ATTACK FROM THE LEEWARD ILLUSTRATED.

Let us suppose two fleets, the one to windward, endeavouring to make off as at F (fig. 14. plate IV.), and the other to leeward, having sufficient desire to get up with him as at A. We hope it will be granted, that A, the fleet in pursuit from the leeward, within the course of a few days, may be able to get up with, and bring the other, his enemy F, to some renounter. Or, otherwise, that F, the fleet to windward, may have the utmost difficulty to make his escape with his whole line entire. Also, that this renewer, as it hitherto has been, may continue to be most frequently on an opposite tack.

Again, let us suppose that the enemy F (fig. 14. plate IV.), from the desire of getting off, will have exerted his whole art of seamanship to enable him to avoid the attack, it follows, that the fleet A in pursuit, though not able to fetch the van of the enemy now far got to windward, as at F, may still be able to fetch a part of his rear, as at G (fig. 15. plate V.); and as this may be conceived to take place with his headmost ships in the first instance,
NAVAL TACTICS.

Flance, we will, for that reason, begin with these examples, when this manoeuvre, of cutting an enemy's line with the greatest propriety, can be put in execution by the leading ships of the squadron in pursuit.

EXAMPLES OF CUTTING AN ENEMY'S LINE OF BATTLE BY THE HEADMOSt SHIPS OF THE SQUADRON IN PURSUIT FROM THE LEEWARD.

1. When the leading ships have fetched the rear of the enemy, suppose the three sternmost ships.

2. When the leading ships have fetched the centre of the enemy's line.

3. When the leading ships shall have fetched the fourth or fifth ship, and shall cut off the van from the centre and rear of the enemy's line.

I. WHEN THE LEADING SHIPS SHALL HAVE FETCHED THE REAR OF THE ENEMY'S LINE, SUPPOSE THE THREE STERNMOST SHIPS.

Let it be supposed, in the course of some fortunate trip in working to windward, that any number (say three or four) of the headmost ships of A have had it in their power to fetch an equal number of ships of the enemy F (as at G, fig. 15, plate V.).
And let it be supposed, that the headmost, or any one of those ships, by keeping her wind, shall attempt to pierce between any one of the sternmost of the enemy’s ships, between the third and fourth, for example, at G, (fig. 16. Plate V.); the consequence will be, that the ship making this attempt will force her way through the interval between these two ships, or otherwise, by getting foul, or running aboard of the third ship, (as in fig. 17. Plate V.), will not only stop her course in the line, but will also throw the ships astern of her into disordered. In whichever case this shall happen, here are three sternmost ships of the enemy which will be forced to leeward, as at G (fig. 18. Plate V.), where they must be entangled with the remaining part of the ships of A, which may now be pushing up, as at B, to prevent their escape.

If this manoeuvre shall be put in execution happily, and with spirit, we have a right to think it will succeed; and that the enemy, F, must inevitably lose these three ships. For his van, by the supposition, having by this time got far to windward, as at F, the matter would be determined before assistance could be given; and, in attempting to give this assistance, he would be reduced to the necessity of making the attack as at F, (fig. 19. Plate V.), which he before had endeavored to avoid, and when in possession of his whole force; therefore he will abandon these three ships; as A, by this time, may be supposed to have envisioned them with sufficient force.
Again, suppose the enemy, upon perceiving the danger his rear must be exposed to, in place of holding his wind, (as in fig. 17. and 18.), shall bear away along the line of A, (as in fig. 20. Plate VI), nothing can be gained by this; for it must be done on equal terms, exchanging a few shot only as he ranges past to windward, and must still be under the necessity of giving up his three ships at last.

---

WHEN THE LEADING SHIPS SHALL HAVE FETCHED THE CENTRE OF THE ENEMY'S LINE OF BATTLE.

When the leading ships of the fleet A (fig. 21. Plate VI.), shall have fetched the centre of the enemy F, the ship B, which shall attempt the passage, as in the former case, will either make her way through the interval which will be given her, and the ship G, with all the ships astern, will be forced to leeward, as in fig. 21.; or the ship B, by running aboard of G, and both ships coming to the wind (as per fig. 22.), the whole ships astern of such attack will be stopped and retarded. But, in whichever of these ways it shall take place, the line will be cut in twain (as in fig. 22.); the rear will be separated from the van; and the whole ships of the enemy astern, will be forced to leeward (as in fig. 23.) Meanwhile, the van A (Plate VI. fig. 24.) ranging to windward, and B, the centre and rear of A, by this time come up, the rear of the enemy G prevented from getting ahead, and finding it impracticable to regain their van F, will prepare to put before the wind, as in fig. 24.

G,
NAVAL TACTICS.

G, (Plate VII. fig. 25.) The rear of the enemy putting before the wind encompassed by the whole force of A, van and rear.

A, The ships in the van, after having forced the rear of the enemy to leeward, are now put before the wind in pursuit.

B, The centre and rear of A having prevented the enemy's rear from rejoining his van, are now in pursuit on his larboard quarter.

F, The van of the enemy (evidently) not having it in their power to prevent the effect of any part of these movements.

WHEN THE LEADING SHIPS SHALL HAVE FETCHED THE FOURTH OR FIFTH SHIP, AND SHALL CUT THE VAN OFF FROM THE CENTRE AND REAR OF THE ENEMY'S LINE.

The headmost ships of the van of A (fig. 26. Plate VII.), having fetched near the van of the enemy, and having cut his line between the fourth and fifth ship, and having ranged along to windward, as at B, his ships are now backing sail to give time for the remaining part of his fleet to get up, &c. That is, while D, the rear, having bore as per course C C, is preparing to intercept the enemy.

By which means the van A (fig. 27. Plate VII.) having got to windward, and the rear B having pressed forward, the remaining part of the enemy's fleet now diminished by four ships, the

A a 2 number
number cut off, must be forced to leeward, where an action sufficiently close must ensue.

Fig. 27. A, The van in pursuit and endeavouring to get upon the starboard quarter of the enemy.
B, The rear division flicking close upon his larboard quarter.
G, The enemy inferior by four ships.
F, The enemy's four ships now cut off.

Observations on the Three Foregoing Cases of the Attack when Made by the Headmost Ships of a Squadron.

Of these three cases, as it is easier to fetch the rear than any other part of the line of a fleet going off, so the attack will be the more assured of success.

The second, the attack on the centre, or anywhere near the centre, as the object is greater and the success equally probable, so ought it always to be attempted, if possible, to be fetched by the van of the fleet in pursuit.

The third, under which is comprehended the attack upon the van, or anywhere a head of the centre, as it must be more upon an equality with the enemy than any of the former two, so the success must therefore be more doubtful, and particularly where an enemy shall be desirous of fighting.

Fig.
Fig. 28. Again, let us suppose the leading ship of the squadron A, after a long struggle, to have gained the weather gage of the enemy, and are now ranging past him to windward, giving and receiving a heavy fire, (as per fig. 28. Plate VII.)

This supposed advantage, which, notwithstanding it has upon every occasion been the object of our most earnest efforts to obtain, must evidently be of as little importance as the ranging to leeward after having failed of gaining the wind (as per fig. 29. Plate VII.), a movement which we have long been well acquainted with.

---

Of cutting the enemy's line with the fifth or sixth ship, or any one next astern of these, in the van of the line, but let it be the fifth ship, for example; which also, like the former, may be divided into three several cases.

1. The attack on the rear of the enemy's line with the fifth ship from the van.

2. Of cutting the enemy's line, at the centre, with the fifth ship.

3. The attack on the van of the enemy's line, with the fifth ship.
THE ATTACK ON THE REAR OF THE ENEMY'S LINE, WITH THE FIFTH SHIP FROM THE VAN.

Fig. 31. Plate VIII. In which, let it be supposed that it shall be the lot of A, the fifth ship from the van, to make the attack, and cut the line of the enemy; and let this be between the fourth and fifth ship of his rear at G; while, in the mean time, the four headmost ships B, after having stretched under the lee of the four ships G, are preparing to put about and stand after them, on the same tack.

Fig. 32. Plate VIII. The consequence of which will be, that these four ships G, having already received the fire of eight ships, A and B, will at last be stopped, and forced to leeward, by the weight of the centre and rear now coming up, as at D; while I, the van, not foreseeing, or perhaps not having it in his power to prevent this misfortune in his rear, may be much more desirous of making off to windward, than of ranging along the line of A, as at H.

A, The fifth ship, with those astern of him, which had cut the line and had gone to windward, now put about in pursuit of the four ships G.

B, The four headmost ships of A, which ranged to leeward, now put about also in pursuit.

Fig. 33. Plate VIII. Shews the inevitable ruin of these four ships G, driving along before the wind, and encompassed with eight
eight ships, A and B, the centre and rear following after, as at D, F, The van of the enemy going off.

OF THE CUTTING THE ENEMY’S LINE AT THE CENTRE WITH THE FIFTH SHIP.

Fig. 34. Let it be supposed that the fifth ship A has been appointed to cut the enemy’s line at the centre, and that the four leading ships B, are in course ranged along under C, the enemy’s rear.

Fig. 35. Plate IX. The consequence will be, that all the ships of the enemy G H, which were astern of this attack, will not only be forced to leeward by A and the ships astern who followed him to windward, but will be stopped in their way ahead, and must be pressed farther to leeward by the remaining part of the fleet coming up at D. By which time it may be supposed that the ships astern in their rear, seeing the stop ahead, will be preparing to put before the wind, as at H, when a complete rout of the whole of this division of the enemy must follow.

B, The four headmost ships, having ranged past the enemy, are putting about to cut off their escape towards K.

F, The enemy’s van going off.

THE ATTACK ON THE VAN OF THE ENEMY’S LINE WITH THE FIFTH SHIP.

In this attack, as well as that of the former case, the danger to which the four headmost ships may be exposed is so great, that
that it is not probable that either the one or the other will often be attempted.

THE ATTACK WITH THE CENTRE.

FIG. 36. PLATE IX.

Let us suppose that the leading ships of the fleet A, having fetched somewhere in the van of the enemy, and that they have ranged along the whole of their line, and under their lee; and that B, the headmost of these ships, has advanced nearly abreast, or in immediate opposition to the sternmost of the enemy's ships G; and, at the time that some of the heaviest ships D in the centre, having kept their wind, shall have cut the line somewhere near the enemy's centre, at F, in like manner as described in the former cases.

Fig. 37. plate IX. The enemy's fleet having been cut in twain in this manner, their van F from their rear G, the separation will be such, it will be next to impossible that these two divisions can ever be re-united together again. But the van F and the rear G making two distinct objects, the pursuit, with propriety, ought to be confined to either the one or the other, as the attempt to carry both evidently must be inconsistent. And whereas, in the course of the preceding demonstrations, the whole force of the fleet making the attack, has, of necessity, been
been more particularly directed against the rear division, in preference to that of the van of the enemy; and as the same cause for this preference evidently subsists in this case, as well as in any of the former, we will proceed, in the first place, with the demonstration of the attack upon the rear G.

(Fig. 37. Plate IX.) The headmost ships of the rear division of the enemy having been forced to the leeward by A, the ship which cut the line will still be continued to be pressed farther and farther down the wind, by the additional weight of the ships astern coming up in succession as at B.

C, Some ships astern of the ships B, preparing to bear away and stand after the enemy’s rear division G.

D, The headmost ships of the van having already ranged past the enemy, and being assured of the improbability of any part of his rear division being ever able to get to windward, are preparing to put about, to be in readiness to follow which way ever it shall direct its course.

F, The van division of the enemy thus separated from his rear, and seeing the danger it must be exposed to, and that it will never be able to get to windward, are putting before the wind, as well to effect a retreat as to take all chances of effecting a junction with the ships of the rear, which may afterwards be so happy as to make an escape.

Fig. 38. Plate IX. shows the attack with the centre a little farther advanced.
NAVAL TACTICS.

A, The ship which cut the line, and part of those ships which followed up after him, still ranging past to windward, and preparing to put about; in the mean while are keeping up a heavy raking fire upon the enemy going off.

G, The rear division of the enemy, having the greatest part of them disengaged themselves of the van of their adversaries, are endeavouring to make off, by putting through the gap.

B, These ships having stopped the headmost ships of the rear division of the enemy, and having forced them to put before the wind, are preparing to follow him.

C, The rear of A, having now pushed forward, will be in sufficient time to get close upon the larboard quarter of the enemy, and keep by him wheresoever he shall go.

F, The van of the enemy.

Plate 10. fig. 39. G, The rear division of the enemy completely encompassed by the whole fleet, viz.

A, With the ships which cut the line and went to windward, now carrying every sail in pursuit.

B, The ships in the rear having had sufficient time to come up, and are now bearing upon the larboard side of G the enemy.

D, The ships of the van keeping close upon his starboard side.

F, The van of the enemy putting before the wind, and anxiously attending the issue of this unequal contest.

Notwithstanding it must already have been self-evident, why the prosecution of the attack on the rear of the enemy’s line, and no
around all of a sudden to the west at W, that there was not time to arrange the ships accordingly. Again, let us suppose this to have taken place near day-break, that there was a fog so thick that the situation of the ships could not be discerned, and that, unsuspicious of the neighbourhood of an enemy, which could be able to contend with them, they were careless, but that they were firing guns as signals for restoring their intended order.

Again, let us suppose an opponent fleet A, in the course of a cruise, and upon the look-out, that he shall have heard the above signals, and, upon the clearing up of the fog, that he shall discover this enemy in the circumstances as described, but extended to such a length from windward to leeward, as to satisfy him, that, although their numbers were great, yet it might be possible to attack them with much advantage. It might be reasoned thus: The right wing F, of this enemy, is at so great a distance, and so far to leeward of the left wing G, that should an attack be made upon this left wing, so far to windward, and this should be done with celerity, and before any material change could be effected in the disposition of their force, it will be next to impossible for this left wing G to receive the smallest assistance from F, the ships so far to leeward.

Plate XI. fig. 43. Accordingly, let us imagine that this opponent A, with his fleet, although inferior in number, as two to one, shall push on, with every sail set, and at right angles, that he shall cut asunder this enemy’s line abreast at B, but in such proportion that he shall be superior in force to the ships G to windward, so cut off and separated.
Plate XI. fig. 44. Again, suppose this fleet of A to have passed on ahead towards the south at C, and that the whole of the force, and in particular the rear, shall have tacked and come up again with G, is it not easy to conceive, that this unfortunate division being in this manner cut off and prevented from flying to leeward, must submit to superior force, while, in the mean time, their friends, so far to leeward at F, after attempting every thing they can, will not have it in their power to give them the smallest assistance? In this singular case, it must be observed, that the several ships of the fleet A, in making this attack, must be on equal terms with those of the enemy, ship for ship, with their heads in opposition to each other.

END OF PAPT II.
not on the van, has constantly been considered, in the preceding
demonstrations, as the object of greater attention, it is still hoped
that the following reasons will not prove unacceptable.

Because a part of the force, by the supposition, having been
detached, and already far advanced in the attack of the enemy’s
line *, it would be a manifest impropriety not to follow the blow,
and still more unpardonable not to give the necessary support to
the few advanced ships, (B B, fig. 31. and 34.), which otherwise
might be left at the mercy of the enemy’s rear.

The pursuit of the rear is also more immediately practicable:
For while the ships in the van D, which have ranged past the
enemy’s line (fig. 38.), are putting about to entangle his stern-
most ships cut off, the centre ships of A, together with his rear
B, having now got almost in contact with the ships in the rear of F,
are preparing to surround them.

Whereas, in the pursuit of the van, the headmost ships of the
enemy having at the time in question got above three miles dis-
tance even from the sternmost and nearest ships of A (fig. 40.),
and above nine miles distant from his headmost ships; to put
about ship, and get up with the van of the enemy at F, that is,
to recover the time lost, would be a work of great difficulty.

B'B 2

*Vide* the four ships at B (fig. 31.); the four ships at B (fig. 34.); and
more particularly the ships in the van at B (fig. 36.)
DEMONSTRATION.

Plate X. fig. 40. Let A be the van division, consisting of 18 ships, which have ranged past to the northward; and let B, which cut the enemy's line, be the ship at the head of the rear division, consisting of eighteen ships likewise. Then, as 300 yards is the space usually allotted for each ship, 6 ships will require a space of one mile*; and 36 ships, the number of the fleet A and B, will require a space of six miles. But the van of the enemy F, supposed to consist of 18 ships also, will likewise require a space of three miles. And as it is evident, that a space of six miles must be required for extending the whole line of the fleet A; that is, from C to D, and a space of three miles must be required for extending the van of the enemy F; then the whole distance between the headmost ship of the fleet A, and the headmost of the fleet of the enemy; that is, the distance between the points C and H, must be a space of nine miles.

G, the rear of the enemy on the point of being surrounded.

Fig. 40. By the prosecution of the attack upon the rear division, you will have your whole force, van and rear, undivided, say 36 ships combined against 18 ships, the number cut off from the van division of the enemy. Whereas, in the case of pursuing the van, it must be evident, that your force being divided, the rear of your line only, after putting about ship, can with advantage be employed in the chase of the van of the enemy, now got to the distance of three or four miles; and if overtaken, to be fought

* Vide Part I. No. 25.
fought with upon a perfect equality; while at the same time the ships in your van are either rendered useless, by having stretched too far ahead, or, at the best, will be obliged to follow the rear of the enemy, now got many miles to leeward, and equal in number, ship for ship, if ever they can be overtaken.

Fig. 41. Is supposed to show the van A, in the act of wearing to stand after the rear of the enemy G; while B, the rear of A, is supposed to get upon the larboard tack to stand after the van F, and prevent his junction with his rear G.

Upon the whole of this investigation, Part I. and Part II. with respect to the nature of both attacks, it may be concluded, that the attack from the leeward quarter can be executed with the greatest number of advantages, of which it is not one of the least, that when a ship of the leeward fleet comes to be crippled, she will still continue to remain under the protection of her friends. Whereas, on the contrary, should a ship of the fleet to windward come to be crippled, she will fall immediately into the power of her enemies, (as per fig. 2. plate 1.)
SECTION IV.

THE PERPENDICULAR ATTACK, OR THE ATTACK AT RIGHT ANGLES.

The following case, not very probable indeed, but as it some time or other may happen, and as it has some affinity to the attack from the leeward, is introduced in this place.

Plate XI. fig. 42. Let us suppose the wind at west at W, and the numerous fleet F G in an irregular and disorderly line abreast, extended to a great length from windward to leeward, that is, from the western to the eastern quarter, and let them be proceeding on their way to the northward from F towards A. At A, let an opponent fleet be discovered ahead at some miles distance, and suppose this fleet A shall be greatly inferior in number, yet still the fleet F G must be considered as in a very dangerous situation.

How the fleet F G has got into such a situation, is not so easy a matter to be explained, unless we shall be allowed to imagine, that its being found extended in a line abreast from windward to leeward, might be accounted for in this manner; that having, for some time before, been working to windward, with the wind either at south at S, or at north at N, and afterwards the wind coming round