THE NAVAL BATTLE

by

Rear Admiral Harris Laning, U.S.N.

President, Naval War College

Revised to May 1933

Naval War College

Newport, R.I.

MAY, 1933

No. 172

INSTRUCTIONS GOVERNING THE CUSTODY AND DISPOSITION OF CONFIDENTIAL AND SERIAL NUMBERED PUBLICATIONS ISSUED IN CONNECTION WITH THE COURSE OF INSTRUCTION

The officer receiving this publication will note that it is marked CONFIDENTIAL and bears a serial number. Upon issue it is charged against the officer receiving it, either by signed receipt or record book entry. It must be safeguarded and accounted for at all times, and must be returned personally to the Publication Section, Room N-11, by the officer to whom issued, for file and cancellation of receipt.

The following procedure covers in general the return to file of all Confidential and serial numbered publications:

(a) If issued in Strategy or Tactics Jackets it should be returned at end of Academic Year in the Jacket in which it was originally issued.

(b) If an OPERATIONS PROBLEM it should be returned immediately after the Critique and Discussion of the Problem. The same procedure applies to TACTICAL PROBLEMS.

(c) If a Publication of a general nature issued during the Academic year, and not included in (a) or (b) above, it should be returned as soon as practicable after it has served its purpose.

S.A. Taffinder

S.A. TAFFINDER
Captain, U.S.Navy
Secretary.

NAVAL WAR COLLEGE
Newport, R.I.
1 June, 1933

2852
5-30-33

THE NAVAL BATTLE

by

Rear Admiral Harris Laning, U.S.N.

President, Naval War College.

Revised to May, 1933

Naval War College
Newport, R.I.
May, 1933

C O N F I D E N T I A L

Not to pass out of the custody of officers of the U.S. Naval or Military Services.
When no longer required this pamphlet should be returned to the Publication Section, Room N-11, Naval War College, Newport, R.I.

2852
5-30-33

THE NAVAL BATTLE

Just as the supreme effort of a state must be put forth in war if the state is to win, so in battle must be put forth the supreme effort of the men and material engaged in it. Were the mere assembling of men and material all that is necessary to bring a state to its greatest strength in war and war's battles, the task for those who are responsible for the conduct of war would be comparatively simple. But such is not the case. For those who conduct war, the assemblage of men and material is barely the starting point, for unless both are used to the maximum of their power they are practically certain not to win against even a smaller but well handled force. From this it follows that those to whom the handling of forces in war is entrusted are in duty bound to so handle them that those forces will exert their maximum power all during the campaign but especially exert it in the battles that are the campaign's crucial and decisive points.

We all know that even tremendous power may be dissipated and utterly wasted if exerted piece-meal and haphazard, when, were it exerted in concentration, it could easily accomplish what we want. It is exactly that way with forces in battle. Utilized each to its maximum strength, and the strength of all applied in a supreme and coordinated effort, such forces can win; but operating without coordination, no matter what their individual strengths may be, the forces can easily fail. Therefore, to get the maximum from our fleet in battle we must make our battle fleet a battle team,- a team so perfected in the application of its concentrated power that it will overwhelm an opposing battle team in any contest it enters.

To keep any team always ready to win its contests requires constant effort, and this is especially true of the greatest of all teams,- a naval battle team. Take the familiar instance of

football teams. Although football contests are always between forces equal as regards numbers and general make-up, and which are greatly restricted as to what they can do by rules that change only slightly from year to year, nevertheless the tactics found sufficient to win in one year are rarely sufficient to win in the next. Even under the restrictions of football, the team that wins year after year is the team that progresses. With that situation so plainly evident in just a tiny team of fixed strength and restricted as to what it can do, it is still more evident in our infinitely greater battle team where the units are thousands of men on dozens of mechanisms, and where there are no restrictions as to what the units may do.

Increasingly complicated by a vastly greater number of units and not restricted by rules as to operation, the naval battle team also has other things that work constantly to change its style of play. New weapons, more and newer players, and improved uses of old material are constantly interjected into the team and the whole plan of battle as well as the team work of battle must take them into account. Hence no matter how nearly perfect we may make the team work of a naval battle team of today, that team work and style of play will surely be inadequate tomorrow. To keep our battle team up to date thus becomes a never ending task, involving continuous study and development, and continuous progress.

It is toward the end of making our country's largest and most vital team,-its naval battle team,-the most nearly perfect team of its kind in the world that we try to make the War College course in tactics a progressive course. The College endeavors by means of this pamphlet, which is revised frequently, to give each class, at the very start of the course, a sound general conception of the naval battle as our Navy would fight it today. By giving it that conception each new class starts where the last class at the College left off and goes onward from that point.

Thus on leaving the College students will be up to the moment in the major tactical development of the day, and, taking their ideas to sea with them, will be better prepared to keep the fleet as perfected in team fighting as is possible for that particular time.

The conception of the naval battle as given in this paper is the general plan for battle as set forth in our War Instructions, which plan, while approximating the general plan and ideas followed by both fleets at Jutland, takes into account the new ideas, the improved weapons, and the new uses of old weapons developed since that battle. It shows what at present seems to be the best general utilization of each weapon and each type of ship when operating as a part of the "naval battle team."

The general term applied to the courses of action taken in battle is tactics, which term covers all of the operations of a naval force from the time it approaches another to engage until it is again out of touch. In a major engagement these courses of action divide themselves into two classes: first, those having to do with the broad general plan under which the battle as a whole is to be conducted, which courses are covered by the term major tactics; and second, those having to do with the several parts of the fleet as each part carries out the task assigned it under the general plan, which courses are covered by the term minor tactics. Major tactics decides on the rôle in battle of each subdivision of the battle force, places each subdivision in position to carry out its rôle, and indicates the manner in which the several subdivisions are to cooperate with each other in breaking up the enemy strength and destroying it; minor tactics covers the operations of a subdivision in carrying out the rôle assigned to it.

Minor tactics has many branches, such as battleship tactics, destroyer tactics, submarine tactics, air tactics, etc., each developed to make use of the peculiarities of the type to which it

applies. At the War College it is assumed that student officers taking the senior course are as familiar with minor tactics as they are with the other fundamentals of a naval officer's education such as navigation, gunnery, engineering, etc., so that in the Senior Course minor tactics are dealt with only incidentally. Unfortunately, the assumption that student officers are generally familiar with the minor tactics of every type of craft is entirely unwarranted since the minor tactics for some of our types are not fully developed and very few officers are familiar even with what has been developed for types on which they have not served. It was largely for the purpose of developing a more thorough knowledge of minor tactics that the War College Junior Course was established and the War College Correspondence Course was recently revised, and it is hoped that by causing all officers to concentrate on the study of minor tactics in these courses our minor tactics will soon be not only well developed but also well known by every officer in the fleet and before coming to the College.

The conception of the naval battle, as given in this paper, will not go into the field of minor tactics but will confine itself to the major tactics that cover the work of a "battle force" operating as a team. Although minor tactics will not be dwelt on any further than to state some general principles that govern them as well as major tactics, one must not overlook the importance of such tactics. Sound major tactics makes the winning of battles possible, but only sound minor tactics wins them. The one is under the province of the high commander, the other under the subordinate commanders. However, a subordinate commander can make but little progress with his minor tactics unless he understands exactly what his force is expected to accomplish in battle, and the purpose of this paper is to develop such an understanding. It will analyze battle tactics from the viewpoint of the high commander, which having been done, opens the way for

subordinate commanders to analyze and develop the minor tactics that will enable their forces to do successfully the things major tactics expects them to do.

I. Analysis of Tactical Dispositions and Operations in Battle.

Procedure followed in the Analysis.

The operations of a fleet in battle have four distinct phases: First, the advance toward and development of the enemy force; Second, the concentration of the battle groups and their deployment to engage; Third, the engagement; and Fourth, the "follow up". The critical phase of battle being the engagement, the key to all battle tactics lies in that phase. Hence in order to analyze and develop the sound tactics required in battle we must begin with the engagement phase to determine the tactics to employ in it, knowing which we will be in a position to determine the tactics to employ in the preceding phases to bring about the tactical situations we find to be required if we are to succeed in the fighting phase. When we have done those things we can proceed to the "follow up" stage, which, if a victory is to be complete, must be carried through even more thoroughly than any other phase of the battle. But, as stated, the key to the whole battle lies in the engagement phase, and before one can proceed to a full understanding of the tactics to be employed in it, one must have a thorough grasp of the principles that govern that phase.

(1) Variations in sea tactics limited.

As compared with land battles the possible combinations of forces and movements in sea battles are somewhat limited. The forces on either side are practically restricted to those created before the war opens, and each commander has a fair idea of the types he may meet. The terrain of battle, the sea, offers few peculiarities that can be taken advantage of by either side. The great uncertainties in a modern sea battle come from the freedom and rapidity of movement inherent in sea forces and

from variations in the employment of the several forces and types engaged; yet even the movements and the special employment of the forces and types in sea battles are more easily detected than in land battles and are restricted by the known speed and maneuvering ability of ships. For these reasons it is possible to establish a much more definite general plan to be followed in a naval engagement with a particular enemy than it is to establish such a plan for land battles in each of which forces, terrain and positions have more influence on the tactics to be employed than have movements and the special employment of forces. Therefore let us look into what such a general plan should be for a modern fleet, bearing in mind of course that while the basic idea will be the same in all major battles against a particular enemy the detailed movements and operations of the several forces will differ in each battle since each part of the fleet team, though carrying out its mission as called for by the basic or general plan, will, in carrying out that mission, have to operate not only in conformity with any special task assigned it in the general plan but also in conformity with the particular opposition it meets in doing so.

(2) The Weapons of the Sea.

The weapons of modern navies are guns, torpedoes, bombs, and mines, all used to destroy enemy fighting craft in order that one's own craft may remain afloat and thereby have control of the sea. While under favorable circumstances any one of the weapons is sufficiently destructive to prove decisive, nevertheless, owing to the development of the defense against it, unaided, not one is capable of winning a decision against a combination of all. Aided by the gun other weapons can be made to exert a decisive effect, or aided by other weapons the gun can be made decisive. But because of its protection against destruction, and because of its great range, accuracy, rapidity of firing, hitting

power, and ammunition supply, the gun can do the greatest damage of any weapon and for that reason tactical effort in modern sea battles is still centered around the main gun action, and the other weapons are made to come into the engagement to aid the gun or to take advantage of situations created by it. Only by combining the effort of the several weapons can each be made to exercise its maximum influence in destroying the enemy, and the end and aim of tactics is to bring about such coordination of effort of one's own weapons that by their concentration they will destroy the ships carrying those of the enemy.

(3) Types of ships found in battle. next page

Naval weapons are carried on ships of various types, the types being more or less standard in all navies. As a general rule each type has been developed to utilize one of the weapons as its primary weapon and though it may carry other weapons they are of secondary importance,- the ships of a type being operated in battle in a way to make their primary weapon most effective. Thus though capital ships may carry both guns and torpedoes the gun is their primary weapon and capital ships are always operated in battle to make their guns most effective. While destroyers carry both torpedoes and light guns, the torpedo is their primary weapon and the movements of destroyers in battle are to the end of getting their torpedoes home against enemy heavy ships. Light cruisers that carry intermediate guns and have torpedoes have a dual role, the torpedo being the primary weapon against the capital ships and the gun primary against light ships. Anti-submarine craft may carry both depth bombs and torpedoes, the depth bomb being primary when operating against submarines, the torpedo when operating against heavy ships. Submarines carry only torpedoes and their function is to get them home with maximum effect on the enemy. Bombs and aerial torpedoes are launched from aircraft, which latter must be carried to the

scene of the engagement in "carriers". The weapon of the aircraft carrier is the airplane, and carriers are operated to the end of getting their planes to a position from which they can be sent out to play their part in the battle.

In addition to having the paraphernalia necessary to make its primary weapon effective, each type of ships has been given such other characteristics as will best enable it to make use of that weapon. These characteristics are expressed in size, protection, speed, maneuvering ability, submergence, etc. Thus we find in modern battle fleets types of ships as follows:

(1) Battleships, of great size, medium speed, heavy armor, many heavy guns, and several airplanes.

(2) Battle cruisers, of size equal to battleships, high speed, little armor, heavy guns, and several airplanes.

(3) Destroyers, of small size, high speed, many torpedoes, no armor, and with small guns.

(4) Cruisers, of medium size, high speed, light armor, intermediate guns, probably some torpedoes, and observation (scouting?) planes.

(5) Anti-submarine craft, often destroyers, that carry depth charges.

(6) Submarines, of medium surface speed and long surface radius, low submerged speed and short submerged radius carrying torpedoes, and

(7) Aircraft Carriers, with characteristics similar to battle cruisers or light cruisers but carrying intermediate guns, and airplanes, instead of heavy guns.

(4) Coordination of effort between types in battle.

With so many weapons carried on such different types of ships it is apparent that if we are to get the maximum effect of all weapons and make our blow the sum total of the blows of all, there must be perfect coordination between the types carrying them. The gun being the only weapon of past years and in the present continuing to be the most powerful weapon, sea battles having revolved for centuries around the ships carrying heavy guns. As other weapons came into being each endeavored, and still endeavors to wrest supremacy from the gun, and hence in battle the efforts of each type of ship are directly or indirectly against the ships that carry the heavy guns. However, as each new weapon came to threaten the gun carrying ship, steps were taken to counter it, and it is upon these attacks and counters that battle tactics are based. We have, as the dominating phase in battle, the gun fight between heavy ships, which fight establishes the main line of battle. Then we have the attacks on the battle line by vessels carrying torpedoes, the idea of which is to make the enemy heavy ships either accept the torpedo menace or else pay a price either in gun fire or in position, in maneuvering to avoid it. Against such attacks we have the counter made by fast light cruisers which by their speed and superior gun power can prevent surface torpedo craft from obtaining the position to deliver their attack. Again we have the attacks of submarines which are directed against the heavy ships and which are countered by anti-submarine craft carrying depth bombs. Finally we have air attacks which can be countered only by guns or air forces, but which can be prevented if enemy aircraft carriers are dmaged in such a way that they cannot launch their planes.

The Rôle of Each Type in the Coordinated Effort.

From the foregoing, it appears that what we call tactics is

in reality the movements or actions necessary to insure getting home the attacks of one's own weapons while preventing the enemy from getting his attacks home. The central and dominating part of the fleet in battle, and around which the entire action will revolve, being always the battle line, the approach and deployment for battle always must be such as will not only establish one's heavy ship line to the best advantage for engaging that of the enemy but also such as will place the ships carrying other weapons where they can deliver their attacks in coordination with the main gun attack, or/and where they can prevent the enemy delivering similar attacks. Therefore as the foundation for our tactical ideas, let us get clearly in our minds the general procedure each type of ship should follow in battle. To do this, let us start with the center of the engagement, the fight between the heavy ships, and then take up the operations that radiate about it as other types join the issue and attempt to exert the deciding influence on it.

Battleships

Necessities of design give heavy ships their maximum hitting power when firing on or near the beam, hence in sea battles heavy ships naturally take a formation approximating column and endeavor to hold the enemy about abeam and under the fire of all heavy guns. The most advantageous position one battle line can gain over another (See Diagram I) is the "capping" or "T" position by which that line is in a position to fire its full broadside against the enemy while the enemy can reply with only the end on fire of his nearest ships. The position equally favorable to each of two engaged battle lines (See Diagram II) is when they are abeam of each other. The "T" position being so overwhelmingly advantageous, each battle line endeavors to obtain it for itself, or to approximate it as nearly as possible, while preventing the enemy from doing anything of the kind, and

for this reason we have as the fundamental principle of battleship tactics that of always keeping one's own line normal to the bearing of the center of the enemy's line. Both before and during the gun fight between heavy ships this principle must be observed and it is because all competent commanders do observe it that even at the opening of an engagement between heavy ships we almost invariably find the two lines on approximately parallel courses and almost abeam of each other. We therefore start from this position of the battle lines in evolving the theory of modern battle tactics.

Although the heavy ship engagement usually starts under nearly equal conditions as between the opposing battle lines, due to their being parallel and about abeam of each other, each line naturally attempts to gain the most advantageous position, that of the "T". Now the position where the opposing lines are most nearly equal gradually changes to where one has the maximum advantage as one column draws ahead of and across the end of the other column to the "T" position. The battle line that draws ahead of the other (See Diagram III) and keeps itself perpendicular to a line from its center ship to the nearest enemy ship while doing so, not only has its full broadside bearing on the enemy line but also, and at the same time, reduces the number of enemy guns that can be brought to bear or kept within range. But to obtain a "T" or "cap", or even approximate it, one battle line must have a decidedly greater speed than the other and the other must hold its course. To prevent a cap, even when a column has less speed, it is only necessary to "swing the line" sufficiently to keep the enemy always abeam. This "swinging the line" may be accomplished in either of two ways,- one by a head of column movement that changes the course of the column to the right or left by the necessary amount to

bring the enemy abeam, the other by a "redeployment" of the line (See "Maneuvers of the Battle Line") to bring the enemy on the beam bearing.

In using the first of these methods, a head of column movement (See Diagram IV), grave danger exists since it takes considerable time to complete the maneuver and, in order to keep the other line abeam or nearly so, the change in direction of the head of the column may be abrupt and through many degrees of arc, thereby creating a bend, or "knuckle", at the turning point. A battle line so bent is in a bad position, for ships at the knuckle or ahead of it are laid open to a concentration of gun fire easily controlled, while those in the rear may be out of range or have but few guns that will bear.

In using the second method, i.e., "swinging the line" by a "redeployment", gun fire may be somewhat interfered with by the several turns and movements the individual ships must go through, while at the same time the signals and movements connected with the maneuver are hard to make especially when both battle lines are firing heavily. Nevertheless, using this second method to keep the enemy line abeam is usually preferable since the maneuver can be completed much more quickly than a column movement, thereby permitting one's own battle line to be ready in less time to carry out future maneuvers, while at the same time it will disconcert the enemy's gun fire much more than one's own because one will know before hand when and what turns are to be made, and can make the set up on his own fire control instruments to cover them, whereas the enemy will require time to ascertain the changes and make his fire control corrections.

So valuable is bending an enemy battle line, or forcing it into complicated and possibly wild maneuvers while under heavy gun fire, that all battle line commanders seek to force

one or the other of these conditions on the enemy line and thereby gain an advantage in gun fire that will be decisive. However, in these days, it is hardly possible for one battle line to have sufficient speed to force a properly handled enemy line into a knuckle or even into difficult maneuvers in redeploying, and since some such decisive advantage must be gained other craft are brought into play to produce it. The types used for such purpose are (1) heavy gunned and fast battle cruisers, and (2) vessels that carry torpedoes. By the proper use of these types their weapons can be brought to bear on an enemy line, forcing it into possibly wild maneuvers to avoid the menace or to accept the menace and the damage to ships it imposes. In either case, the advantage gained may prove decisive; hence battle tactics, to be sound, must be such as to give one that advantage while denying it to the enemy. Let us see how forces not of the battle line should be used to gain it for ourselves while at the same time preventing similar enemy forces from doing that same thing to us.

Battle Cruisers - (See Diagram V)

Battle cruisers, like battleships, have guns for their primary weapon. Their high speed enables them to do what battleships cannot do, i.e., obtain or approximate the capping position. However, weak in heavy armor and having but few guns, they dare not engage battleships ship for ship, but must by their speed attain a position from which they can bring their full broadsides to bear while the enemy, unless he maneuvers his line, can return the fire with but few guns. Hence, in battle, battle cruisers have their greatest value as "fast wings", fighting from advantageous positions against either end of the enemy line, but preferably against its head, and causing the enemy line to suffer either from the cruisers' guns or from those of the other heavy ships as the line maneuvers to parry the battle cruiser attack. It is this that determines the disposition

and employment of battle cruisers in a general engagement, and we therefore, wherever practicable, use them as fast wings, with missions to attack the enemy battle line from advantageous positions and destroy its ships by gun fire or force them to maneuver so the battleships can do so.

From the advantageous position battle cruisers can take at the ends of a battle line, they are able to play a dual rôle in an engagement. Not only are they placed well to attack the enemy heavy ships but from these positions their great speed and gun power enable them to protect the ends of their own column from all kinds of attacks by enemy light fast surface craft.

Prior to the time of the treaties limiting armaments a fleet that had battle cruisers without having to sacrifice battleship tonnage to get them had many advantages. Not only was such a fleet able to use battle cruisers to strike hard at the enemy line at its weakest point,-its flanks,-but at the same time it had (1) a most powerful support for its own light forces on the flanks of its battle line and (2) a most powerful defense against enemy light force attacks from the flank. One should always remember, however, that for all their strength battle cruisers could fill their dual rôle successfully only when in gun support of their own battle line. Worked, as regards gun range, in perfect coordination with a battle line approximately equal to that of the enemy they could do much to the enemy line while at the same time protecting their own, and in this was their great value. But to use them successfully, and to have them always sufficiently supported by their battle line to prevent their destruction through lack of gun support, required the closest coordination in gun range between the cruisers and the battle line, and it is in the difficulty of so coordinating the ranges of dispersed forces that the weakness of battle cruisers lies. This point must be remembered always, and especially now when capital ship tonnage is limited, for should there be a

failure in mutual gun support between a battle line and its detached wing, even if the wing is a fast one of battle cruisers, both the battle line and the detached wing open themselves to destruction in detail. One of the groups will get within range when the other is out of it, or will get to a short range when the other is at extreme range, and when this happens a concentration of gun fire on the nearer group will quickly destroy it.

It is the impracticability of coordinating in battle the movements and gun ranges of two widely separated groups of capital ships that has caused navies, limited in capital ship strength by treaty, to cease to build battle cruisers. The price paid for them in battleship strength is far above any possible gain they might give us in battle. However, although we ourselves have no battle cruisers and therefore have no worries as to our using them in battle, other countries still have them; hence we must reckon with them in our battle operations. But will will suffer little damage from them in battle if we keep our own battle line in concentration, for doing so will enable us to remain at least equal to our enemy in the battle line if he operates his battle cruisers in his own battle line, and will give us an almost certain opportunity to destroy his capital ship strength in detail if he separates his battleship and battle cruiser groups.

Destroyers - (See Diagram VI)

In the same way that battle cruisers, through their speed, can gain a position favorable for attacking a battle line with heavy guns and force it into a knuckle or cause it to maneuver when under heavy fire, lighter craft of high speed can gain a similar position from which, by attacking with torpedoes, they, too, can force the same disadvantages on an engaged enemy. Since the positions least open to enemy gun fire are those on the flanks of his line, such positions are comparatively safe not only for vulnerable battle cruisers but also for the still more vulnerable

destroyers. Therefore, destroyers sent in on the bow, or forward of the beam, of an enemy battleship line to fire long range torpedoes have excellent opportunities to compel an engaged battle line to maneuver under fire or accept the menace of their weapons. This fact gives us the key to the employment of destroyers in battle, and it becomes a principle of battle tactics to so employ them. Like battle cruisers, their stations, except those of the Anti-Submarine Screen, on deploying are (1) on the engaged bow of their battle line, in order that they may strike at the enemy line from ahead if the enemy continues on his course, or (2) astern, or on the engaged quarter, that they may strike in case he turns about.

Thus are the positions of the ships that have heavy guns and torpedoes as their major weapons of attack determined for us, and in the opening stages of modern battles they probably will be found about as follows: (a) opposing battleships in parallel columns and about abeam of each other; and (b) the major part of the battle cruisers and destroyers ahead and on the bow of their battleship line, the remainder in the rear on its engaged quarter. From these positions, and all advancing simultaneously, each type will endeavor to hit the enemy heavy ships with the full power of its weapons, overcoming such resistance as may be met in reaching the position to deliver their attacks.

Light Cruisers - (See Diagram VII)

In a normal naval engagement, other things being equal, the force that can get home quickest the simultaneous attack of its several weapons or types of ships has every prospect of winning the engagement, and to prevent the enemy getting home such a simultaneous attack each side counters the various parts that go to make it up. Such counters, however, are not always carried out by ships of the same type as the attackers. The counter to heavy ship attacks is generally made by heavy ships, but the

counter to the attacks of destroyers is made by ships of the cruiser type, by battle cruisers from their positions as fast wings, and by heavy or light cruisers which have the speed of destroyers but very much heavier batteries. Hence, interposed between the enemy's cruisers and destroyers and our Battle Line and destroyers, we place cruisers whose mission it is to cover and clear the way for their own destroyers and light craft in their attacks at the same time that they prevent attacks on their own heavy ships by enemy destroyers and light craft. With this disposition and use of the cruiser type also before us, we have the broad general plan for the deployment stations and use of battleships, battle cruisers, destroyers, and cruisers in battle.

Submarines - (See Diagram VIII)

In addition to the offensive types so far discussed as operating entirely on the surface and against surface craft, and which, as we have seen, work in close coordination with each other, we find in battle two other offensive types previously mentioned, submarines and aircraft. These types, though capable of delivering powerful attacks, cannot carry out their roles in battle with anything like as much synchronization as is possible between the surface types. Though the submarine is a more recent addition to battle fleets than the surface types already discussed, its weapon,-the torpedo,-is not new. Like the torpedoes of surface craft, those of submarines, to be effective, must be launched from favorable positions, but owing to the limitations imposed on submarines by their low submerged speed and their inability to observe, gaining that position is most difficult. Their great strength lies in the element of surprise contained in their attack, but their success is largely dependent on their original position as the battle opens and on the movements of the enemy thereafter. Hence only the broadest principles

can be laid down for their use in battle. All that can be done is to so place them in the disposition for advance that as many as possible will be in or near the area that the enemy battle line must occupy to be within gun range of our own, and then afterward to so maneuver our own battle line as to hold or draw the enemy battle line near the submarines so they can attack. That, they must do at every opportunity with a view to destroying the enemy heavy ships or throwing them into such confusion that gun fire can destroy them.

When successful, a submarine attack exacts heavy toll, usual at small cost, and so though successful attack by submarines cannot be counted on in battle to the extent we can count on the attacks of surface craft nevertheless submarines always offer the possibility of obtaining a decisive advantage. The mere suspicion that submarines are in a certain area may be sufficient to interfere with the enemy's plan either by keeping his heavy ships out of the area or by forcing them into maneuvers they do not wish to make.

Aircraft

Of the many weapons or types found in the up to date naval battle, aircraft stand out as peculiarly affecting battle operations. Because of the newness of aircraft in actual war operations at sea their capabilities and limitations are not as well established as are the capabilities and limitations of other types. However, much study has been made of aircraft operations in peace time maneuvers and through those studies we have obtained a fair understanding of the manner in which they probably will be used. But before going into the manner of using them in battle, it is advisable to have some understanding of what our studies have shown aircraft can be relied upon to do. It appears they can

accomplish the following:

First: Locate and keep touch with practically all types of enemy craft, reporting their strength, dispositutions, and movements. This includes such things as

(a) Tactical scouting and protective scouting against all surface types, and

(b) the detection of submarines and torpedoes.

Second: Spot gun fire, thereby increasing both effective range and accuracy.

Third: Attack enemy ships with bombs containing high explosive or chemicals, or with torpedoes.

Fourth: Lay smoke screens.

Fifth: Engage other aircraft, and

Sixth: Possibly supply an auxiliary means of communication (1) by radio, or (2) as direct messengers, should the ordinary lines fail.

From the above list of things that aircraft can do it is evident that the influence of aircraft on the naval battle may begin when the opposing fleets are still several hundred miles apart and will continue even after all other types have passed far out of sight contact. By the information aircraft can gain before, during, and after battle, they can provide what is necessary to enable all types of craft to be maneuvered intelligently to gain decisive tactical advantages. By spotting for gun fire they may give a decisive advantage in such fire. By attacks with chemical bombs, the gas from which temporarily disables personnel, they may place vital units hors de combat for a period sufficiently long to give one side a decisive advantage in gun or torpedo fire. By the use of torpedoes or explosive bombs they may inflict lasting damage to vital units or even destroy them; while smoke screens made by aircraft often can be better and more quickly

placed than those by destroyers, and may be even more efficacious.

Great as will be the influence of aircraft on the trend of a naval battle, it is apparent that to get full results the aircraft effort must be closely coordinated with the efforts of the other types. Only by direct attack on enemy ships can aircraft by themselves accomplish much, and though such attacks may prove deadly and possibly have a decisive value, nevertheless, because of the limited number of carriers allowed by treaty, air attack usually cannot be made in sufficient numbers to gain as much for their fleet as can be gained by other aircraft efforts in which the influence is indirect, as, for instance, information work, spotting gun fire, laying smoke screens, etc. But that aircraft may do the things open to them their carriers must be so placed, both before and during battle, that they can launch their planes freely and in safety, and for this reason carriers must be well protected and kept out of the area of gun fire. Hence in battle, carriers are usually stationed well away from the battle line on its disengaged side as the battle opens. Also there must be for the battle a very definite and well understood "air plan" conforming to and furthering the general plan established for the surface craft.

In order to carry out any worth while air plan, and particularly to protect one's own fleet against enemy air attacks, the first effort in an air plan should be to insure, as nearly as possible, control of the air in the vital areas. Such control often has to be fought for and for that reason we usually find the first step in any air plan is the getting up of sufficient combat planes to dominate the air at least in the vicinity of one's own fleet. It has been found, however, that aircraft alone, no matter what the type, cannot <u>insure</u> complete control

of the air over a fleet or protect it against all enemy air attacks. Apparently the only way to insure protection to a fleet is to so damage in time the enemy's plane carriers that planes cannot take off from them; and for that reason great effort must be made to attack and injure enemy carriers at the earliest possible moment.

Once one is in position to make full use of his aircraft hitting power, one should lose no time in taking advantage of it to attack enemy fighting ships, to lay smoke screens either to blanket the enemy's gun fire or cover the attacks of one's own forces, and to destroy all remaining enemy planes. However, in attacking enemy ships or in laying smoke screens to cover attacks by our own forces, sound judgment must be used. The objective for either effort must be selected with wisdom and must be that part of the enemy fleet we most desire to put out of the action. Also, in attacking from the air, careful consideration must be given to the weapon used by the planes, and the one selected should be a suitable one. For instance, if the attacks are made before the objective is under gun fire, one should use bombs or torpedoes that do lasting damage. When the objective is under fire it may be advisable to have some planes use chemical or smoke bombs, for the increased effectiveness that comes to one's own gun, torpedo, and bomb attacks from a wise use of chemicals or smoke that renders a part of the enemy force helpless for even a short time may far exeeed any damage a like number of aircraft can possibly do with torpedoes or explosive bombs. These and many other things must be considered in preparing the air part of a battle plan and only by considering them can we arrange to gain from air forces all the assistance of which they are capable.

But however great the air effort may be in other directions, one must never lose sight of the necessity of watching the enemy from the air. Aircraft are the eyes of the fleet in battle, and without such eyes, because of the enormous area covered by huge modern fleets in battle, a fleet may easily become as a blind man. For that reason, both long before and all during battle we must have observation planes out in sufficient numbers and so stationed as to see and report all enemy movements. And as a corollary to this part of the air effort, the air plan should provide means for denying the enemy similar information by fighting off his planes. In the air, as on the surface, one must gain information for one's self and deny it to the enemy.

Anti-Submarine Craft

All the types of craft found in the naval battle of today have now been discussed except the purely defensive anti-submarine type. Ships of this type merely keep in positions to protect the more important ships from submarine attack and as long as they maintain such positions they have no great offensive rôle to play in battle. But in protecting important ships against submarine attacks, anti-submarine craft, when in position, are able to play another very important defensive rôle, for should the ships they are protecting suffer too much from gun fire, the anti-submarine craft are in excellent position to cover them with smoke and thereby reduce the damage being done. While such defensive operations will not of themselves win a battle, they may prevent one's losing it and thereby make winning possible, and for that reason a fleet must be ready to use them whenever advisable or necessary.

(5) The Advance, Approach, and Deployment.

With the idea in our minds of the general role each type has to play in the engagement phase of battle and of its approximate station as that phase opens, we are now in a position to determine the dispositions and tactics to employ in the advance, approach, and deployment. To do this we again start with the battleships, taking up the other types in turn, just as was done to determine the dispositions and procedure in the fighting phase.

The Advance

To win in battle with as little loss as possible, it is necessary to bring the maximum gun hitting strength of the heavy ships to bear on the enemy at the earliest possible instant after the firing starts, and because of that fact battleships must, during the advance of a fleet, be kept concentrated and ready for quick deployment. Unfortunately for a fleet commander, there can be no certain knowledge before hand as to what will be the bearing of the enemy battle line from one's own line when contact is made and for this reason, in the advance and approach, heavy ships cannot be placed in a battle formation while seeking the enemy but must take some other formation from which they can deploy quickly for engaging on such course as happens to be normal to the bearing of the enemy battle line when that line is approaching gun range.

Without going into details as to why, it has been found that the best cruising formation for battleships, from which quick deployment can be made in any direction and in any order of divisions, is some form of a "line of division columns", and heavy ships are always kept in such a formation, with its general line of bearing normal to the expected bearing of the enemy when sighted, whenever there is any possibility of meeting him. It is impracticable in this paper to discuss these cruising formations of the battle line or the deployments therefrom, and it is unneccessary to do so since they are all indicated

in the official publication "Formations and Maneuvers of the Battle Line." For the purposes of this paper it can be accepted that battleships must be in such a formation whenever battle is even a possibility, and that from the formation they can deploy quickly on any course and in almost any order of divisions. Bearing this in mind, we will pass on to the disposition of the other types of ships during the advance.

The fundamentals of a sound disposition for the advance of a battle fleet are:

First, that it be suitable for offensive operations.

Second, that it provide for the quick and accurate deployment of the entire fleet no matter what may be the bearing of the enemy when contact is made.

Third, that it insure time for deployment after contact has been made, no matter what the visibility may be.

Fourth, that it permit rapid maneuvering of the entire fleet during the advance but more especially after scouting contact has been made and tactical advantages in position are being sought, and

Fifth, that it insure the safety of the units in the disposition and provide an overwhelming defense against surprise attacks of every kind, including those of destroyers, aircraft, and submarines.

If a fleet had an unlimited number of ships of the types other than heavy, it would not be difficult during an advance of the fleet to provide both for information and security and still have a complete "battle team" in concentration and ready for quick movement and deployment for battle. As things are, however, a battle force has to do much if not all of its own tactical scouting and screening, and the task of providing for both while at the same time permitting flexibility of movement

for the force, yet holding all types ready to take their position and play their roles in a general engagement, is very difficult. Not only must all types be in correct position and ready to engage as the heavy ships come within range of each other, but immediately prior to that time they must be in an easily maneuvered disposition that will enable them to (1) locate the enemy, (2) prevent surprise attacks of all kinds, and (3) deny the enemy information. Assuming that the heavy ships will be in concentration and in a formation from which they can deploy quickly for battle, what, in the advance, should be the disposition of the other types found in a battle force?

The ships nearest the battleships will, of course, be those of the anti-submarine type. Beyond them there must be ships for protective screening, and, still further beyond, ships for searching and contact scouting. These necessities largely determine the disposition of the outlying ships during the advance of a battle force to meet an enemy, and in the several outlying lines of ships that result from meeting the necessities we find we must use ships of all the types at our disposal, excepting only battleships and aircraft carriers; and when the enemy has battle cruisers and we have not, or is greatly superior to us in light cruisers, even battleships may have to be placed in these outer lines.

Though many dispositions can be laid out, each of which will provide the necessities for the advance and still leave the fleet ready for quick concentration and deployment for battle, nevertheless any one of them, to be effective, will have attributes about as follows:-

First: Around the disposition, and well beyond all other forces, and covering them especially on the front and flanks, a force of submarines.

Second: Inside the submarines, one or more lines of destroyers to act as a protective screen, give timely information of enemy forces, and to force down any submarines coming into the disposition.

Third: Within supporting distance inside of the destroyer line (or lines), a strong line of cruisers to support the outer lines. (Note: The actual distances of the second and third lihes from the center are direct functions of the visibility and therefore cannot be definitely laid down in a paper of this nature.)

Fourth: Between the cruiser line and the main body, a protective screening line of destroyers, concentrated, as far as their numbers and the area to be covered permits, in sections or divisions, and ready for further concentration before deployment takes place.

Fifth: Inside the several screening lines, the battleships in a quick deployment formation.

Sixth: Near the battleships, the aircraft carriers.

Seventh: Around all heavy ships, wherever placed, an anti-submarine screen.

Any disposition used in advancing into waters where enemy forces may be encountered must be strong in defense as well as in offense, for unless it is strong in defense, especially against surprise raiding attacks, the strength of even a powerful battle force may be seriously impaired before it can force a general engagement. This fact is sometimes lost sight of, and in developing a disposition for the advance, students frequently base it solely on its efficiency for deploying withoutntaking into account what may and probably will happen before an engagement starts if there is not sufficient defense against surprise

raids by aircraft or submarines, or even by fast cruisers and destroyers. No matter how much on the offensive an advancing force may be it must not overlook the vital necessity of having a thorough defense against raids. In fact, the more offensive an operation is, and the deeper it penetrates into the enemy's area, the more likely it is to be subjected to surprise attacks, and to overlook the defensive necessities of a disposition just because it is to be used in an offensive operation is to make one of the most dangerous mistakes a naval commander can make.

If in laying out a disposition for the advance there were nothing more to it than giving it the ability first to destroy enemy raiding forces that attack during the advance and second to deploy and fight a general engagement when the enemy's heavy forces are met, the problem of our cruising dispositions would be much simplified. However, in addition to providing both for an overwhelming defense against raids and for quick deployment and fighting, a disposition for the advance must be able quickly to change both the direction of its advance and the direction of its axis. Let us investigate these several requirements, taking up first the matter of quick deployment.

In our discussion of the employment of types of ships in battle (See Diagram VIII) we deduced the approximate station of each type at the time the major ship action opens. Also we have seen how, for the purposes of security and information, the types must be dispersed in a cruising disposition just prior to that time (For diagrams of Cruising Dispositions see "Tentative Fleet Dispositions and Battle Plans, U.S. Fleet, 1930" and the War College pamphlet "Example Fighting Instructions for a Battle Force using a Circular Disposition"). Now the deployment of a fleet changes it from a"disposition for the advance" to a "battle disposition", and as can be readily seen the problem in deploying

becomes one of time and distance. Evidently the disposition used for the advance must be such that when contact is made with an enemy battle force there will be sufficient time, before the opposing battle lines get within gun range, for the outlying forces in the disposition to concentrate and cover the distance to their stations for deploying and opening the engagement. Providing for even that would be less difficult were we always sure of a smooth sea and could count on all types making their maximum speed over the ground. What makes the quick deployment requirement difficult to meet is the effect the wind and sea may have, for the outlying craft in a cruising disposition are generally small and light and the speed they can make over the ground is often reduced several knots by even a moderate wind and sea. Therefore a disposition for the advance must be such that, even with their speed reduced by adverse sea or weather conditions, the light craft in it will still have time to concentrate and reach their deployment stations by the time the major ship action opens.

In addition to permitting rapid concentration of its many subdivisions and their quick deployment for battle, the "disposition for the advance" must also be such as will permit the quick maneuvering of the entire force whenever necessity warrants and especially when seeking an advantageous position over an enemy force just prior to engaging. Hence to be properly efficient our dispositions must be able to make changes of course quickly and without confusion, during either daylight or darkness, must not weaken its strong defensive properties while so doing, and must retain at all times its ability to deploy quickly and accurately.

"Linking Up"

While every sound cruising disposition must have all the above named qualities, there is yet another point that must be looked out for in them. Because of the very great area it covers when in a cruising disposition no part of a huge modern fleet is

visible to all the other parts, nor can enemy ships outside of or even on the edge of the disposition be seen by more than a few ships in it. Yet the units of the fleet must maintain their stations at all times when the fleet is cruising or maneuvering itself into a position favorable for deploying for battle, must concentrate and gain their positions for deployment when engagement is imminent, and then must fall on the enemy quickly with all the hitting power they have. To do all these things requires considerable precision both as regards keeping position while cruising or advancing to engage, and as regards movements while concentrating and taking battle stations.

That all contacts made can be reported and plotted with the accuracy necessary to enable subordinate commanders to bring their forces into concentration and to their deployment stations with rapidity and precision, all ships in a cruising disposition must know at all times their exact location with reference to the battleship force. Therefore all ships must keep positions accurately with reference to that force, and to facilitate their doing so ships for "linking up" positions by visibility must be provided in all cruising dispositions. Keeping stations accurately through "linking up" ships, and aided by frequent reports as to the "reference position" of the battle line, a Fleet is ready to concentrate and deploy its forces promptly and accurately.

So vital to successful deployment is the accurate linking of all other forces to that of the battle line that the utmost attention must be paid to it. Great as may be the disasters arising from an improper arrangement of forces in a disposition for the advance, almost as great disaster can result when the Fleet's parts are not sufficiently linked to the position of the battleship force as to make possible their quick and accurate concentration and deployment.

"Types of Cruising Dispositions"

To meet the necessities when advancing a fleet or force into waters where the enemy may be met, two general types of cruising dispositions have been provided for our Navy, - one type axial with rectangular coordinates, the other circular. Both of these types, each in several modifications based on the purpose for which it is to be used, are described in the publication "Tentative Fleet Dispositions and Battle Plans, U.S. Fleet, 1930". Each type has advantages and disadvantages, and the one to use, in any particular situation together with the special modification of it, can be determined only by weighing all the factors that govern in it. Having weighed them we can then select the cruising disposition best suited to the need.

(6) Tactical Scouting.

It will be noted from our official publications that the cruising dispositions laid down usually utilize all the ships we will probably use as a "Battle Force" in war but make no special mention of the ships that probably will compose the "Scouting Force". This should not be taken to indicate that our Scouting Force will not cooperate with the Battle Force to give the latter security and information, but only that in doing so its dispersion may become so great that it cannot be relied on to take part in the battle or even to do the tactical scouting preliminary to battle. All we can surely count on from the Scouting Force in war is that it will scout and screen strategically and will keep the Battle Force informed as to whether or not the enemy is near. Having that information the Battle Force must depend on itself for such other information as it needs to engage successfully and it is to the end of gaining such information that our cruising dispositions are given their rather far flung outer screens. Should the Scouting Forces drop back on the Battle Force as the latter nears the enemy

so much the better for us, but we date not count on its doing so and must provide accordingly.

While the cruising dispositions laid down for our Navy are so devised that water-borne craft, surface or submarine, will probably give us reasonably early information of the nearness of the enemy and will generally prevent our main body being surprised, it is evident that an enemy only eighty or ninety miles from the Main Body might not be discovered by them. Were a Battle Force merely on the defensive and awaiting attack it might be sufficient only to know when the enemy is within such a distance, though with earlier information even a fleet on the defensive would be benefited by having more time to maneuver for a favorable position as regards wind, sea spray, light, etc. However, to a Battle Force on the offensive and seeking the enemy, it is essential that it know if the enemy fleet is within two or three hundred miles and so in addition to the far distant strategic scouting done by the Scouting Force, a Battle Force requires tactical scouting of far greater range than is provided by the outlying surface craft in our cruising dispositions. Such tactical scouting, in ordinary weather, can be done by aircraft and so, having adopted a somewhat concentrated cruising disposition for the Battle Force in cruising or advancing toward the enemy, we must also provide means for air tactical scouting that will let us know of any enemy forces within several hundred miles of us.

The question of air tactical scouting is far from being solved. Until the engagement phase opens it must be done by planes that can return to their ships when their search is completed and this planes from light cruisers or other combatant type ships not fitted with flying on decks cannot do with certainty. Therefore planes on combatant ships should be held on their ships until just before those ships start to engage at which time they should be launched and take up the duty of spotting and supply information. Until battle is joined all air

activities, and especially tactical scouting activities, should be carried out by planes from ships with landing decks and only when engagement is certain, or some other extremity demands it, should planes be launched from other ships. But once the main engagements opens all tactical scouting and spotting should be done by planes from ships other than those with landing decks in order that the latter may drop such tasks and use their planes fo offensive purposes.

Having given "carriers" such stations in our cruising dispositions as will enable them to carry out air operations as above outlined, the question then before us is as to how they may provide suitable tactical scouting prior to the time battle becomes certain and the aircraft from combatant ships become responsible for supply information.

If carriers had unlimited numbers of long radius planes and air pilots, air tactical scouting prior to battle would not bother us greatly. But the numbers both of pilots and of long radius planes are limited. Casualties are not infrequent even in scouting flights where no contacts are made. Continuous air scouting for many successive days is often impracticable and even frequent flights exact a considerable toll in damaged or lost planes. Hence there should be practically no air scouting except when there is a possibility that the enemy is near, and even when he may be near the number of scouting flights and the number of planes in each flight must be a minimum.

In view of these things and holding the idea that among our Scouting Force, secret agents, and other elements of our information service we will at least know when there is a

possibility of our Battle Force being near the enemy, it is suggested that we confine the Battle Force's air tactical scouting to that time. The one best scouting plan to be followed in that time has not as yet become evident, but when devising a plan, the following should govern:

First:- Searches must be thorough and cover all the area in which the enemy can be.

Second: Use the minimum number of planes commensurate with thorough search.

Third:- The plan of search should be such as to call for not more than two changes of course by any one plane between its leaving and its return to the disposition.

Fourth:- The plan of search for a fleet seeking out the enemy may differ greatly from the plan of search for a fleet on the defensive, so in drawing up a tactical scouting plan one must base it on his scouting needs.

Fifth:- Usually at least two flights per day is the least number that will suffice; - one made at the earliest possible time after there is sufficient light, the other made as late in the afternoon as is commensurate with getting planes back before dark. The morning flight should cover all the area from within which surface contact with the enemy is possible before the afternoon flight; the evening flight should cover as much as possible of the area from which attacks could get home during the night.

Having in our minds the dispositions suitable for a Battle Force when cruising or seeking the enemy, and understanding how that Force will locate any enemy near enough to be engaged, we are now ready to take up the steps preliminary to engaging. These are:-

(7) (a) Concentration, (b) Approach, and (c) Deployment.

When the outlying portions of opposing fleets, be they air, surface, or sub-surface craft, make contact with each other, they endeavor to locate all the enemy forces in the vicinity, and, when the heavy forces have been located and reported, the fleet after maneuvering to gain the best possible position as regards wind, sea, light, etc., must then deploy. Let us not forget that success in battle depends on many other elements than the mere arrangement of one's own forces with reference to themselves and to the enemy after deployment (See Diagram VIII). Important as is the disposition of one's own forces for battle these other elements must be given attention long before deploying. Under the weather conditions must the fleet seek the weather gauge or can it be content with the lee gauge? What bearing from the enemy is best to gain the advantages of sun and light? What bearing from the enemy will give a battle course least handicapped by wind, sea and spray and at the same time not cause our aircraft carriers to run into dangerous situations when heading into the wind to launch and receive planes? Can we interpose between the enemy and his base? Each of these points or a combination of them and others can easily become a decisive factor in a battle so much so that before closing the enemy a battle force must often maneuver to gain the position that will give it their advantages and avoid their disadvantages. When a battle force commander has the power to do so and other things being equal, he must maneuver his fleet to obtain the deployment course that will give to himself the major portion of the advantages and the

fewest disadvantages as regards wind, sea, light, etc. Having acquired as many of the advantages as possible and practicable he is then ready to close and fight.

As previously stated the concentration of forces and their approach and deployment are vital features of battle. Just as decisive advantages from wind, sea, light, etc., may be gained or lost by the position a fleet has with reference to the enemy and by the direction in which deployment is made, so decisive advantages as regards the arrangement of one's forces as the engagement opens may be gained or lost in reaching action stations. Each part of the fleet must know its station and be in it when the main engagement opens, but owing to the dispersion of outlying forces while cruising, and to the pressure put on them by enemy forces once contact is made, their reaching such stations is not always easy. The easiest part in deploying to fight falls to the battleships and their anti-submarine screen, for concentrated and protected as such ships are their operations are simple. With other forces it is very different. The cruisers, far distant from their fighting positions, widely separated and probably being pressed by the enemy, not only have to assemble before it is time to deploy but after assembling may have to reach stations on the extensions of the battleship line before that line engages. Even more difficult feats may have to be accomplished by destroyers, while the submarines must attain positions that will be close to the enemy line after its deployment.

So complicated is the concentration of light forces and their accurate deployment that a very definite plan must be followed by all parts of a fleet between the time the outlying forces make contact and the main gun action opens. Usually the

process consists of three distinct steps, - first, a concentration of forces; second, their arrangement into what is called the "approach dispositions" (See Diagram XI); and, third, the deployment from the approach disposition that brings all forces to their engagement stations (See Diagram VIII).

The general rule for deployment in our Navy is that two-thirds of the light forces shall be at engagement stations opposite the van of the enemy battle line and one-third opposite its rear when the deployment is complete. Since shortness of time for deploying and avoidance of confusion in doing so both require that forces nearest these positions while cruising go to them on deploying, it follows that for deployment we must divide the light forces into three equal groups and make it clear to each group whether it is to be on the right or left flank of the battle line as the battle opens. This is provided for automatically in most of the cruising dispositions prescribed for us, but when for any cause the automatic feature for the deployment of light forces fails to work, or whenever the Force Commander so desires, the groups can be easily directed by signal when to take stations. The stations to be taken by the light forces are of course dependent on the direction the enemy battle line will bear from our own when the engagement opens. The bearing of the enemy battle line from our own is known as the "general bearing" line, which line plays a very important part both before and all during battle. It becomes the "Fleet Axis" both for the "approach disposition" and the "deployment disposition."

That all forces may know what the "general bearing line" is, not only for approach and deployment purposes but also that they may be ready for emergencies, the Battle Force Commander,

from the time the enemy battle line is located, uses every effort to keep his forces constantly informed by signal of the approximate bearing of that line. If the direction of the "general bearing line" changes due to the relative movements of the two fleets, the new "general bearing line" or "fleet axis" must be indicated by a signal for only when all forces know the direction from our battle line in which the enemy strength lies can they be ready to meet surprises or have any idea of what will be the battle course on which they will have to reach deployment stations.

Remembering that a battle line when properly deployed is always on a line of bearing normal to the bearing of the enemy battle line, knowledge of the bearing of the enemy's line (i.e., the "general bearing line") shortly before deployment is all that is necessary to enable forces to know the general direction the deployment course will take. Naturally the battle will be opened with the fleet deployed on one or the other of the two courses <u>normal</u> to the "general bearing line". Hence, once we know approximately what the "general bearing line" of the enemy will be when the action opens we can at once <u>start</u> the concentration of our forces for deployment, - and we should start it immediately for all forces on that side of our cruising disposition <u>away</u> from the enemy bearing.

The necessity of starting early the concentration of forces preliminary to deployment is not always realized. Again, when it is realized, commanders often make the mistake of concenting <u>all</u> forces early and at a time when a concentration of certain forces is most dangerous and undesirable. Ordinarily one should not concentrate the light forces between his own and the enemy's main body until the latest possible moment for not

only should those forces retain their positions as long as possible for information purposes and for screening against enemy surface craft but also they are needed in those positions to prevent or help defend against air and submarine attacks. Furthermore it usually take very much less time to concentrate forces that lie toward the enemy fleet than those that lie away from it, since the former have only to drop back on the battle line, whereas the latter usually have to catch up with it when it is going only a few knots slower than themselves. Hence just as soon as we are sure of what the approximate bearing of the enemy battle line will be when our own closes it to maximum gun range, all light forces on the side of our disposition away from the enemy must start their concentrations. Concentrations may be started at any time by a signal but should start automatically without special signal as soon as pressure is felt if, in sending out his intentions as regards engagement, the Battle Force Commander indicates the approximate course on which he intends to fight.

Diagram IX indicates in a general way how concentrations may be effected by the outlying units in a circular disposition, these concentrations being by type groups in each sector. Diagram X shows the approximate arrangement and position of all forces in a circular disposition when those from the side of the disposition away from the enemy have concentrated and reached their positions for deployment on the flanks of their battle line, - the flank a sector group goes to being the one that lies within, or nearest to, its own sector. Thus we see what the first step is in going from a circular cruising disposition to a deployment. This same step is necessary in any disposition.

It often takes considerable time to complete this first step toward deployment and especially so when the disposition is standing directly toward the enemy at the fleet's best speed

and forces on the side of the disposition away from the enemy have a considerable distance to gain. To reduce the time required to complete this step, a Battle Force Commander should keep his fleet speed as low as possible during this phase of the situation. This point is frequently lost sight of and by standing directly toward the enemy battle line at best speed as soon as that line is located fleets sometimes close to fighting ranges long before the concentrations of light forces have been completed. This is especially true of fleets in any disposition other than an axial one with all forces ahead, and this fact is one of the strongest arguments for such formations. However, it is not always necessary to go full speed toward our enemy as soon as he is sighted and even when it is necessary, concentrations can usually be completed in ample time if there is no delay in starting them. And, anyhow, there is no sound disposition for cruising so fool-proof that it will neutralize the errors of its commander, and one of the errors most frequently made by commanders is in failing to start soon enough the concentrations that take long to complete. The very instant a Battle Force Commander is sure of what the approximate "general bearing line" will be when the major action starts, he should order the concentration, at deployment stations, of all forces on that side of his disposition that is away from the enemy. And at that same time he should place his battleships in such a battleship cruising formation as will permit their quick and simple deployment on either of the two courses normal to the general bearing line.

Even though ordered to concentrate promptly it is hardly likely that all of the forces on the side of a cruising disposition away from the enemy will reach the positions shown

in Diagram X before the forces on the side toward the enemy are in contact with and under the pressure of the enemy forces. For this reason it is not often that the disposition shown in Diagram X will be fully attained. However, even though only partially attained it will have served its purpose and when pressure from the enemy becomes such that the forces toward him have to concentrate, those on the side away will be near enough to their deployment stations to reach them by the time those nearer the enemy can reach theirs.

The forces on the side of a disposition toward the enemy can of course be ordered to concentrate whenever the Battle Force Commander wishes but usually he will not order them to concentrate. On the contrary they should retain their stations until enemy pressure forces them to seek support, which they do by falling back towards the battle line and concentrating, as indicated for the circular disposition in Diagram IX, and then taking stations as shown in Diagram XI.

The arrangement of forces shown in Diagram XI is known as the "approach disposition". It is a disposition from which deployment can be made very quickly and is taken in order that the decision as to the direction of deployment (i.e., to the right or left) can be postponed to the last instant.

There is a tendency among inexperienced tacticians to rush into this approach disposition as soon as an enemy is located without waiting to see whether or not the "general bearing line" changes its direction as the fleets near each other. Besides doing away with a fleet's defensive screening at a time when it is most needed, the early assumption of the "approach disposition" is most unwise since if the "general bearing line" changes much while in the disposition, the disposition must be <u>re-oriented</u> to keep its axis pointed toward the enemy. The re-orienting of a battle force while in the approach disposition requires not only a series of complicated maneuvers by each part of the force but

often takes so long that deployment becomes necessary before the re-orientation is completed. For that reason taking the approach disposition should be delayed as long as possible and taken only when the enemy pressure becomes felt by the outlying forces and deployment is imminent.

From the standard approach disposition, deployment can be made quickly either to the right or left, the center group of light forces going to the flank directed by the Battle Force Commander, or to the flank that will be the van when deployment is completed, or to a position to interpose between the enemy light forces and our Battle Line. But as with concentration and with taking the approach disposition, deployment should always be made as late as is commensurate with being fully deployed when gun fire opens.

The matter of delaying deployment until the latest practicable moment is most important and for several reasons. First of all, too early a deployment may require a re-orientation of one's forces before the main bodies close to gun range which for the far flung flank forces means long maneuvers at high speed to complete, and always with the danger that the engagement will open before the flank forces are again in position. Also, too early deployment will leave the choice to the enemy as to whether the engagement shall take place with the opposing forces on the same course or on opposite courses, and will leave to him the ability to put the major part of our light forces in his rear while the major part of his own light forces are on our bow. Furthermore once committed to a deployment course changing it is usually very difficult, and by deploying too soon we may find the movement of the enemy will prevent our engaging as we want to or in accordance with our desired plan. All these as well as other things make it advisable to delay deployment until just reaching extreme gun range and good commanders never lose sight of that fact.

In the approach disposition when the signal for deployment is executed, two of the three groups of light forces will already be at or near their stations on the flanks of the battle line while the third group will have only a short distance to go to reach the flank to which assigned thus bringing about the disposition for battle (See Diagram VIII) we have already deduced as being desirable. With battle cruisers not present, one flank, probably the van, will have in it an attacking force made up of two-thirds the destroyers supported by two-thirds the light cruisers while rear will be covered by one-third of these types. This disposition of the light fast forces completes the main deployment but of course does not cover the deployment of the submarines or air forces.

As for the submarines, from their position outside of all in the disposition for advance, once contact is made with the enemy they proceed at once to place themselves where they can best attack his heavy ships, acting on their own initiative from that time on to get their torpedoes home in the best way to further the general battle plan.

As regards air forces, the consideration they get in deployment is the same as we give to other forces. We place their carriers in such favorable positions that the planes on them can be operated to carry out their part in the battle plan. These positions are usually on the disengaged side of the battle line and, being near and in rear of the battleships when cruising, the carriers can reach them easily and quickly once deployment is ordered. From those positions the carriers operate as necessary to enable their planes to carry out the air plan.

Tactical Principles

We have now discussed in a general way the procedure and operation of a battle force from the time the force enters enemy waters until it is in general engagement. It is impossible to lay down for the operation of a battle force or fleet, as a whole or as to its parts, in engagement anything more definite than the battle plan in general. However, when the force or fleet as a whole and in each part is familiar with the plan, and when the commander of the force and the commanders of each part are thoroughly indoctrinated with it, are imbued with initiative, and have the will to win, the force will operate as a team to produce the desired results even though definite details can not be laid down to guide the individual forces in doing it. The possible combinations standing in the way of any subordinate commander as he tries to carry out his part in the general scheme are infinite in number and variety and for that reason no commander can be given a one sure and certain method of procedure that will cause him to arrive at the desired result no matter what happens. The recorded experiences in battle, however, have shown that certain principles, when followed, tend to bring success and when not followed tend to produce failure or disaster. Therefore, let us discuss the more important of these principles to the end of applying them so far as they fit, to our tactics.

The Basic Principle

The fundamental principle of engagement tactics, axiomatic on its face, but proved by history and confirmed on the game board, is expressed in the phrase "Superiority of force at the point of contact". By this is meant one's tactics should be such as to isolate for the time being from the full support of the remainder of the fleet such portion of the enemy's fleet as one is engaging, while at the same time a superior part of one's own

force is brought to bear on the isolated portion.

It should not be gathered from this that superiority of force at the point of contact can be obtained only through causing an enemy to divide his fleet and then throwing one's own fleet against a part, though that is one way of obtaining the superiority referred to. An able commander will not usually divide his fleet but, for all that, a fleet not divided so far as distance between its parts is concerned can still be put in such situation that there is not full support between its parts or even between all the units in one certain part. For instance, a capped battle line, a line maneuvering under fire, or a line, part of which is blanketed by smoke, has not mutual support throughout itself, and concentration on a portion of it at that time is one method of carrying out the basic principle. Similarly, the falling upon a fast wing when it is out of gun support by its battle line, or the bringing of a full line to bear on an enemy line only part of which is in range, answers the requirements. It is impossible to indicate the innumerable ways in which superiority of force at the point of contact can be gained. Some of them as, for instance, the blanketing off of a portion of the enemy line with smoke, may be provided for in the general plan adopted for a battle. Other ways of getting it develop in the deployment and at various times throughout the engagement. Hence, commanders must be constantly on the alert not only to create such situations or take advantage of them when they occur but also to prevent the enemy doing so.

The deployment stations herein deduced, and which are standard for our fleet for opening an engagement, tend to put a fleet in such concentration that when the fighting starts it is ready to exert its greatest strength against any and all points of contact, and this is as it should be, both for offense and defense. Because of this fact this general method of deployment

is basic and is always followed no matter what special plan the fleet commander may put into effect for the battle. Like a football team, the battle team, when deployed, is lined up for a play. What special play, if any, is to be used in the fight is indicated by the fleet commander and that play must be carried out. But how the fleet and its parts move once the play is started is of course in the hands of the subordinate commanders, and if such commanders wish to have success they must have a clear conception of what constitutes proper points of contact and what they must do with the superior force they bring to them.

While the "point of contact" in the expression quoted above of course refers to any point where opposing forces are engaged, such points may be divided into two classes: - one, the main point where superiority has a decisive effect on the battle as a whole, the other, the secondary points through which certain parts of the fleet pass in their attempts to reach the main point and influence the main decision. Whether the point of contact of any part of a fleet at any particular instant is main or secondary, the principle to be followed by a commander is always the same, - his tactics must be such as to develop a superiority there for his own force. But having developed a superiority, it must be used in one way at a main point of contact and quite another at a secondary point, and again there will be secondary points of contact that may have considerable influence on the battle and others that will have little or none.

The Objective

It is evident that if one is to gain success in battle the important points of contact must be something more than mere haphazard points where parts of opposing fleets happen to come together. Of course the main point of contact is determined by the main objective in the battle, but the only important secondary

points are those immediate objectives forced on parts of a fleet by the counters they meet in trying to reach the main objective. Hence, it is very vital in battle that commanders at every instant have not only a clear conception of what the main objective is and what the immediate objective may be to enable them to reach the main, but also they must clearly understand what constitutes gaining an immediate objective to the extent of permitting them to drop it and proceed toward the main. Thus after the basic principle of "superiority of force at the point of contact" we have as a first secondary principle "the efforts of a fleet as a whole or as to its parts must be directed toward the objective and that objective must be the proper one for the instant and for the force concerned".

That the objective of a fleet as a whole is the enemy fleet is, of course, self-evident, but the immediate objective of any part of one fleet is not just any part of the enemy fleet that happens to come near. On the contrary, it is only such part of that fleet as lies in the way of reaching the main objective. To gain an understanding of the immediate objective of his force at any given instant in battle, a commander has but to look upon the battle as a whole. Remembering that the foundation around which the battle play of any fleet is built is its heavy battle line and that when the enemy's battle line is broken or destroyed his whole fighting structure will crumble, it is evident that the main or primary objective of all parts of a fleet in battle is the opposing battleship line. Every part of the fleet that can hit that line a blow must do so at the earliest possible moment and must keep hitting it with its full strength as long as the line exists and blows can be struck against it. However, in their attempts to strike that line, the various forces meet counters to their attacks and, when they do, they must destroy or evade the countering forces to such extent as will permit their

proceeding to the main objective. Thus, countering forces frequently become the immediate objective of an attacking force and because of the necessity for clearing them from their path, sub divisions of a fleet often lose sight of the main objective and become so engrossed in an immediate minor objective as to fail to return to their real mission at the earliest opportunity.

The tendency of outlying forces to follow a temporary, minor, or useless objective too far must be overcome at all costs, for, unless it is, one's strength can be utterly expended on fighting minor forces without in the least influencing the general trend of the battle. Subdivisions of a fleet must fight their way through any opposition tending to hold them from the main objective, but they must never do so at the expense of the main objective. Destroyers that can attack the main objective should never stop their attack to enter a melee with other destroyers or light forces trying to hold them off; cruisers covering a destroyer attack should never stop to engage enemy light forces that cannot break up the attack unless such light forces are threatening their own capital ships; battle cruisers should not forsake a grip on the enemy battle line to drive off cruisers unless such cruisers threaten to break up the systematic attacks being made on the enemy line. These just stated minor principles are but a few examples of the many that have arisen from forces losing sight of their primary objective in battle, but they are sufficient to press home the idea that losing sight of it may cost a commander his opportunity to deliver the decisive blow. To prevent such occurrences, all commanders in a fleet must always know what the primary objective is and keep before them the fact that nothing they do will count for much if it draws them from that objective before it has been gained. When, as always happens in battle, an enemy force stands in the way of reaching the primary objective, that enemy force may for the time become the immediate objective,

but rarely for long. As soon as the way to the primary objective again becomes open, the immediate objective has been gained and no time should be lost in dropping it and going on to the key of the enemy strength, his battleship line. If in his battle tactics each subordinate commander keeps this idea to the fore he will at least do his maximum toward bringing victory, for success in battle hinges on knowing the objective, - the right objective for the instant - and going for it.

Offensive versus Defensive Tactics

There is usually only one successful way of going for the objective in battle, and that is the offensive way. In a sea battle, unless a fleet is forced to a defensive attitude by the necessity of protecting something, as, for instance, a train, defensive tactics will never bring a decisive victory. When guarding a train, even though the dispositions may be defensive, victory may be obtained by using offensive tactics from them. Therefore, a commander of a fleet or any part of a fleet, as soon as his objective of the instant becomes evident, must go for it and gain it in the offensive way. So going, the commander seizes the initiative and, putting his enemy on the defensive by compelling him to conform to his movements, he takes the first step that will ultimately enable him to gain "superiority at the point of contact". Let us not forget that though defensive tactics sometimes prevent defeat, only by offensive tactics can a decisive victory be gained.

Conditions and Elements that Influence Tactics

While reference already has been made to some of them, there are certain things that influence tactics in such a vital way that close attention must be paid to them from the time of earliest contact to the closing moments of battle. These points and the bearing they have on tactics will now be discussed under the headings (1) the weather gauge, gas, and spray; (2) roll and pitch; (3) light, sun-glare, silhouette; (4) surprise; (5) time; (6) smoke and smoke tactics, and (7) preparation before battle. Knowing how these things may affect results in battle, a commander must at all times take cognizance of them in his tactics and give their advantages and disadvantages due consideration in every move he makes.

The Weather Gauge, Gas and Spray

It is a generally accepted rule that the weather gauge gives one the advantage in a modern sea battle, and looking on the fleet as a whole this is probably true. But it is not always true for any single part of the fleet. The advantage to a fleet as a whole comes from the fact that, having the weather gauge, its torpedo craft close for attack with the wind and sea rather than against them, thus retaining their speed, while at the same time the fleet can make effective use of smoke screens not only to cover its own attacks but also to protect any of its threatened parts. Also a fleet having the weather gauge has a decided advantage in operating the aircraft from its carriers since carriers must steam directly into the wind to launch or take on planes. A leeward position for carriers in battle greatly restricts their operation since heading into the wind tends to run them into such enemy gun fire as to jeopardize the carriers and all their aircraft operations. We thus see how the weather gauge offers possibly decisive advantages both for offense and defense. But these are not always its only advantages. If the wind is

strong, spray, both from the sea and from shells that fall short, blows toward the leeward ships and materially slows the rate of fire especially of ships not fitted with directors. This may become a disadvantage of no small importance. On the other hand, ships having the weather gauge often suffer greatly from the interference of their own gun and funnel gases, sometimes to such an extent that they lose much of their gunfire while the enemy retains all of his. Hence, while the battle force commander will almost invariably seek the weather gauge for the action as a whole, or will at least avoid the lee gauge, minor commanders when they have a choice as to course and direction must weigh the spray against the gas penalty and select the course that will be the better for them.

Roll and Pitch

Another element resulting from weather conditions, and which may have a very considerable effect on the results of battle, is "roll and pitch". Superiority in gun hitting being practically the deciding factor in battle, all tactics are based on it and roll and pitch seriously interfere with hitting. He who can keep his ships on courses that will give them the minimum roll and pitch will at least not lose hits on that account. In any event, unit commanders should not accept roll and pitch handicaps without trying to impose equal handicaps on the enemy.

Sun-glare, Silhouette, Light

Before the day of telescope sights and colored lenses, another element interfering with gun pointing and spotting was sun glare, and, until recent years, sound tactics required one to obtain and keep the "sun gauge", especially if the sun were low. In recent years, and more particularly in the late war, the sun gauge has been found to be sometimes distinctly disadvantageous, for not only have colored lenses partly nullified the glare when the sun shines, but also, because of the

great ranges used, ships with the lighter horizon behind them when the sun is obscured make much better targets than those having the darker background. It is believed that the decisive results of Coronel and the superior fire of the Germans over the British Battle Cruiser Fleet in the early stages of Jutland were both due to the silhouette of the British ships even before the sun had set. Hence, an effort to impose sun-glare on the enemy, which at best may have but little effect, is of doubtful value, while the danger of silhouetting one's own ships if the sun becomes obscured may prove decisive. Therefore, unless the weather is clear and the sun very bright, the sun gauge should be avoided rather than sought even though it may be possible to nullify the effects of silhouette by throwing a smoke screen behind ships having the sun-gauge.

Surprise

In tactics, as in strategy, no one thing has more far reaching effect than the element of surprise. A commander whose battle plan or tactics contains some element of surprise stands to make great gains thereby, since catching an enemy when unready to ward off a blow makes it possible to inflict great damage that often may be carried through to decisive victory. So great is the danger from a surprise attack that the safety of a fleet demands at all times a disposition that will make a major tactical surprise impossible, and such dispositions have already been discussed in this paper. In spite of these dispositions however, in war each fleet always endeavors to get some of the advantages of a major tactical surprise by coming up on the enemy fleet in a way not expected even though a complete tactical surprise rarely occurs. However, the possibilities of surprise do not end with surprises in major tactics, for a surprise at any state of the battle, even if brought about by a

comparatively minor force, may be sufficient to give a decisive turn to the whole battle. Any sudden maneuver that enables a commander to hit the enemy a heavy blow when that blow has not been anticipated has the nature of a surprise and this should be remembered by all minor commanders. Destroyers attacking from a smoke screen, a submarine attack, a sudden closing of the range, an unexpected concentration of fire, a sudden cutting off a part of the enemy's gun fire by a smoke curtain and heavy air attacks are all examples of minor tactical surprises that may bring tremendous results. And just as it is strong in offense, a tactical surprise has great possibilities for defense, as was shown by the Germans in their "ships right about" maneuver in the Battle of Jutland.

There is no possibility of indicating the infinite number of ways in which the element of surprise can be injected into battle tactics. It often results from changes in visibility conditions, unavoidable or created intentionally, but more generally it is obtained by taking quick advantage of some situation brought about by the maneuvers of battle. All that can be laid down about it is first, that the fleet commander must seek to inject a surprise into his general battle plan and then, after the battle has opened he and each of his subordinate commanders must take advantage of every opportunity to strike a blow that has not been anticipated.

Time

In battle, once a fleet begins to reduce the relative strength of an enemy, that enemy's loss of remaining strength multiplies rapidly. Hence, other things being equal, the fleet that can hit hard first has made a long stride toward winning the battle. Time, therefore, becomes a most vital element and makes it imperative that every force strike at the main objective at the earliest possible instant after the battle lines become heavily engaged.

It is not sufficient that a force knows what to strike and how to strike it. It must also strike in the absolute minimum of time and with its utmost strength. Any commander who fails to keep the time factor in mind and, after the main gun action opens, delays his attack on the main objective beyond the earliest possible minute it can be delivered, is risking the success of the whole battle. In tactics, as in strategy, "Time is everything".

Smoke and Smoke Tactics

The introduction of steam-driven ships affected tactics in many ways, some of which have been touched on in this paper in an indirect way. While the broad fundamental tactical principles enunciated long ago remain as sound as ever, new motive power has caused many changes in minor tactics, the results of added maneuvering ability, speed, etc. But one of the more recent developments arising from mechanical driving devices has come from their making smoke. We have already mentioned the effect on tactics of gun and funnel gases because of their interference with gun fire, and smoke in its commonest form is a funnel gas. But smoke has another bearing on tactics in that it can be made a mantle of invisibility, and because certain types can make smoke at will, this attribute has come to play an important part in naval tactics.

To a force driven to defensive measures, ability to make and hide itself in or behind a screen of smoke is of tremendous value. Possibly no other defensive measure can so quickly and successfully save a force from punishment as a smoke screen properly thrown between it and a force firing on it. Similarly, a force that can advance under the cover of a smoke screen has a splendid opportunity of doing so with the maximum immunity. Again, it is frequently possible, especially with smoke laying air planes, to cut off the support one part of an enemy fleet is giving another by putting a smoke screen in front of that part

and blanketing it. As a defense against air attacks, the value of smoke has not yet been determined, but it is possible that smoke can be made a great handicap to air attacks. These and other uses of smoke in battle show its enormous tactical possibilities, and special devices for making it having been developed for aircraft as well as surface craft, and may be developed even for submarines, all commanders must make special study of the use of smoke and their tactics must be such as to take advantage of it to the fullest extent both for offense and defense.

But great as are the possibilities of success arising from the proper use of purposely made smoke in battle, there are grave dangers arising from using it carelessly, for smoke moves with the wind, and once launched there is no controlling it. If carelessly laid, a smoke screen may put out of action a part of one's own fleet at a time when the hitting power of that part is absolutely essential to safety or success, and hence, though commanders must know and use smoke tactics, they must use them with discretion, lest they be hoist by their own petard. But, as has been the case with other things bearing on tactics, we can give no definite fixed rules concerning the use of smoke. When to make it and when not, and how to use it when made, can be determined only on the field of battle where the multitude of factors operating at the instant can be taken into consideration. But knowing the possibilities smoke has for good and evil, it is apparent that any commander who may go into battle must make a study of "smoke" and must use it, as far as it may be advantageous to do so, in all his tactics.

Preparation before Battle

The several points we have just discussed as having a decided bearing on the tactics to be employed are points that must be considered in and applied during the various phases connected with the naval battle. There are many other things

upon which success in battle depends but which, though given their actual test in battle, must be provided for long before it. In fact, no battle tactics can succeed unless these things are fully developed beforehand, and because they are so vital to the success of battle tactics we cannot omit to mention them as being the things a commander must look out for before he enters battle. The points particularly referred to are (a) Perfection in ship handling, (b) Excellence in gunnery, by which is meant accuracy and rapidity in the use of all weapons, (c) Readiness of the material to stand up under all strain, (d) Knowledge of the general plan and the part each unit is to play in it, and last, but not least, (e) Such a will to win that nothing short of complete victory will be accepted. Only when a fleet has these things is it ready to enter battle, but, after entering, it can win only by employing sound tactics which, to a large extent, are based on the principles herein deduced or discussed.

The "follow-up"

Having been thoroughly prepared for battle, and employing sound tactics in it, a fleet has every prospect of gaining its primary objective, the breaking up of the enemy battle line. When that has been done, the decisive point of the engagement has been reached. But having reached it, what remains to be done to turn the advantage gained into a decisive victory?

As soon as any fleet finds the center of its strength breaking, it cannot but realize that to continue on as it is then going means only greater disaster. When this point has been reached the fleet naturally will attempt to withdraw from the action, and, when it does, the final phase of the battle opens. If a weakening fleet can withdraw successfully, the battle, even though lost, may not be decisively lost, and though the other side has won a victory it will not be a

decisive victory. It is therefore apparent that though the decisive point in battle comes in the engagement phase, the decisiveness depends on the follow-up stage. Hence, commanders must devote as much attention to the "follow-up" as to any other phase of battle, employing tactics in it that will save their fleet if being defeated, or, if winning, that will complete the destruction of the enemy.

As to what tactics the retreating and following fleets should employ in this phase of battle nothing definite can be stated. The one fleet attempts to conceal itself and avoid action as much as possible while seeking a safe refuge, while the other attempts to come up with it and defeat it as a whole or in detail. In general, both sides endeavor to follow the tactical principles already laid down whenever contact is made, but the one does so by fighting rear guard actions in a defensive manner, while the other constantly attacks. In this phase, history seems to indicate that a following fleet has the more difficult role to carry out successfully. Aided by the inevitable smoke of battle, as well as by smoke screens purposely made, strengthened by the initiative in attack that to a certain extent goes with retiring tactics, especially in the use of destroyers, submarines, and mine-laying craft, and often covered by the darkness of night, a retreating fleet has usually been able to get away. However, it seems probable that such a result comes less from the strength of retreat than from the fact that winning fleets have not prepared themselves as they could and should have done for carrying out this phase of battle. Possibly the greatest draw-back to success in it lies in the fact that the Battle Force Commander usually places himself in a battleship in the battle line, and going through the battle suddenly finds himself without the communication facilities necessary for reorganizing his fleet for the change in operation. But whatever the

cause may be, certain it is that modern battles between large fleets seldom result in decisive victory, since when one fleet decides to withdraw from battle the other is either unable or incompetent to "follow-up" successfully. In view of the vital effect this stage of a sea battle may have on the result of the war as a whole, much more attention must be paid to it in the future than it has received in the past. It requires a plan just as the engagement phase does, though the tactical principles governing it merely continue from the preceding stages.

Though but briefly outlined, you have now before you a mental picture of a Naval Battle. We hope that through this presentation first of our general battle plan and second of the tactical principles to be followed in carrying it out, you are now impressed by these facts:- first, that if any subdivision of our battle team fails in the task assigned to it, the battle may not only not be won, but may be disastrously lost; second, that to perform its task successfully, each subdivision of our battle team must in itself be a team highly skilled and trained in the work peculiar to its type; third, that only by perfect coordination and team work between the type teams is there any reason to hope for a victory in battle for the fleet team; and fourth, that we officers have a tremendous work before us to prepare ourselves, our type teams, and our fleet team to be always invincible in battle.

x x x x x x x x x x x x x x x x x x x x x x x x x x x x x

Your Next Step

It is hoped that having studied this paper to this point the student now has a good general understanding of a "Naval Battle" as our fleet of today would fight it. With such a general understanding, the student is now ready to go more into the details of handling a battle fleet as a whole, and to the end of having a full knowledge of those details should now study:-

(1) The "War Instructions" (Navy Department Publication),

(2) The "General Tactical Instructions" (Navy Department Publication),

(3) The "Tentative Fleet Dispositions and Battle Plans, U.S. Fleet, 1930" (U.S. Fleet Publication), and

(4) "Example Fighting Instructions for a Battle Force using the Circular Cruising Disposition", (War College Pamphlet).

A thorough knowledge and understanding of what is set forth in the above named publications is prerequisite to properly handling our battle force and is the logical sequel to this preliminary paper on "The Naval Battle". When the above publications also have been digested, but not until they have been, the student can proceed logically to a study of the minor tactics that necessarily follow the major tactical ideas and conceptions he has already learned. This further study will take him through such publications as:-

(1) "Formations and Maneuvers of the Battle Line" or "Battleship Tactical Instructions".

(2) "Cruiser Tactics and Doctrine".

(3) "Tactical Employment of Destroyers" and "Formations and Maneuvers of Destroyers".

(4) "Submarine Tactical Instructions".

(5) "Aircraft Tactical Instructions".

(6) "General Signal Book".

(7) "Contact and Tactical Report Code".

A thorough knowledge of these will complete his study of up to date naval tactics so far as it can be completed by a study of current official publications. However, although a student may, from that study, have a fine general knowledge of present day naval tactics, that knowledge alone will not necessarily make him a fine tactician. Only by practice in war games

in miniature and at sea will he become that, hence after the studies outlined above must come practice of which the efficient tactician can never get too much.

END

DIAGRAM I

THE "T" POSITION

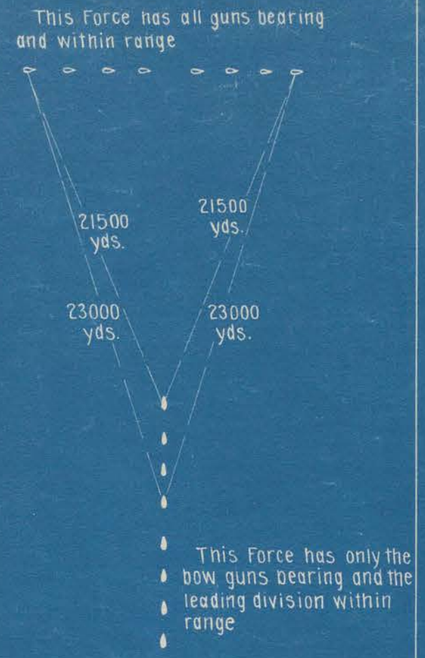


DIAGRAM II

THE EQUALLY FAVORABLE POSITIONS

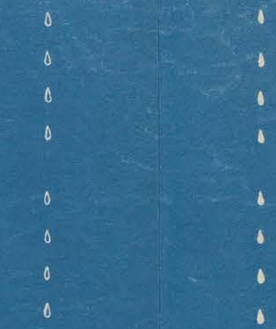
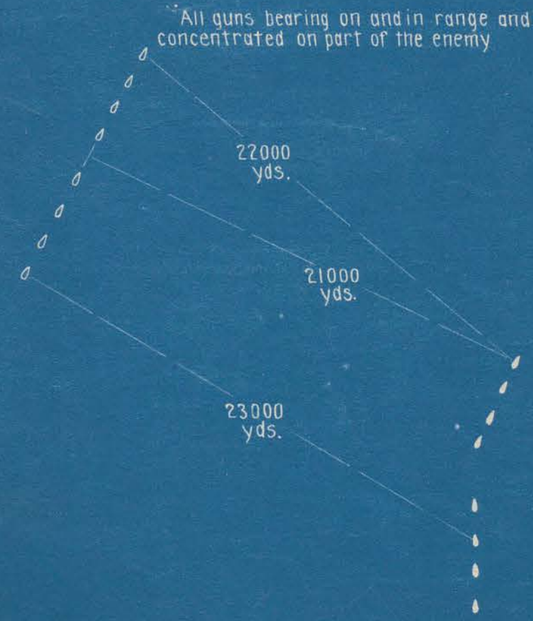


DIAGRAM III

POSITION APPROACHING A "T"

DIAGRAM IV

ONE BATTLE LINE IN KNUCKLE



"THE NAVAL BATTLE"

DIAGRAM V

BATTLE CRUISERS AS FAST WINGS IN POSITIONS THAT FORCE

Either a knuckle, a division of force or maneuvers under fire

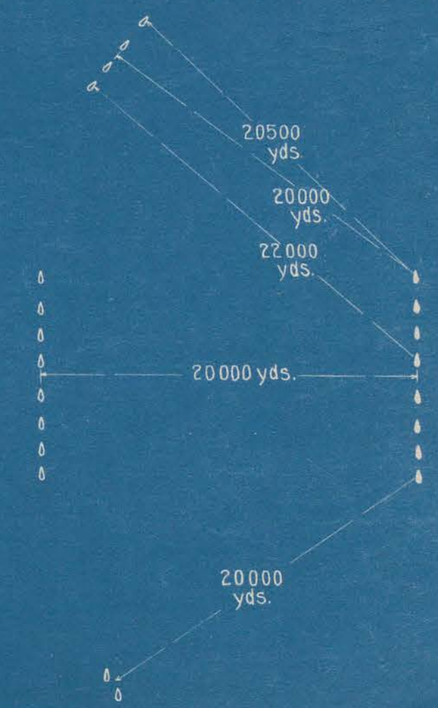


DIAGRAM VI

DESTROYERS IN POSITION TO DELIVER AN ATTACK THAT WILL BE SUCCESSFUL OR FORCE ENEMY TO MANEUVER UNDER FIRE

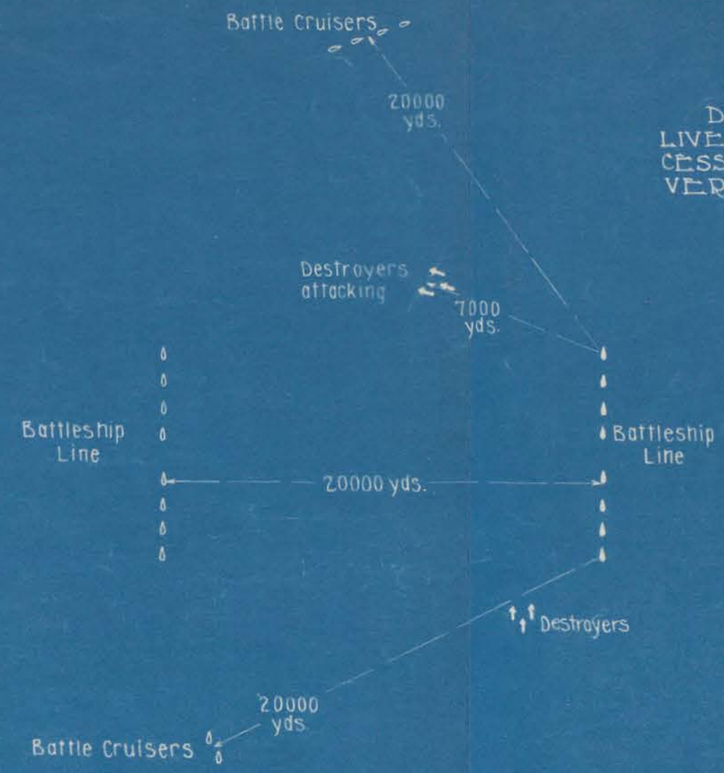


DIAGRAM VII

SHOWING DISPOSITION OF FORCES AT VAN AND REAR OF BATTLE LINE AS BATTLE OPENS

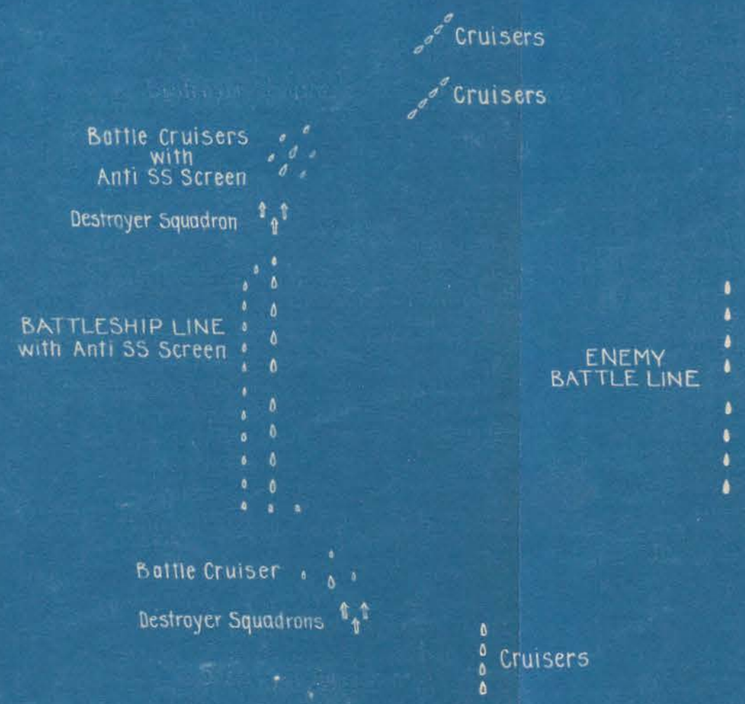


DIAGRAM VIII

TYPICAL DEPLOYMENT DISPOSITION OF A BATTLE FORCE

Note:- Enemy forces other than Battle Line are not shown but the deployment of his Light forces probably will be similiar to our own

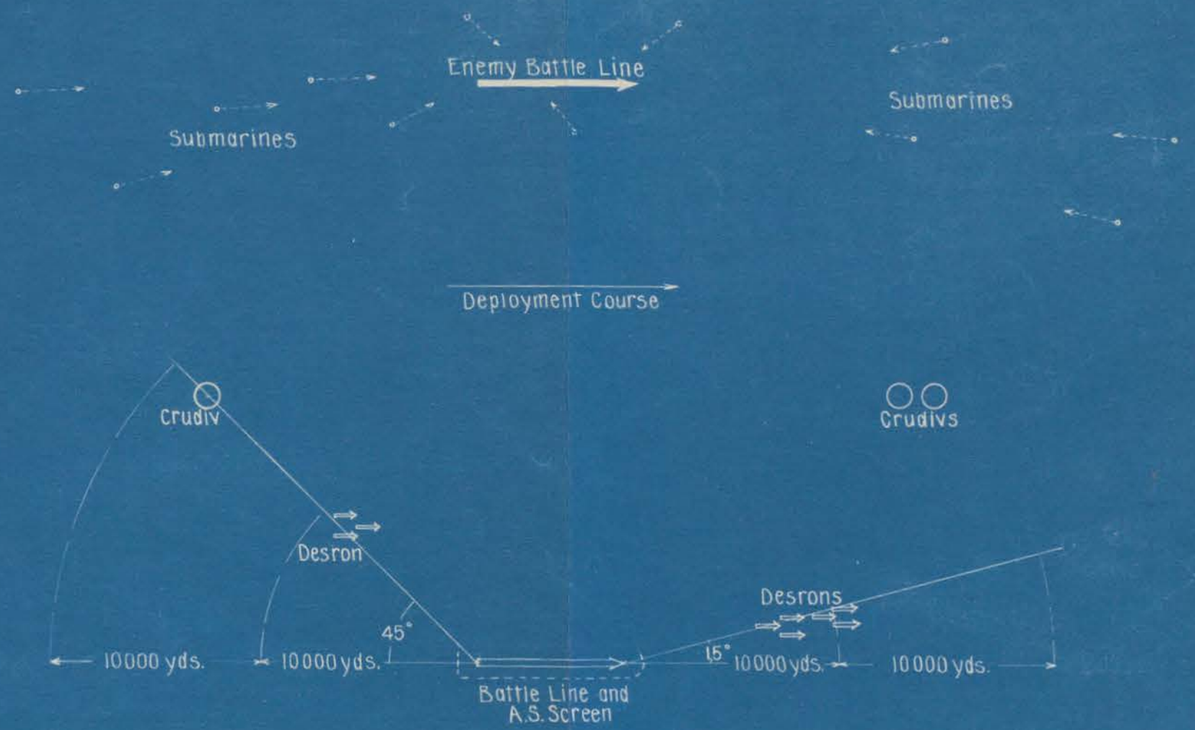


DIAGRAM IX

CRUISING FORMATION

General Direction
of Enemy Strength

Arrows indicate general direction units take for concentrating, dotted lines the minor subdivisions, full lines the major subdivisions.

Submarines distributed on circle well outside of circles shown on this diagram.

Anti Submarine Craft covering ships of Main Body are not indicated.

DIAGRAM X

Showing concentration of Light Forces on side of disposition away from enemy as made after enemy has been definitely located.

Note:- Unless ordered otherwise, Forces on side of disposition toward enemy retain stations until enemy pressure necessitates concentrating

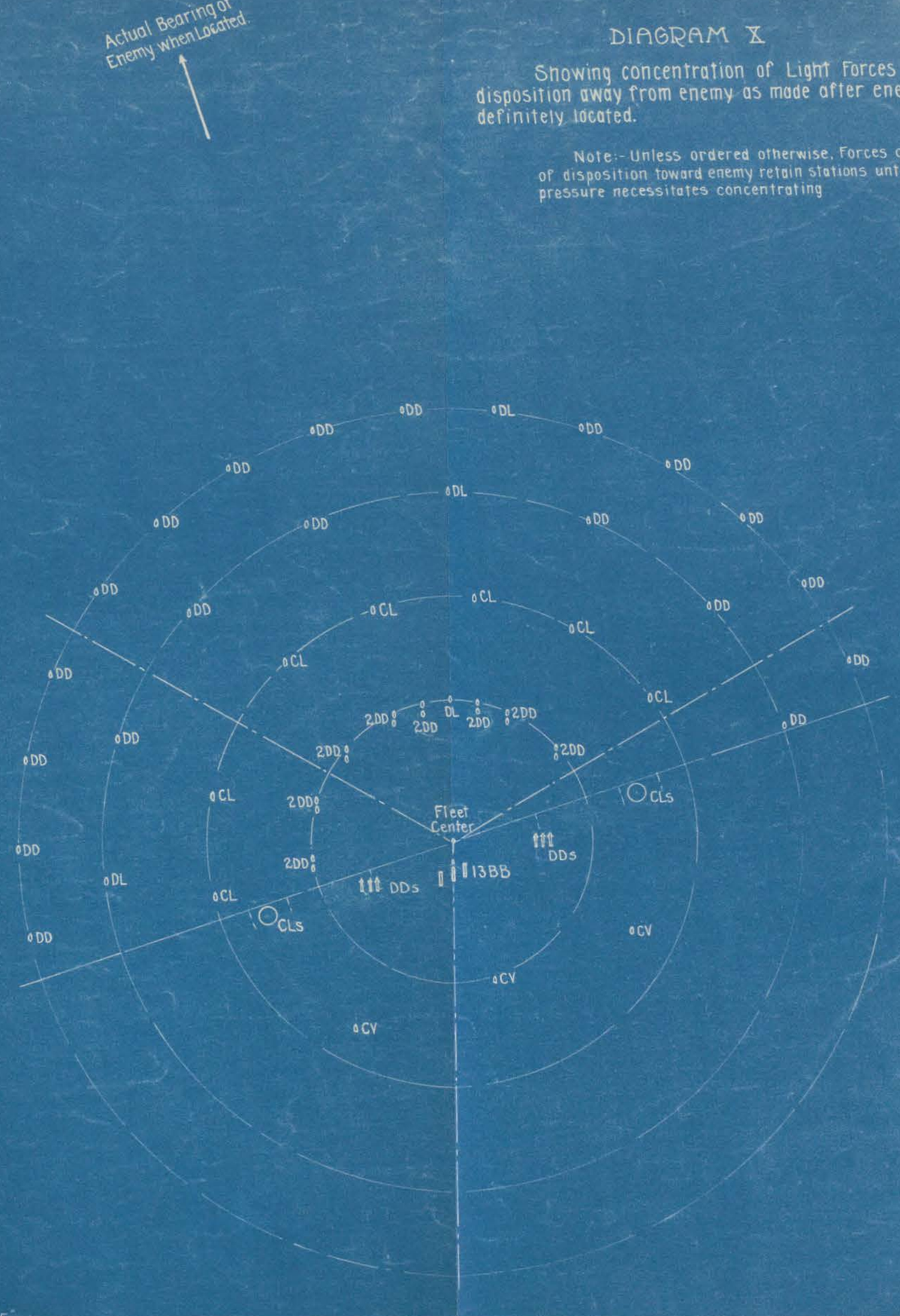


DIAGRAM XI

Battle Force in the Approach Disposition ready for quick deployment in either direction normal to bearing of enemy.