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DESTROYER OPERATIONS (both German and British)

AT THE BATTLE OF JUTLAND

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DESTROYERS AT JUTLAND

Historical Background

In all eras of naval warfare, warships have tended to group themselves into groups in accordance with the primary function each class constituting the group was designed to serve. These groups always have been, and still are, broadly speaking, the Battle Force, the Cruisers, and the Flotilla. While this grouping is practically unchanged since the earliest era of organized naval forces, the function of the Flotilla group has, by a process of evolution, largely changed. It is necessary, in order to develop a proper background for any consideration and discussion of the principles under which the modern Flotilla operates, to briefly trace the development and evolution of such functions.

The three groups, Battle Force, Cruisers and Flotilla, taken together, constitute a Fleet or Fleets. It is useless to consider any one group alone, as they have always been, and still are, mutually dependent, either strategically or tactically.

In the era of sail and early steam, the Battle Force contained or defeated the enemy Battle Force, leaving the Cruisers comparatively free from molestation in their function as strategic scouts or controllers of sea communications. These are still the primary functions of these groups.

In the era of sail and early steam, the function of the Flotilla was largely inshore work, the protection of the coast, the cutting out of ships, carrying dispatches, and kindred duty.

With the development of battle power in the Flotilla, the evolutionary process in the functions of the Flotilla begins. The change is not immediate but is a gradual one. Even with the advent of the more efficient steam engine, the early oil engine and the automobile torpedo, the function of the Flotilla is still one of coast defense. This was because the beginning was naturally made in the construction of units presenting small

targets, incapable of operating far from the coast, carrying comparatively short range weapons.

The relation of the three groups is still, in the early steam era, as in the era of sail, a strategic one. The groups are mutually dependent, but in a strategic sense; each group has its own sphere of activity, and these activities have not yet brought the groups together in tactical concentration for the delivery of fire or torpedo power against an immediately common enemy.

As the evolution from early steam to modern steam is rapid, so is the evolution of the function of the Flotilla. Light and powerful steam engines are developed, the range of the automobile torpedo increases and we find torpedo boats with sufficient seakeeping qualities to proceed to and remain at sea. A new and powerful weapon capable of being put to use on the high seas is available and the Flotilla joins the Battle Force so gradually and naturally that no violent readjustment appears to take place. But the complexity of the tactical considerations of battle is increased a hundredfold. Cruisers must be withdrawn from their true functions as controllers of sea communications and strategic scouts, in order to screen the Battle Force from the enemy Flotilla, as well as to give notice of the presence of the enemy Battle Force in order that our Battle Force may be disposed to fight at advantage in sufficient time.

A far-reaching change in the employment of the groups constituting a Fleet has now taken place. From mutual strategic dependence, two groups and part of the third are drawn together in a mutually tactical dependence of an absolute nature. The majority of the Cruisers remain Cruisers in their historic sense, others join the Battle Force for tactical purposes. The defense of the coast passes to stationary weapons, mines, fixed artillery, and the strategic location of a Fleet in tactical

concentration. The Flotilla definitely abandons its strategic relation to the Battle Force, and, in its entirety, together with a portion of the Cruisers, joins the Battle Force in the firmest of tactical relationships, and becomes one of its component parts.

This is the status of the Flotilla at the outbreak of war in 1914. The tactical uses to which it is intended the Flotilla will be put, as determined by the tactics of the other groups constituting a Fleet, will be considered as for Germany and for Great Britain, respectively.

Germany

In carrying out the foregoing historical treatment of the Flotilla, it became clear that Germany, by reason of geographical position and weaker relative strength, brought about a close tactical relationship between her Battleships and her Torpedo Boats at an earlier period than did the British. Germany visualized a naval battle in which she would take part, in the North Sea. The time in the development of the Torpedo Boat at which such boats could accompany a Fleet in operations involving the North Sea alone was considerably prior to that at which Destroyers or Torpedo Boats could accompany an English Fleet to meet its conceivable enemies. Germany built a Navy to fight England. England, until a comparatively short time before war, built against no enemy so definite, but committed herself to fight at sea as required by imperial policy in any ocean.

Further, Germany was a late starter in the race for naval power and therefore a weaker nation at sea. The Torpedo Boat offered a cheap means of attaining equality of battle power for the Fleet in the North Sea in the shortest time. Therefore, Grand Admiral von Tirpitz, the outstanding naval genius of modern Germany, devoted eleven of the best years of his life to the

development of this arm of the German Fleet, and gave this arm his patronage long after giving up direct contact with it.

Having determined the reasons for Germany's striving for and development of Flotilla or torpedo boat power from the earliest time at which it was considered tactically part of the Fleet, let us deduce as best we can the manner or methods in which this power was to be used and the principles of Fleet fighting or tactics that determined these methods.

The German Torpedo Boat of 1914-16 was small (50% were about 570 tons), swift (all capable of 33 or more knots), heavily armed with torpedoes (ratio of 3 to 2 over British), lightly gunned, most maneuverable (many had bow rudders), low of free-board but most seaworthy, and having its torpedo armament so disposed that from one-third to one-half of its ready torpedoes could be fired at an angle very high on the bow. No war vessel could be built along lines more indicative of the offensive.

Over and beyond the materiel design of the German boats were the steps taken to inculcate in the personnel a high military spirit, a sense of pride in their arm, and a willingness to accept responsibility and risk. Admiral von Tirpitz' supreme tactical principle for Torpedo Boats was "Close up, fire at the center." Another was "Act according to circumstances."

Considering materiel, personnel and esprit, the German Flotilla in itself was essentially an offensive group. If we investigated no further that would be our final word. But we cannot let the matter rest here. A group which is a component part of a Fleet is influenced by the materiel and the tactics of the other groups that make up the Fleet. Although we have no German destroyer tactical instructions nor German fighting instructions available, it is believed we can deduce from certain well known German maneuvers and from characteristics of other groups of the German Fleet certain facts that will cause some

alteration of our point of view.

The arrangements of the main batteries of German capital ships in 1914 will be considered.

Dreadnoughts

KAISER class (5 ships) 1911-12

	<u>Whole battery</u>		<u>Broadside</u>		<u>Ahead</u>		<u>Astern</u>
Guns	10	:	10	:	6	:	8
%	100	:	100	:	50	:	80

WESTFALEN & HELGOLAND class (8 ships) 1906-10

Guns	12	:	8	:	6	:	6
%	100	:	66	:	50	:	50

SEYDLITZ & MOLKE class

Guns	10	:	10	:	6	:	8
%	100	:	100	:	60	:	80

Other Capital Ships

%	100	:	100	:	50	:	50
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From the foregoing table it is readily seen that considerable thought was given to allowing capital ships to develop the maximum practical fire dead astern, in some cases as much as 80% of the entire battery. Such arrangement can be the result of but one thing, the anticipation of retiring tactics.

As the design of the German Battleships suggests the defensive, so too, does the famous break thru their own battle line by the German Torpedo Boats suggest the defensive, from a Fleet point of view. This statement must be elaborated upon.

The normal position of two engaged battle lines is center opposite center, granting equal tactical skill. The highest conceivable gun range prior to 1914 was about 12,000 yards. Let us see if a Torpedo Boat attack could be advantageously launched from the unengaged beam of the German battle line against an enemy battle line on a parallel course distant 12,000 yards. We find that under ideal conditions of weather fourteen minutes involving a rate of change of range of only 400 yards a

minute is required to reach an advantageous firing position. During this time the Torpedo Boats are close in the line of fire of half their own battle line, exposed to the secondary batteries of the entire enemy line, and presenting their entire length with practically no foreshortening as targets in deflection.

Such an attack belies the design of German Torpedo Boats as well as the well known tactical training of the German Navy. We believe the "break thru" is a counter against an offensive enemy, radically closing the German battle line and punishing it heavily with gunfire. Under such conditions the break thru puts the German boats forward of the enemy beam at once, produces a high rate of change of range, a narrow gun target in deflection, conditions reflected by the very design of the German boats. We also believe the break thru is normally followed by a turn away by the German battle line.

Therefore we submit that this famous maneuver, much practiced and rehearsed, is, in its essence, a defensive one, designed to cover a retreating Fleet.

The battle line is the "piece de resistance", the heart of a Fleet, within the circle of whose heavy artillery fire light craft find refuge and support. Therefore, although the German Flotilla is indoctrinated with a literal offensive, we can only consider its intended offensive action as a spasmodic blow delivered by a Fleet in retreat, and not a powerful blow to be pushed in with support of gunfire to utterly crush the opponent. How far the literally offensive tactics of the German Flotilla carried it while its battle line was in retreat will be seen when the actual operations at Jutland are gone into.

England

The British Fleet in 1914 had been built for offensive action. It was built around the gun, the weapon of offense.

The gun differs from the torpedo in that its bolt is not shot in one fell blow, requiring its carrier then to retire, but is capable of delivering sustained and continuous destruction to a degree not attainable by the torpedo. It was perfectly natural for the greatest naval power to make the gun dominant.

When the Torpedo Boat developed out of the coast defense stage and joined the Battle Force tactically, the British at once saw the offensive employment of the gun menaced, and countered with the construction of the Torpedo Boat Destroyer.

Its very name is of the offensive, and from its name we readily derive its mission. It was, with its guns, to utterly destroy and sweep aside the enemy Flotilla, in order that the great gun carrier, the Battleship, might proceed with the annihilation of the enemy. Its torpedo armament is almost an afterthought, to be used as a weapon of opportunity.

For the above reasons we believe that the spirit behind the employment of the British Destroyers was, in its essence, the spirit of the offensive.

To sum up, we believe that the spirit of the British Fleet, by tradition, by design of materiel, and by training was of the offensive.

How these more or less abstract moral factors influenced the two Flotillas, German and British, respectively, on the day of battle, we shall see upon following thru the actual Destroyer operations at Jutland.

Tactical Organization and Dispositions

We find, on the eve of Jutland, the German Torpedo Boats organized in Flotillas of about ten boats each, these being further subdivided into half flotillas and sections. The tactical unit appeared to be the half flotilla or the section, at discretion. It was not anticipated that boats should operate singly.

The German Flotillas were permanent, and the units had worked together considerably. They were splendidly drilled in their tactics and we should expect from them a very polished and finished performance tactically.

The British, on the other hand, had larger and more unwieldy Flotillas and half Flotillas, and these were undergoing many changes in the units, due to the continuous withdrawal and replacement of Destroyers caused by the requirements of the anti-submarine warfare. We should not, therefore, expect the tactical efficiency from the British Flotilla we expect from the German.

The cruising formations of the two navies appear to be substantially the same insofar as Torpedo Boats and Destroyers are concerned. The light craft were employed as anti-submarine screens.

But upon approach and deployment the dispositions of the Flotillas appear to differ radically. The German Flotillas concentrated on the unengaged side of their battle line, from which position they could cover a turn away or exploit a tactical advantage such as crossing the enemy's T.

The British Destroyers on the other hand were ordered to take station on either flank for the approach and in van and rear upon deployment. This disposition is entirely orthodox, as van Destroyers were in a position to counter a torpedo attack on their battle line's engaged bow, and at the same time were in position to move to an attack position on the enemy's engaged bow under the conditions of a normal engagement. The Destroyers in the rear protected the rear of their battle line and in case of a countermarch carried out the duties of Destroyers in the van.

If it is remembered that the distance Flotillas are placed ahead of and astern of the battle line is a function of the ex-

pected battle range, much is explained to us. Assume that function to be .5. The British anticipated before Jutland, under North Sea visibility conditions, a maximum range of about 12,000 yards. Therefore, using the function .5, the van Destroyers were 6,000 yards ahead. We can establish that the determination of this function was the result of considerable tactical study. A little investigation shows that an attack launched from the deployment station described above to a most favorable firing position, under normal conditions of speed, satisfies the following conditions:-

(a) Destroyers never come between the line of fire of own leading ship against enemy's leading ship.

(b) Foreshortens Destroyers as gun targets considerably.

(c) The rate of change of range of Destroyers as gun targets for enemy Battleships is high. (It is actually greater than it would be if enemy ships were dead in water and Destroyers heading directly for them at 30 knots.)

This deployment station is also an ideal one from which to move to attack enemy Torpedo Boats attacking own van. It does not provide, however, a Destroyer counter against Torpedo Boats moving to attack the rear squadrons of own battle line, when such battle line is a long one as had the British at Jutland.

It is certain, however, that the British Destroyer dispositions provided for a coordinated, powerful, and simultaneous attack on the German battle line with gun and torpedo. In other words, the British dispositions provided for a true tactical offensive.

We are admittedly previous when we admit that Admiral

Jellicoe did not employ his Fleet at Jutland so as to develop to a full extent its latent offensive possibilities. There is no doubt that the state of mind of the Commander-in-Chief of the Grand Fleet determining the cautious employment of that Fleet was created by the German Flotilla, subsidized by a determination on the part of the Admiral to maintain his own battle line always in concentration and disposed for mutual support. This latter factor is often referred to as the "rigidity" of the battle line. We shall see in the Battle of Jutland that the entire British battle line will turn away together when only a part of that line is subject to the torpedo hazard. A turn by only the part jeopardized, and that turn toward the torpedo firing point and the enemy does not appeal to the Admiral. The Navy built for the offensive and by tradition imbued with the spirit of offensive is held in leash in battle by the tactics of its Commander.

In passing we must also remark that the selection of Scapa Flo as a base was determined not only by the necessity of supporting the cruiser blockade of the North Sea, but also by a desire to have a base clear of the high speed steaming radius of the German Flotilla. Thus did that Flotilla affect British strategic dispositions and maintain open to attack the southern coast of England.

JUTLAND

A detailed narrative of the destroyer operations is wearisome and is largely the work of a copiest. We shall endeavor only to develop the main features that characterize the attacks and operations as a whole, and compare German and British.

We have already attempted to show the contemplated tactics of the two Flotillas in battle and the spirit behind these tactics.

We shall now see how the Flotillas react in battle to these tactical ideas, to their tactical training or lack of it, and to the spirits of their respective Fleets.

We conceive the elements determining the nature of attack to be grouped under two categories: Morale or spiritual, and tactical or mechanical. Under the former are the abstract elements of initiative, determination, discipline and judgment. Under the latter, insofar as torpedo attack is concerned, the most important to us are Range, Volume of Fire, Firing Positions, and the related features of target angle, track angle and enemy maneuvers. More detailed features of tactics such as methods of tube laying and approach and firing formations are beyond the scope of this paper, nor have we any data upon which to base discussion of these matters.

Having laid down the foregoing plan under which we propose to consider the work of the Flotillas at Jutland, we proceed with our investigation.

German Attacks

1630 - 1648

<u>Unit</u>	<u>Target</u>	<u>Range</u>	<u>T. Angle</u>	<u>Tr. Angle</u>	<u>Volume of fire</u>
Flot.IX	1st BCS	11,000	125°	---	22%

The firing position for this attack is very poor as is indicated by the target angle. It was not pressed home -- note the range. It is not seen how any torpedoes could have passed either thru or ahead of the target.

1648 - 1710

<u>Unit</u>	<u>Target</u>	<u>Range</u>	<u>T. Angle</u>	<u>Tr. Angle</u>	<u>Volume of fire</u>
Flot.XI	5th BS	11,000	60°	110°	40%

The firing position for this attack is excellent. The attack is not driven home, as the range indicates clearly. The attack does not affect the 5th BS.

1755 - 1810

<u>Unit</u>	<u>Target</u>	<u>Range</u>	<u>T. Angle</u>	<u>Tr. Angle</u>	<u>Volume of fire</u>
HF 12	3d BCS	6,000	115	150	17%
Flot.IX	3d BCS	5,000	60	110	?

In the first case above a poor track angle is obtained, allowing the target to "comb" the torpedoes. Apparently the 3d BCS passed well ahead of these. In the second case the conditions are excellent and the torpedoes passed thru or near the limits of the target. Apparently the volume of fire is poor, as the torpedoes were avoided by individual ship movements, nor does the target turn radically as a whole.

1830 - 1835

<u>Unit</u>	<u>Target</u>	<u>Range</u>	<u>T. Angle</u>	<u>Tr. Angle</u>	<u>Volume of fire</u>
Flot.III	BCS 1&2	5,000	101	150	8%

This attack was countermanded, but 3 boats fired torpedoes on the turn. The firing position against the target used is poor and as indicated by the track angle, the target was not deflected from its course in avoiding these torpedoes. This attack is characterized by lack of initiative, for if pressed home across the stern of the battle cruisers, the long British battle line offered a beautiful target. This is a typical German attack in that it covers a turn away. Flotilla III's retirement under the circumstances is difficult to understand. In an engagement with the SHARK, V-48 was disabled. It is believed that this boat while lying disabled fired the torpedo hitting MARLBOROUGH and probably three more that passed thru the 6th Division. V-48 lay in an excellent position for firing torpedoes as the entire British Battle Fleet must steam past her while she is afloat. Her performance is most creditable, as she was under heavy fire.

1910 - 1915

<u>Unit</u>	<u>Target</u>	<u>Range</u>	<u>T. Angle</u>	<u>Tr. Angle</u>	<u>Volume of fire</u>
4 boats Flot.III	5th Div.	6,000	90°	120	12%

This attack is one of opportunity made by two boats of the group listed. G-88 fired three torpedoes which pass thru target limits, while V-73's one torpedo passes thru the rear of the 5th BS. So far it appears the Germans do not necessarily choose a target giving a target angle of less than 90°, whereby they could shorten the torpedo run and make counter maneuvers more difficult.

1920 - 1925

<u>Unit</u>	<u>Target</u>	<u>Range</u>	<u>T. Angle</u>	<u>Tr. Angle</u>	<u>Volume of fire</u>
9 boats Flot.IX	6th Div.	6,000	30	50	60%
4 boats Flot.VI	5th Div.	4,000	40	70	50%

This is the main German torpedo attack, and being an intentional attack, to distinguish it from one of opportunity, it is to be taken as the criterion of German Torpedo Boat massed attack. The firing positions are good but close together, the attacks have been pressed home intentionally to a greater extent than any others, and fulfills its tactical purpose in causing the British battle line to turn away. The British turned away just before the torpedoes were launched, first two points, followed by two more points, a total of 45°. The situation for Admiral Jellicoe was indeed difficult. By intent or chance the German torpedo attack created the following situation. Due to the position of the German Flotillas relative to the British battle line the minimum turn (the one least disruptive to own gunfire) was toward for the 5th and 1st Battle Squadrons at the rear of the line, while for the 2d and 4th Battle Squadrons the minimum turn was away. In other words, to avoid the German torpedoes with a minimum amount of maneuvering required a break

in the British battle line between the 4th and 1st Battle Squadrons, putting the Battle Fleet in two groups of eleven and sixteen ships each. Such a maneuver would have in the light of present knowledge of the situation, kept eleven powerful units in contact with the head or rear of the German battle line and in any case across its T, and slightly to the north of east, while sixteen capital units would be disengaged temporarily slightly to the south of east. Such a break in concentration of the battle line Admiral Jellicoe could not bring himself to allow, and considering the situation as he saw it at that time, his judgment is not questioned. It must be noted also that the northern group on a turn toward would have encountered Flotilla III. However, their advance would have been covered by their own Twelfth Flotilla and they would have "combed" the torpedo tracks from Flotilla III. An eight point turn by all ships to West Magnetic was dangerous in appearance but would have been almost as effective as the 4 point turn away, and would have maintained contact with the German battle line.

In a recapitulation of the German Destroyer attacks it appears that the Flotillas were employed principally as their tactical dispositions indicated they would be, to cover a retreat; that this knowledge of their intended defensive employment weakened their determination to push home the attack as is indicated by what are large ranges under the existing visibility conditions and the small numbers of boats damaged; that lack of determination is further indicated by retirement prior to firing all torpedoes, and by the failure of Flotilla III to press on to the eastward when no enemy ships were sighted; and lastly, that German torpedo boat tactics conceived a massed torpedo attack to be a massing of units with a consequent dispersal of torpedo tracks, rather than a dispersal of units and a convergence or concentration of torpedo tracks. The German Flotilla was not

truly offensive from the point of view of morale or of tactics.

British Attacks

1630 - 1710

<u>Unit</u>	<u>Target</u>	<u>Range</u>	<u>T. Angle</u>	<u>Tr. Angle</u>	<u>Volume of fire</u>
⁴ 9th&10th	SDI	9,000	60°	90°	25%
⁸ 13th	SDI	6,000	30°	50°	25%
Moresby	SDI	6,000	60°	90°	25%
Nestor & Nicator	Div.VI	9,000	15°	30°	25%

These attacks were initiated by S.O. B.C.F. The firing positions are good in that they give a relatively short torpedo run with considerable over run. The moving of the British Destroyers to attack caused SDI to turn radically to the eastward, but the Destroyers pressed on until SDI again turned to the southward. The volume of fire developed is poor and is not creditable to the internal organization of the British Destroyers. The SEYDLITZ was hit by this attack but by a freak shot, as her hit came after her countermarch. Shortly after these attacks NOMAD fires 4 torpedoes at the High Seas Fleet before sinking, a creditable feat and one, as previously noted, to be repeated by V-48 later in the battle.

1755 - 1820

<u>Unit</u>	<u>Target</u>	<u>Range</u>	<u>T. Angle</u>	<u>Tr. Angle</u>	<u>Volume of fire</u>
ONSLOW	SDI	5,000	70°	120°	25%
ONSLOW	BS III	8,000	50°	90°	100% (all remaining)
ACASTA	SDI	8,000	35°	60	25%

These attacks are made by Destroyers under heavy fire, and on the initiative of their captains. Firing positions are quite good, always forward of the beam. These attacks reflect great credit on the individual initiative and courage of the British Destroyer officers when thrown on their own. As we

move up the hierarchy of command we find among the British an inclination to await orders before attacking with torpedoes. OPHELIA's torpedo fired shortly after this period appears as a shot in the dark.

The Destroyer night actions are melees in every sense of the word and it is impossible to cover them from a tactical point of view.

Although the Destroyer night actions are not readily subject to analysis, it is fitting at this point to remark on Admiral Jellicoe's Fleet Disposition for the night. This night disposition was a strategic one as well as a tactical one. Knowing the approximate bearing of the German main body from the IRON DUKE, Admiral Jellicoe disposed the Grand Fleet in an arc-like cordon about the Germans, both fleets initially moving together to the southward. Relative to FRIEDRICH DER GROSSE, German Fleet Flag, the British lay on an arc of 10 miles radius approximately as follows: South south west, light cruisers; south, battle cruisers; southeast, light cruisers; east and east by south, battleships; and northeast, the British destroyer mass.

From a tactical point of view this distribution and separation of different types gave each type tactical freedom upon contact with the enemy.

What was the strategical effect of this disposition?

First, the escape of the Germans to the southward without contact with the British at daylight was rendered impossible.

Second, ^{had} the Germans taken a course sufficiently to the northward to pass, enroute to HORN REEF, clear of the British destroyer mass, daybreak would have found them as far from HORN REEF as were the British, inviting the latter to intercept them there. In other words, by means of his destroyers, Admiral Jellicoe extended the cordon of the Grand Fleet well to the northward, insuring, to his own satisfaction, either that he would shoulder the Germans off to the westward thru the night and have them in his clutches

at daybreak, or that in case they were not in sight at daybreak, he could move directly for HORN REEF with the assurance of meeting the enemy there.

An attempt by the German main body to escape via the SKAGGERACK was considered suicidal for that wounded body by both Commanders, and was therefore discounted by them.

Could Admiral Jellicoe have considered it possible for the German battle force to forge without deviation thru his massed destroyers unscathed or with slight loss? We believe not. We believe the British night disposition was determined from a strategic point of view by the firm conviction in Admiral Jellicoe's mind that it was tactically impossible for his enemy to forge thru his destroyers.

That they did forge thru practically unscathed, vindicates Admiral Scheer's determination to so do, and constitutes the crucial failure on the part of the British leading to the German escape.

We attribute this failure to the moral courage and steadfast determination of Admiral Scheer, to the splendid torpedo defense organization of his ships, to the lack of information and instruction furnished the English destroyers, but principally to what must be characterized as the utter inadequacy of the internal organization of the individual British destroyer to meet night fighting conditions.

In a recapitulation of the British Destroyer operations at Jutland it appears that the individual dash, initiative, and courage of individual ship commanders was of a high order, and in keeping with the best traditions of the Royal Navy. The effectiveness of the British Flotillas was weakened, however, by what must be considered poor internal organization of the individual destroyers, an imperfect state of tactical training, a disinclination on the part of the high command (except the S.O. B.C.F.) to order a torpedo attack in coordination with powerful gun attack, and a hidebound form of discipline on the part of the upper hierarchy of Flotilla command which forbade an attack until the receipt of orders.

The Comparison

The German High Command employed his Flotillas dynamically, offensively in a literal sense in that they moved to attack, defensively from a broader sense in that they covered a retreat. The British High Command did not employ his Flotillas dynamically. Although the Flotilla dispositions provided for a true offensive, their employment was purely static in that at no time during the main fleet engagement did they move out from their positions to attack enemy capital ships. In this respect the palm goes to the Germans.

In internal organization, in coordination of effort within the Flotilla, and in tactical training the German is also superior.

Once released from immediate tactical concentration the British seem to have the edge in individual dash and determination.

Conclusion

It is well to try to visualize in the Destroyer operations at Jutland the reality of war, and to remember the difficulties (Clausevitz's "friction") that must be overcome in battle. Otherwise we become too critical in a meticulous way.

The writer has tried to indicate in the foregoing discussion the existent state of mind (attitude), the existent state of tactical training, and the intended tactical uses of the two Flotillas in conjunction with the other groups of their respective fleets, and in a not too critical way to show their reaction to the foregoing pre-battle considerations, from the point of view of morale and tactics, during the actual engagement, in order that we may learn from the operations at Jutland and profit thereby.

We learn that good Torpedo Boat tactics require a far

greater volume of fire than was developed at Jutland. The operations there also show the necessity for pushing an attack in to the closest possible range to firing positions disposed thru thirty or forty degrees of target angle. The relative ease with which torpedoes were avoided when a single firing point was used indicates the necessity for a criss-cross of torpedo tracks, which can be obtained only by a dispersal of firing points. We see the difficulty in bringing about joint and coordinate attack by the battle line and the flotilla. We must make every effort in our training to perfect ourselves in carrying out such an attack, as without it, we do not develop our offensive powers to the fullest, and an unsupported torpedo attack is not truly offensive when viewed from fleet tactics. The esprit of our Destroyer personnel must be brought to the highest pitch, as determination and dash are their effectiveness and their armor at one and the same time. We must continuously strive to simplify the technique of our torpedo fire in order that it may better meet the conditions incident to surprise and to rapidly changing situations.

Above all, the Destroyer Squadrons of our Navy must avoid self sufficiency, and must remember, regardless of the special duties assigned them from time to time, that they are a component part, tactically, of the Fleet, supplementing, supporting, defending the battle line's attack.

