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DESTROYER OPERATIONS (both German and British)

AT THE BATTLE OF JUTLAND

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INTRODUCTION

This is a critical study of destroyer operations at the Battle of Jutland. In order to form a clear appreciation of the possibilities for effective action, and to establish a standard of comparison, the present state of development in our own Navy in the direction of design, organization, training, and indoctrination will be presented first. This seems necessary because any criticism, to be most profitable, should be, and usually unconsciously is made under the light of the most modern knowledge. In justice to the individual leaders, however, criticism of their actions should be tempered by a realization of conditions existing at the time.

It will be assumed that the reader has knowledge of the general course of major events in the battle. Frequent references will be made to the "NAVAL WAR COLLEGE JUTLAND PLATES, 1927". Time used will correspond with that in the above publication.

DEVELOPEMENT OF DESTROYER TACTICAL EMPLOYMENT IN THE U. S. NAVY TODAY.

In our "WAR INSTRUCTIONS", under the head of "The Conduct of the Battle by the Light Forces", tactical functions which destroyers may be called upon to perform, are described in general terms. I

Immediately preceding, and until visual contact is assured between battle lines, tactical scouting will be demanded. It is necessarily implied that, should such contact be lost, contact scouting will be resumed. Although probably most of this work will be performed by light cruisers, at critical junctures it may devolve upon destroyer units

The necessity for transmitting information concerning the enemy battle line, which often may be obtained by attack squadrons having the enemy battle line as an objective, should be appreciated.

It is expected that eventually as the battle progresses and probably soon after the battle line engagement begins, all destroyer squadrons pass into the status of attack squadrons. The missions of attack squadrons are:

(a) Attack decisively enemy battle line.

(b) Assist in the defense of own battle line against attack by enemy light forces. (This is defensive employment and is considered as secondary to (a).)

(c) After launching torpedoes

1. Assist other torpedo attacks with gun fire and ramming.

2. Counter-attack enemy units which are making torpedo attacks on our battle line. (Here again the offensive act, assistance given to our own torpedo attacks, takes precedence over the defensive purpose of the counter-attack against the enemy light forces.)

Distinct from the day battle, but of high importance from the standpoint of effective tactical use of the destroyer type, is the "night search and attack". This is carried out by the light forces as a tactical mission independent of the engagements of the main fleets. While entirely offensive in every respect, and of prime importance (especially to the inferior fleet), it is comparatively obvious in conception and execution. Its technique is simple and direct. The most modern development is the contemplated use of light cruisers to assist in the search,

the developement of contacts and the penetration of the enemy anti-destroyer screen.

Other minor tactical operations which may be demanded of destroyer squadrons are:

- (a) Anti-submarine screen.
- (b) Anti-destroyer screen.
- (c) Smoke screen work, both offensive and defensive, for purposes incidental to the torpedo attack or incidental to the main battle or other phases of the action.
- (d) Offensive scouting, probably against enemy units.

Our torpedo attack plans contemplate four forms of daylight torpedo attack:

- I. Day supported torpedo attack .
- II. Unsupported day attack for inflicting torpedo damage.
- III. Unsupported day attack for forcing open the battle line gun range.
- IV. Day low visibility surprise torpedo attack.

Considering these in inverse order, Plan IV. partakes in most essentials of the nature of a night search and attack. Plan III. is, from the standpoint of the commander-in-chief, a defensive action. This use of destroyers will be considered later under the heading of "German Destroyer Tactics in the Day Action". Plan II. has for its object the bringing to action of an enemy fleet which has the speed advantage over our own. Some of his capital ship units are to be slowed by means of torpedo hits. It is an important method of employment but applies to a special situation. Plan I. will now be

given consideration separately, as it embodies ^{the} highest conception of offensive employment of the destroyer squadrons: their primary role in the "naval battle". Many of the tactical methods and much of the attack doctrine which will appear in the description of such an attack obviously applies equally to good visibility daylight attacks made according to Plans II. and III.

THE DAY SUPPORTED TORPEDO ATTACK.

Upon the order for the deployment, stations are taken by the squadrons in the van and rear of the battle line, on the engaged bow and engaged quarter of the deployment course. The distribution calls for two thirds in the van and one third in the rear. The rear flotillas are so stationed in order that, in case of a reversal of the enemy's course, there will be destroyers in position to attack from ahead. In any case it is desired that an "anvil" be furnished by a torpedo salvoes fired from abaft the beam to cover courses which the target ships may take when they maneuver to avoid the torpedo salvoes fired from forward of the beam. This makes desirable a division of the destroyer force in order better to achieve this coordination.

When ordered, the flotillas proceed from deployment stations to attack stations. These latter are so chosen as to be out of effective gun range of battle line secondary batteries. Also the positions of these stations are so fixed as to equalize, for the several attack units, the periods

comprising the approach to the firing point plus the run of the torpedo thence to the target.

Each squadron is assigned a sector defined by a given section of the target, a given angular measure, and, on the outside, by the attack station. Each destroyer division is assigned a sub-sector.

During the movement from attack stations to firing points, it is expected that opposition will develop, so at this moment the flotilla commanders release their divisions. These proceed then independently into their sub-sectors and to their respective firing points, where they deploy for firing so as to coordinate with the other divisions of their own squadron and fire immediately upon reaching the firing course. Curve fire ahead is contemplated as the primary method, permitting a salvo of twelve torpedoes per boat. The flotillas are coordinated so that salvos arrive at the target nearly simultaneously. Volume of fire, spread of salvos, the criss-cross of the torpedoes within the salvos, and the coordination of the salvos to cover the possible maneuvers of the enemy battle line are calculated to make possible severe damage on a large number of the battle line units.

Increase in the efficiency of the torpedo has resulted in large increases in both range and speed. Except in unusual cases, it does not seem that excessive range is required; It is ordinarily desirable for the length of the torpedo run to overlap by a certain margin the computed target position so that the possible positions in case of change of course away will be covered. Also an extremely long run could possibly be used to advantage by the squadrons approaching and firing in the sectors abaft the beam. However, length of run is had at the expense of speed. Increase

in the designed torpedo speed results in a faster run from firing point to target, decreasing the opportunity of evading salvoes by maneuvers.

During the approach it can be expected that there will be attacks made on the flotillas and divisions by the following agencies:

(a) Gunfire from the target capital ships. This will usually be from secondary batteries but main batteries may be used.

(b) Gunfire from enemy light cruisers.

(c) Gunfire from enemy destroyers.

(d) Bombing by aircraft.

To resist these counter-attacks the following forms of defense can be used:

(a) Defensive qualities inherent in the destroyer type -

1. Smallness of target

2. Multiplicity of and dispersion of targets; this reduces the number of guns available against each boat and increases the complexity of the enemy's fire control.

3. Maneuverability, making possible frequent and radical changes of course; this produces irregular rates of change of range and deflection.

4. Speed; the differential over target speed produces high rates of change of range and deflection, especially when on courses approximately reverse of the target.

(b) Own battle line gun fire on target ships; this greatly reduces the efficiency of the torpedo defense fire

from the target ships.

(c) Own light cruiser gun fire against enemy light cruisers and destroyers which are countering our torpedo attack.

(d) Gun fire, torpedo fire, and ramming by our own destroyers; a division of a certain squadron, for instance, may be assigned the task opposing the counter-attack in order that the other two divisions be not diverted from higher offensive operation against the battle line.

In order to properly coordinate all the light forces in the delivery of this offensive stroke, there should be a special and single commander charged with this responsibility. He should have authority over both light cruisers and destroyers, during the training periods and during maneuvers and battle. He should be the administrative and tactical commander. There is now too much differentiation between the several types of light surface vessels, which in battle will find their most important function to be the execution, in cooperation with each other, of this highly organized form of attack.

GERMAN DESTROYER TACTICS AT JUTLAND

The development of the German torpedo boat flotillas paralleled the evolution of the automobile torpedo while that invention was gradually attaining status as a major naval weapon. In the beginning, at the insistence of the then Captain Von Tirpitz, there had been created a unique organization to foster the new weapon and its carrying vessels. This was called the "Inspection of Torpedo Affairs". It was

in effect an independent Navy Office, in complete control of the technical progress, construction, and all other administrative functions. It also exercised military control at all times when the flotillas were not with the fleet at maneuvers. Thus when the fleet was mobilized for an operation, there were turned over to the commander-in-chief, all flotillas available which were accepted by him as being in full readiness and trained in all respects except the coordination with other forces of the fleet. This was his responsibility. The policy has its nearest duplicate in our service in our use of the so-called "ready torpedos," which are received onn ships from the Torpedo Station in a state of completer readiness for firing.

As in the case of the other types of German naval vessels, the torpedo boats were designed for a definate tactical function. This is undoubted due to the influence of Admiral Von Tirpirtz, who having spent eleven of the best years of his life in this type, maintained a watchfull eye over them through out his long period of control. The fact that the German navy adhered to the name "torpedo boat" is significant and their loyalty to the principall of offence in the design of their boats is evidenced by the armament. The latest groups carried eight 22-inch tubes, so arranged as to fire six torpedos on a broadside. They had already introduced oil fuel in mostof their boats. The experience of the battle demonstrated forcibly the tactical importance of this feature both in regard to continuance of capacity to steam at high speed and the reduction of unwanted funnall smoke. A novel

feature employed by the Germans was the artificial fog-making apparatus which had just been installed on all boats for defensive purposes.

Training of personnel was facilitated by the permanence of details. Officers, except those in the most subordinate positions, were almost universally required to have had previous experience in the job next subordinate in order of importance, e.g. division commanders as captains, captains as executives, etc. All officers in torpedo boats, even the commanding officers, were required to maintain their qualifications as torpedoists. The non-commissioned personnel was selected corps, underwent long training, and remained strictly specialized. The torpedo boat service was very popular with both officers and men. These are all conditions conducive to good morale and enthusiastic service.

The German organization of flotillas is well known. Its soundness is best demonstrated by its duplication in its basic features by the British (just prior to Jutland), the Japanese, and the United States. Fundamental were the principles of centralized control, delegated authority, flexibility of tactical movement, and concentration for employment in attack. It is evident from the method of organization that there existed some conception of what we call "coordinated attack". Support to this contention is given by the doctrine which was enunciated at the establishment of the Torpedo Inspection:

"----instant readiness, initial offensive, and attack always in considerable numbers."

Also the German Kaiser in the days before the war, is known to have expounded just such a conception. In the words of his naval mentor, Grand Admiral Von Tirpitz, he likened this "massed attack," as it was then known, to the swarming of bees around a bull; some would be killed by the sweeps

of his tail but most would continue and get home their stings.

At the beginning of the battle cruiser action, immediately after the first contacts at I4I5, there did not seem to be a definite doctrine as to when the destroyer flotillas should concentrate and take up positions favorable for concerted attack. The several half flotillas remained with their light cruisers, to whom they had been attached in the scouting formation, long after they were required, see Plate I7 & I8.

It is believed that the proper employment of the German flotillas during this action was torpedo attack against the 5th Battle Squadron. At I6I4, when Admiral Hipper ordered the destroyer attack, see Plate 2I, Scouting division was under fire by the 5th Battle Squadron at a range of about I8,000 yards. The Battle Cruiser Fleet, having been disengaged for about ten minutes, was now closing, range about twenty thousand yards, bearing about broad on the starboard bow, or southwest. The INDEFATIGABLE had been sunk and the Scouting Division I. was now on terms of virtual equality with the Battle Cruiser Fleet. The fire of the I5-inch batteries of the 5th Battle Squadron was taking effect. The Battle Cruiser Fleet was on a course, southeast, which would surely develop into a dangerous situation when the battle squadrons of the High Seas Fleet made contact. All German flotillas were at this time disposed forward of

the beam of the 5th Battle Squadron on the courses which Admiral Evan-Thomas must steer to close or maintain the range. Conversely they were no better than abeam of the Battle Cruiser Fleeton even the sharply converging course being steered by Admiral Beatty. The position forward of the beam of the 5th Battle Squadron would permit them to deliver an earlier attack. It would be an attack against the force whose fire was then most effective against Scouting Division I. Opposition to the attack would have come from only the weak 1st Flotilla and FEARLESS (CL). The Scouting Division II. was available as support against the counter-attack of these forces, Flotilla VI. and the remainder of Flotilla II. could have participated, When the attack against the 1st and 2nd Battle Cruiser Squadrons was attempted, it was made ineffective by the counter-attack of the larger, more heavily gunned British destroyers. The support given by REGENSBURG (CL) in this gun fight probably prevented frustration of the attack and devastation to the German flotillas.

If an effective attack by a considerable number of destroyers could have been made on the 5th Battle Squadron, it is believed that the latter would have been forced to open the range and would have been removed from the action. It will be remembered that, at this time, Admiral Scheer was diverted from his contemplated movement to the westward on account of the urgency of relieving Admiral Hipper. It is therefore a possibility that a torpedo attack which achieved that result might have had far reaching effects culminating in the complete ~~envelopment and destruction of the~~
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ating, when junction was made with the High Seas Fleet, in the complete envelopment and destruction of the Battle Cruiser Fleet.

Other effective use could have been made of the flotillas at the time of junction by attacks on either the 5th Battle Squadron or the Battle Cruiser Fleet. By a careful timing of the attack the High Seas Fleet could have been used as an anvil. It could have been predicted with certainty that both British units would be constrained to withdraw immediately upon contact and that their possible courses lay in the north-west quadrant. Torpedoes fired soon after the counter-march, spread to cover northwesterly courses, would have been impossible to avoid without closing the range on Scouting Division I. and the leading divisions of the battle fleet.

It was evident from the operations of both sides that the approach was very difficult due to the high speed of the target ships, This gave a low speed differential in favor of the torpedo craft. It also had the effect of keeping the boats longer in the dangerous zone and made it easier to counter the attacks.

During the contacts between the two battle fleets conditions were more favorable.

At 1758 Admiral Hipper ordered his destroyers to attack. He was being hard pressed by the 5th Battle Squadron and the 1st and 2nd Battle Cruiser Squadrons. As the admiral did not then know of the presence of the 3rd Battle Cruiser Squadron, the attack was undoubtedly intended for the four ships of Admiral Beatty, although no objective was designated. The flotillas under Commadore Heinrichs who received the order just then made accidental contact with the 3rd Battle Cruiser Squadron and the light cruisers and destroyers in company. In the confusion resulting from the turn away to

to the southward of the German light cruisers and destroyers, several sporadic torpedo attacks were delivered, see Plate 27. These were not made against the objective which the higher commander had selected. Due to the effective counter-attack of the British destroyers and the confusion resulting from the surprise contact and precipitate retirement of the forces that should have supported them, these attacks were hastily executed and barren of results.

The attack of Flotilla III., made at 1835, see Plate 31, resulted from a mistake on the part of several boats. They mistook a radical change of course made by the leader, as the expected turn to the firing course. Before the real attack could be delivered on Battle Cruiser Fleet, the flotilla was recalled by the First Leader. Although in an excellent position for an attack, the flotilla commander obeyed the recall. As he was in possession of information not available to his chief, i.e. from his position it was evident that he had a fine opportunity which Commodore Michelson was too far away to see, he failed in the exercise of proper initiative. Commodore Michelson later stated that the flotilla commander should have continued. This seems, therefore, to be a failure in leadership rather than a lack of proper doctrine.

A large scale attack on the van divisions of the Grand Fleet might, at this time, have frustrated the accomplishment of a major tactical result which endangered the German fleet. This was the crossing of the "T" and the consequent concentration of fire on the leading divisions of the German column.

At 1910 four boats of Flotilla III., having been driven off from the rescue of the WIESBADEN'S crew, again again found themselves in firing position. Four torpedoes were fired, three by one boat. This was fine initiative on the part of the captain who fired the three torpedoes, but the salvo lacked volume. Although under heavy fire from the British battle line, these boats were supported by the gun fire of their own battle line. They were not opposed by British destroyers or light cruisers. Flotilla III. again failed to seize a favorable opportunity and ram home an effective attack. What is known as the "grand attack" was begun at 1915 by the Scouting Force Flotillas, VI. & IX. This attack was ably directed and finally executed. It was made with use of the smoke screen, which also served as a defensive screen behind which the German battle line was retired. The several phases of this attack were delivered in the face of a very destructive fire from the main and secondary batteries of the enemy's battle ships. Also his destroyers and light cruisers, in both the van and the rear of the battle line, counter-attacked, see Plate 40. The large scale attack ordered by the commander-in-chief had for its purpose the forcing open of the battle line gun ranges. The mission was accomplished. At 1935 thirty-one torpedoes were fired by thirteen destroyers, which considering the attacks already delivered by these flotillas, seems to have been an adequate number for the defensive mission for which employed. Probably consideration was also given to the fact that the attack was unsupported by main battery gun fire and 7000 yards was the minimum range attained. It should be remembered that the target ships were in no way constrained from maneuvering freely to avoid the torpedo fire. Perhaps for these reasons

the Commodore did not consider it necessary to employ Flotilla II. in an enterprize of this nature. He estimated that the lull in the heavy gun fire denoted a turn away by British battleships, and that it would be a waste of force to use his best flotilla for this purpose. This estimate is surely correct and most criticism seems to be colored by the knowledge that this flotilla found no better use for its torpedoes, returning to port with a full armament.

Later, at 1925, Flotilla III. commenced a third ineffectual effort and one boat fired one torpedo. This seems to have been an even more flagrant lack of energy, persistence, and initiative than the previous performances of the flotilla. The enemy battle line was near at hand and the only action necessary was to press a little farther to the eastward. Additional torpedo fire delivered from this position, see Plate 42, would have coordinated nicely with the attack previously delivered by Flotillas VI & IX. ~~Flotilla IV.~~

Flotilla V., at 1945, executing the order of the Commander-in-Chief to attack, penetrated through the thick part of the smoke screen, see Plate 44, and were immediately heavily counter-attacked by light cruisers and destroyers. As no large ships were sighted, Commander Heinecke estimated that conditions were unfavorable for successful attack from this position and ~~frank~~ and at this time. As he would have been entirely unsupported at this time, his estimate is probably correct.

In all the daylight attacks it was evident that the tasks assigned to the German flotillas were considered as being of a secondary nature. They consistently saved torpedoes for the grand attack which was expected but never materialized.

It is believed, however, that the principle of VOLUME OF FIRE was well understood and that, if the real opportunity had presented, large numbers of torpedoes would have been fired.

Although no attacks were made with support of the entire battle line gun-fire, there is adequate evidence in the utterances of unit commanders that the necessity of this support was realized and that it was expected and relied upon, should the massed torpedo attack be ordered.

From the reports of the British captains in the battle line, it seems certain that the principle of a spread salvo and criss-cross fire was not used. Torpedoes seem to have been fired as aimed shots and the paths were practically parallel, making them easy to avoid by maneuvering. The only approximation to spread was had by fire distribution similar to that used in gun-fire.

The necessity of pressing home the attack to close range must have been known. However, most of the salvos were fired from around 7000 yards and it must be remembered that these attacks were unsupported and both torpedoes and boats were being economized for the major offensive attack.

The German operations at night are marked by the failure of Commodore Michelson to execute his mission: to deliver the night attack on the Grand Fleet capital ships for the purpose of reducing his superiority. Although Admiral Scheer knew that he would need these torpedo boats the next morning, in case of a renewal of the fleet action, which was not improbable, he never-the-less decided on an offensive torpedo attack during the night hours, by all his flotillas.

The night search for the British fleet seems to have been very poorly conducted. Flotilla II. and the 12th Half Flotilla were driven off in the earliest stages by the 2nd Light Cruiser Squadron, see Plate 47. The German search doctrine fixed the origin of the search sectors at the van of their own fleet. In concentrating on the First Leader (ROSTOCK), and in gaining ground to the eastward, the flotillas which were to search the southern sectors dropped behind the German battle fleet and, when the latter turned off to the southeastward, they were cut off on the port flank. As the fleet proceeded they were crowded to the northward. On account of their dirty fires great difficulty was experienced in making the speed required to haul ahead. A serious error was made Commodore Michelson acquiesced in the prior dispositions made by the Second Leader. This was done in order to expedite the start of the search, but it resulted in eliminating the fast capable boats of the Flotillas II & VI. from those sectors known to be the most profitable. The slower Flotillas V & VII. proved too slow to even draw clear of the battleship divisions.

In making the preliminary assignments for the night

search the Second Leader gave permission to Flotila II. for returning to port via the Skagen after the night operations. In view of Admiral Scheer's obvious need for boats the next morning, and that these were his newest and least damaged units, this order is hard to understand.

The German navy had been praying for just such an opportunity for night attack as was here presented. Commodore Michelson failed in the execution of his commander's very positive order to make this night attack. If he had used his fast boats the search should not have been difficult. Considering the admitted inefficiency of the British battleships in night torpedo defence action, it would be no exaggeration to predict a greater loss in capital ships than resulted from the day action. The British battleships were notoriously vulnerable to torpedo hits. Their night dispositions were favorable to the attacking forces. A successful night attack would have given to Admiral Scheer a real victory instead of the phantom one which he claimed.

Viewing the battle as a whole it is not believed that the torpedo was used by the German fleet in the manner intended by Admiral Von Tirpitz. In his destroyer flotillas Admiral Scheer possessed a highly developed instrument for attack. The individual ships were well designed each to deliver a considerable increment of offensive power in the form of six or eight of the best torpedoes ever designed. In proportion to the size of his fleet he had a tremendous concentration of these effective weapons. It is not to the credit of Admiral Scheer that he was constrained to employ this potent offensive force in an operation which must be considered, from the standpoint of fleet tactics, defensive: to assist in the extrication of his battle line from a

desperately unfavorable tactical situation.

It is not possible to refrain from conjecture as to what might have happened had Admiral Scheer made his approach and deployment under such circumstances as would have permitted a grand torpedo attack in accordance with the best tactical conceptions: an attack with all flotillas coordinated and supported by the battle line gun-fire, and backed by the light cruisers. Considering the capabilities of the boats, under these conditions, it is believed that results would make impossible the habitual use of Jutland as illustrating the failure and disappointment to be expected from daylight torpedo attack.

BRITISH DESTROYER TACTICS AT JUTLAND

In the daylight actions the British tactics are characterized by the complete failure in the delivery of organized torpedo attacks, the neglect of many excellent opportunities, the brilliant attacks delivered by the individual boats, and the excellent counter attacks made on the German flotillas.

The higher commanders understood the value of daylight attacks although, correctly from their point of view, they gave priority to the counter-attack function. The tactical training of the flotillas was insufficient for the delivery of organized attacks although the individual boats and the personnel were demonstrated capable from every other point of view.

The British were known to realize the potentialities of the night attack. It is believed that, had the flotillas been prepared for their contacts by a prior search, the results might well have been disastrous to the German fleet. Admiral Jellicoe, exactly contrary to the decision made by him

adversary, sacrificed his prospects so that his boats would be available for the next day's operations.

The attack made by the 12th Flotillasat 0210, see Plate 5I-F, stands out as the only organized, well delivered night attack made by either side. Although the contact was accidental, conditions permitted a proper approach to be made. Even in this attack lack of training was evident in the failure of the boats to deliver a full volume of fire. Only the excellent defensive tactics of the German battle line prevented extensive damage. It is evident that this Commander understood the principles of torpedo attack and he was skillful and determined in the execution of his plan. Of all the flotilla commanders he is the only one who seems to have understood the major tactical situation sufficiently to prompt him to make repeated attempts to report contact with enemy capital ships,

Opportunities for effective daylight attack were best at the time of the two crossings of the "T". Then the relative positions of the two fleets provides a situation favorable to the flotillas at the van and rear of the fleet that has achieved the crossing. That much sought factor, the anvil, exists in its most positive form, the overwhelming concentration of gun-fire on the van of the target fleet. In the first crossing of the "T", at 1830, see Plate 30, information necessary to exploit this situation was fragmentary but, with a little contact scouting, might have been developed. In the second case, at 1915, see Plate 39, the situation could have been grasped by an alert Commander of Flotillas. In such situations, if the launching of the

attacks from both flanks be timed so that the salvos arrive while the van of the enemy column is still under the gunfire concentration, maneuvers to avoid torpedoes will be so restricted as to make certain a large percentage of hits.

The best examples of the use of flotillas for counter-attack were:

1. The action near the head of Scouting Division I. between I615 and I648, see Plates 22 & 23, where boats of the 9th, 10th, and 13th Flotillas fought a successful action; only the presence of the REGENSBURG (61) in this fight protected the German boats.

2. At I925, see Plate 41, the 12th and half of the 11th Flotillas dashed out from the rear and van of the British line to assist in the punishment of the German Flotillas, VI and IX.

COMPARISON OF THE TWO FLOTILLAS AND THEIR TACTICS

There seems to have been a radically different conception ^{of} ~~in~~ the best method of employment for the flotillas of each fleet. It certainly was the German plan to make the massed supported attack with maximum number of units available and it was confidently expected that this great attack would be made under circumstances permitting support by major battery fire of the battle line. On the other hand, the British were very skeptical of the feasibility of the daylight torpedo attack and intended their flotillas for counter attacks on the enemy torpedo boats.

The contrasting conceptions of the missions of the flotillas is reflected in the design of the boats. The German boats were planned to be efficient carriers of torpedoes. The British had given preference to the heavier gun battery at the expense of the torpedo armament. Apparently their conviction that this policy is sound still holds because their latest boats have heavy gun armaments but carry only eight torpedo tubes. The British adherence to the torpedo boat destroyer principle dictated a larger vessel than the German designers deemed necessary for torpedo craft.

The importance of oil-burning in for the destroyer type was emphasized repeatedly during the course of the battle. The tactical qualities lacking in these burning coal or coal and oil, were: the ability to maintain high speeds over prolonged periods, ability to attain high speed in a short time, ability to make high speed without a prohibitive amount of smoke, and a prolonged high speed steaming radius. The lack of these qualities limited the activities of the boats of both sides at times vital to the successful accomplishment of important tasks.

In organization of the German flotillas, the offensive again predominates. They had two attack groups, one with the scouting force, under Commodore Heinrichs on the REGENSBURG (CL) and the other under Commodore Michelson on the ROSTOCK (CL). This indicates that the principle of a coordinated attack was understood. The fact that the authority of the First Leader embraced both groups also supports the contention that a simultaneous attack by all flotillas was planned.

It was well known that the Germans had developed the torpedo weapon to a higher degree of efficiency. The personnel of German flotillas, especially the officers in command of units, were thoroughly trained in the tactics of

the daylight attack. Their famous "break through" the battle line was justly famous. But the British had not developed either organization or technique of the attack. Their flotillas were, at this time, in process of reorganization on the German pattern. Their boats had been employed in arduous work as anti-submarine screens for the battle fleet on their periodic sweeps of the North Sea. Considering their background and the lack of confidence in the day torpedo attack, their performances in the battle may be considered as brilliant individual actions. It is evident that the British considered the single destroyer as the minimum tactical unit, whereas the Germans divided their forces into no smaller groups than the section or half of the half flotilla. Even this was not usual except on the last deployment to the firing point. All through the action, the Germans maintained the integrity of their tactical units, so necessary to volume of fire, under the most punishing conditions. The British commanding officers apparently had no check whatever on initiative and they split off from their organized units without hesitation to carry out such attacks as their fancy should dictate.

The assignment of stations for the fleet deployments seems to have been based on sound tactical principles in both cases. The German flotillas formed on the unengaged side of the battle line. It was planned that, from this protected position, the flotillas would dash through their own battle line and proceed into the space between the two lines to the firing point. In view of the comparative weakness of the German Fleet in battle cruisers and light cruisers and the presence of the heavier gunned British destroyers, it seems that it would have been inadvisable for the German flotillas to

have attempted to operate from the van and rear of their battle line. These positions undoubtedly would be untenable. The fact that the expected action would be fought with the German battle line more or less in retirement, even when completely engaged, would establish the flotillas at the start of the approach forward of the enemy beam and in favorable attack position after the "break through".

The British provisions were calculated to dominate van and rear with battle cruisers and light cruisers, and to operate the strongly armed T.B.D.'s in counter-attacks against the German torpedo boats. As it was the task of the British Commander-in-Chief to engage decisively, it was necessary to prevent interruption of the battle line gun fight by the enemy torpedo attacks. Destroyers are the only vessels numerous enough and small enough to operate in the dangerous area between the ~~line~~ lines where it was known that the German ^{boats} would make their approach. From the experiences of the battle it seems that both the design and tactical doctrine were justified. Both were calculated having in view a particular opponent and a special task.

MINOR TACTICAL EMPLOYMENT

At the time of both daylight retirements of the German battle fleet, the flotillas assisted by laying smoke screens. As they carried the artificial fog-making apparatus, it is certain that this was frequently used. It is probable that much of the mist and irregular visibility experienced during the engagements of the main fleets was due to this. Such conditions are unquestionably favorable to the inferior fleet and can be used offensively by it.

There were several instances of tactical scouting carried out by the German flotillas while making torpedo attacks. It seems evident that units, while making the will

approach, will be in positions from which important information can be secured. Previous arrangements should be made to jam through the reports.

An excellent example of information service of this kind can be seen in the report of Commander Goehle made during the attack of the Flotilla IX. He furnished the Commander-in-Chief with the first reliable information of the composition and course of the enemy main body.

This can be contrasted with the failure of the British destroyer unit commanders to get through reports of contact during the night action which resulted in the escape of the High Seas Fleet. However, exception to this must be made in favor of Captain Stirling, commanding the 12th Flotilla because he made three determined attempts to transmit contact reports.

GENERAL CONCLUSIONS

The German navy had a conception of the proper offensive employment of destroyer flotillas. They had boats well designed and crews personnel well trained for this employment. The Commander-in-Chief was not able to produce tactical situations favorable for their offensive employment as had been intended and as was confidently expected.

The British navy was uncertain in support of the principle of offensive employment in the day action. They admitted the effectiveness of the night attack. But the idea of defensive use for counter-attack and anti-submarine service took precedence over both forms of offence.

Although the Commander-in-Chief was engaged in developing his flotillas for offensive use, they were at the time of Jutland, disorganized, untrained, and unindoctrinated. AS a consequence, their performances of offensive tasks met with most meager success in spite of the utmost daring and bravery.

