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German Naval Strategy in World War

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A STUDY OF THE PRINCIPLES AND ELEMENTS OF GERMAN NAVAL STRATEGY
IN THE WORLD WAR AND THEIR APPLICATION IN THE PRESENT DAY.

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GERMAN POLICY BEFORE THE WORLD WAR

The German Empire of 1914 dates back only to 1871 when the King of Prussia was proclaimed German Emperor. Yet in tradition, thought, and fundamental composition, modern Germany may be traced back to the time of Frederick the Great. His father had founded and developed the army which the former led to victory in the three Silesian wars (the third, 1756-1763, commonly known as the Seven Years War). Thus was made the modern Prussia which was to wield such a great influence in the founding and subsequent development of the German nation. Under Frederick the Great the Prussian Army attained a prestige which, in spite of its complete overthrow by Napoleon, was really never lost. This gave rise to the well-known remark, "There are only two perfect organizations - the Prussian army and the Catholic church." The army made Prussia and the army was a dominant factor in her subsequent development. So much so that Mirabeau said, "The only industry of Prussia is war". On the evening of his active life (1785) Frederick concluded an alliance which for the first time included a majority of the German States under the leadership of Prussia.

Napoleon smashed this model army in the famous battles of Jena and Auerstadt. Prussia was shattered and reduced to almost a vassal State. Yet her military spirit had not been vanquished. Under such men as Scharnhorst and Gneisenau the army had a rebirth. It had been crushed as a professional army; it was to rise anew as a national army. It was this factor largely which was to raise her from the dust in the Wars of Liberation.

The States of Germany were again united by the Confederation of 1815. At best, this could only prevent war between the States themselves and if necessary ward off foreign attack upon its territory, but it could never establish German political unity. This, however, was

finally achieved when, after three short and successful wars, Bismarck - the man of "blood and iron" - created the German Empire under Prussian rule. These wars were simply dry-land campaigns, unaffected by sea power, and of such short duration that the national and economic life of the people was not involved. Yet the last war (Franco-Prussian war of 1870) was necessary to finally unite the nation, to sweep away the internal barriers, to give her that security which the last three centuries of incessant warfare had denied her, to awake national self-confidence, and lastly, to give her that respect amongst the nations of the world without which her subsequent economic development would have been impossible.

Thereupon began an economic development which the world regarded as little short of marvelous. In this Germany was favored by her central position with her great rivers reaching into the far interior. Thus between 1870 and 1914 her foreign trade more than trebled, her mercantile shipping, and ship-building capacity increased in like proportion. During this period she passed from a mainly agricultural to a mainly industrial nation. She became a dangerous competitor to Great Britain. The life-blood of the latter is trade and she could feel it being drained away increasingly year by year.

Bismarck was a strong advocate of consolidation at home and held the reins tightly in hand when the budding nation felt that it had attained the great aim of her continental policy and was now reaching out to a world policy. Irresistible force from within pressed for expansion. From 1870 to 1914 her virile population had increased from 41 to 68 millions. Colonies were regarded as essential to world power and in 1884 Bismarck's consent was obtained for their acquisition. In Africa, to which primary attention was directed, Germany acquired German East and Southwest Africa, Togoland, and Cameroon. In Polynesia, she acquired a portion of New Guinea, the Bismarck Archipelago, and numerous islands.

With her change from a continental to a world policy, with the growth of her foreign trade and shipping, Germany began to look to the sea - a strange and unfamiliar element to her. Centuries had passed since the heyday of the Hanseatic League and as this was only an alliance of cities it

could have no enduring effect on national thought. The German people were estranged from the sea - it had no traditions for them - and they had no conception of the influence of sea power upon the development of nations.

Soon after Wilhelm II succeeded to the German throne, he began to give marked attention to the development of a fleet. "Our future is on the water", he said. He reorganized the German Navy Department and adopted plans for a progressive and systematic development of a fleet. One might say that up to about 1900 the German navy gave primary consideration to cruiser warfare; thereafter the guiding motive was battle. Although France had long been her traditional enemy, the German navy soon surpassed the former. Induced by antagonistic foreign policies as well as by the growing rivalry in foreign trade and shipping, the German navy became pointed more and more toward the greatest sea power of the world - Great Britain. Under the able direction of Admiral Tirpitz, the Germans developed in their fleet a remarkable weapon and one consistently built to a purpose, that of giving battle to the British fleet in the North Sea. Yet it did not represent the outgrowth of national thought; it remained in fact the special creation of the Emperor.

From the time of the Boer War (1896) German foreign policy became definitely antagonistic to England. Attempts at a rapprochement were made by the latter but Germany vacillated, fearing that it would involve her in war against Russia. However, Germany's interests and those of her ally, Austria, were already clashing with Russia in the Near East. Germany had begun her "Drang nach Osten" (pressure to the East). She had begun to extend her influence in Turkey, whose interests were directly inimical to Russia. Thus Bismarck's policy of joining hands with either Russia or England fell by the board and the way was paved for the Triple Entente of England, France, and Russia.

So rapid had been Germany's growth in wealth and power that an antagonism had developed between the people and the State. The nation, triumphant in war, outstanding in the arts of peace, and eminently successful in its economic struggle, was filled with a great and justifiable self-confidence. The people felt an urge for expansion and world power that demanded a world policy. The State, however, lacked this impetus to world power - their pol-

icy was still largely continental. Thus, it would seem that, contrary to popular conception, the people had taken the offensive to conquer the economic world, but the State chose to keep the defensive policy of the self-satisfied State.

GEOGRAPHY

A study of the map is necessary in analyzing the German naval strategy of the World War. Germany fronts on two seas - a comparatively small section on the North Sea and a much larger section on the Baltic with the Danish peninsula separating the two. The Kiel canal cuts across the base of this peninsula and connects the Baltic with the North Sea. This canal was invaluable to the Germans permitting as it did the concentration of their whole fleet in either area.

At the base and on the western side of the Danish peninsula lies the German Bight. Guarding the approaches thereto lies the heavily fortified Heligoland - said to have been impregnable from the sea. The waters of the North Sea are comparatively shallow, lending themselves readily to mining operations. Especially is this true of the German Bight, and thus with a powerful fortress and strong minefields the German fleet occupied a strong defensive position at its primary base of Wilhelmshaven.

Looking across the North Sea some 300 miles from Germany stretches the whole length of England and Scotland, of around 500 miles. Along the east coast the British fleet has the following bases from north to south at its disposal; Scapa Flow, Cromarty, Rosyth, Humber, Harwich, and Sheerness. Thus it must be borne in mind that whereas the German fleet must advance and retreat along one line, the British were not so handicapped. This fact however tended to keep the German fleet concentrated and led the British to disperse their forces.

It is apparent that England and Scotland physically blocked German access to the high seas - a factor of great strategic advantage. The latter had two outlets; the shorter by way of the Strait of Dover (21 miles wide) and the longer between northern Scotland and Norway (about 300 miles wide).

The visibility in the North Sea is generally poor - about 8 or 10 mi.

In summer the days are long, twilight long, and the nights short. In the winter the opposite relationship holds good.

The eastern end of the Kiel canal leads into the Baltic Sea with the fleet base at Kiel. Here the Germans faced the greatly inferior in size and efficiency Russian fleet. Here was a factor of strength for the Germans. The supremacy of the latter in the Baltic, which was never disputed during the World War, cut off Russia from access to the sea except by way of Archangel - a port closed by ice during a large part of the year. On the other hand Germany was able to maintain sea communications with Sweden. To ensure this supremacy Germany had voluntarily given up from the beginning of the war the utilization of the Skagerrack and Denmark had mined the Belts. The Sound, on the Swedish side, was not mined but Sweden took certain measures which practically closed it to both belligerents. Furthermore, as there was a minimum depth of 23 feet in the channel, it could not be used by capital ships. Thus the British fleet was denied access to the Baltic.

By land Germany also had communication with Holland and Denmark. Both of these countries were neutral and had access to the sea. Much could and was obtained by the Germans from them in the way of raw materials and supplies.

It is apparent that the German fleet occupied a poor strategical position. She could maintain sea communications only with Sweden, but she was in no position to sever vital trade routes of the Allies. She could temporarily interrupt commercial traffic bound to or from Sweden, Norway, Denmark, and Holland but could exercise no permanent control thereof. In general Germany did not wish to stop imports to these countries because much of such materials found its way to the Central Powers. Except for sporadic raids of cruisers and the submarine menace of 1917, all the rest of the trade routes of the world were in the hands of the Allies. It is apparent that the latter controlled by far the largest number and most important sea lanes over which troops, munitions, and supplies were to flow to the Allies in number and quantity which any previous war never even approached.

I. GERMAN NAVAL STRATEGY TO ATTAIN NAVAL SUPREMACY

A. INITIAL STRATEGY

In the North Sea was concentrated the German High Seas Fleet and there also was assembled the British Grand Fleet which was to checkmate the moves of the former and to preserve for the Allies the supremacy of the seas. The relative fleet strength was as follows:- in dreadnoughts and battle cruisers, the British had 24 to 16 for the Germans, a ratio of 3 to 2; in cruisers, the British had a superiority of almost 3 to 1 in numbers alone and their cruisers were in general larger and more powerful; in destroyers, the British had a superiority of about 2 to 1; and in long range submarines, Germany had a certain advantage. The latter also had a number of large, long range airships, whereas the British had none. It should be remembered throughout this treatise that so far as a battle on the high seas is concerned Germany could choose the time of her attack. This gives her fleet a marked advantage in that it can probably have all of its important units available at the time selected, while the British had to be ready at all times. Thus the latter always had important units undergoing refit, and due to the heavy use of boilers and engines in the early period of the war, this resulted in a considerable diminution of strength. All in all, in the event of a fleet action at this time, the Germans had to count on a British superiority of about 3 to 2. However the Germans had confidence in their personnel and in their material, and thus under favorable conditions they might have engaged their foe in the North Sea with good prospects of success.

Although, as has been pointed out, the German fleet was built for battle in the North Sea, it was believed that the strength comparison was such that they could not overcome British naval power directly. The first concern of the Germans was the defense of their position, securing the Bight from the attack of hostile forces, and establishing naval supremacy in the Baltic. Then, and then only, they turned their attention to a tactical offensive in the North Sea. They felt it was necessary first of all to wage a war of attrition by carrying submarine and mine warfare to the British Isles and by attacking with surface craft any British forces blockading, patrolling, or

advancing in the immediate vicinity of the German Bight , until equalization of forces had been attained and the German fleet could hope to attack with success. There was really no definite or comprehensive plan for the utilization of the German naval forces for the attainment of naval supremacy. The Germans felt that their strong military offensive would bring the war to an early termination before the sea power of the Allies would bring its pressure to bear. Thus there was no need of risking their fleet and the opinion was widely held that it mattered little what the navy did or did not do.

On the outbreak of war, the Emperor issued the following directive for the conduct of war in the North Sea: (1) Object of the war must be the causing of damage to the British fleet by offensive action against the forces patrolling or blockading the German Bight and, at the same time, by an energetic offensive by means of mines and, if possible, submarines pushed as far as the British coast (2) After equalization of forces shall have been obtained, by this method of warfare, our fleet, after having ~~been~~ prepared and assembled all its forces, should try to engage in battle under favorable conditions. If favorable conditions for combat present themselves sooner, the opportunity should be made use of.

Thus the German fleet was committed from the start to the strategical defensive. As a rule, when one is unable for lack of strength to take the offensive, it is logical to take the defensive. Particularly is this the case when one has a strong defensive position which cannot be enveloped but must be overpowered before the opponent can attain his aim. Clausewitz contends that the defensive is the stronger form of waging war because it confers on the defender the natural support of the theater of war. The German Bight was such a position - so strong defensively that during the course of the whole war the British at no time made an attack on it in force. Yet the defensive per se can never win a war; it is simply a temporary expedient - to gain an advantage and then "under the protection of this success he must return the blow, if he is not to expose himself to certain destruction. A swift and vigorous assumption of the offensive - the flashing sword of ven-

geance - is the most brilliant point in the defensive." (Clausewitz).

The purpose of defense is to preserve. Now what is it that the German navy sought to preserve - they held the German Bight and ~~it~~ controlled the Baltic. So far as sea power, which seeks to control the sea lanes, is concerned, the latter was a prize. However with the existent strength relationship this was conceded to them from the ~~it~~ start. The German Bight was isolated from the sea lanes and controlled none of any consequence. It was therefore illogical to expect the British to butt their heads against a stone wall to gain so little. The British on the other hand controlled the sea lanes; it was theirs to preserve; it was theirs to defend. Here is a definite indication of the military influence on German naval thought. On land a defensive position that cannot be enveloped must be overpowered but in this case the British were in no wise compelled to advance against the German position. The belief of the Germans that the British fleet would immediately attack their fleet in the Bight went so far as to expect an attack of the British even before a declaration of war. This opinion was fostered by certain remarks made by individuals before the war such as that of Admiral Fisher, "We should 'Copenhagen' the German fleet at Kiel a la Nelson" (Nelson attacked the Danish fleet beneath the fortifications of Copenhagen without a previous declaration of war). However absurd it seems to us now it was given wide credence in Germany in 1914. Thus, in their initial estimate of the situation, the Germans made a grave strategical error.

The Germans expected that the British would immediately establish a close blockade of their North Sea coast or at least a patrol off the Bight. They pictured an ideal situation for themselves, permitting the concentration of powerful forces on isolated units or formations. Such losses, they believed, would compel the British to bring in major forces. "It is the nature of war, that what is beneficial to you, is detrimental to your enemy; and what is of service to him always hurts you." (Vegetius). Thus, contrary to German expectations, the British did what was most beneficial for themselves and instituted a distant blockade. Perhaps the error of the Germans is due in part at least to the fact that the British distant blockade is unique in history. In sailing ship days, close blockades were the rule because sailing ships

could keep the sea for months at a time if necessary and thus the battle fleet could support any part of the blockade line that might be threatened. In the Civil War, the Federal navy established a close blockade because the Confederates had no navy to oppose it. In the Russo-Japanese War, the Japanese established a close blockade of Port Arthur and the Russian fleet based there. In this case however the Japanese had established a strong defensive position at the Elliott Islands - a base from which their fleet could on short notice reenforce their blockading vessels. Since it is impossible to keep a modern fleet at sea continuously, it is necessary to have a base near at hand if a close blockade is contemplated. This was an impossible condition for the British since their nearest base was hundreds of miles away. Although it was perhaps not recognized by the British in 1914, it is a fact that the submarine is a serious obstacle to the establishment of a close blockade. Thus it would seem that common sense should have preserved the Germans from this strategical error of reasoning.

B. COMBINED STRATEGY

"Strategy in war must therefore give an aim to the whole military action, which must be in accordance with the object of the war; in other words strategy forms the plan of the war, and to the said aim it links the series of acts which are to lead to the same, that is to say, it makes the plans for the separate campaigns, and regulates the combats to be fought in each." (Clausewitz).

"The great usefulness of the Clausewitzian theory of war lies therein that it gives us a universal conception of the nature of war. It leads us to a summit from which we can survey in its entirety the problem of the combined conduct of war and before all else we now recognize one thing: that namely land and sea strategy - and if we wish to acknowledge the independence of the air service - also an air strategy, are only parts of a combined strategy. We can only solve the particular problems of one or the other, if we consider them in their relationship to strategy as a whole." (Groos).

Thus, policy should dictate the strategy for the war and the whole power of the nation should be coordinated for the attainment of the objective indicated thereby. The rapid growth of Germany's foreign trade and shipping,

the acquisition of foreign colonies, the building of a fleet to protect her interests on the seas and overseas, all served to indicate that she had embarked on a world policy. This far overshadows any continental aspirations she may have had. The great obstacle which she must overcome in pursuing this course was Great Britain who held sway in the realm of foreign trade, shipping, and sea power. Thus the first objective of the Germans should have been to crush the British control of the seas and to establish their own sea power. Had they been able to do so they would at one and the same time have won the war and attained the aim of their world policy. Ordinarily one does not think of using military power to attain naval supremacy, yet the World War offers striking instances how this may be accomplished.

Upon the declaration of war, Germany set in motion her splendid military machine. "The plan of campaign, which was inaugurated in August, 1914, was conceived by General Count von Schlieffen, one of the greatest soldiers that ever lived." (Indendorff). The strategy of the Schlieffen plan, adopted in 1906, was elevated to the rank of a dogma. "It was thought to be the heritage of Clausewitz, Moltke, and Schlieffen - infallible and undefeatable. It was this obsession for the predetermined military strategy of 1906, and the unquestioning faith of the Germans in its infallibility, which pushed the German Navy into the background; and the General Staff of the Moltke of 1914 committed the test of all the years of German preparations to the Army alone." (Frothingham). Since the plan of 1906 was adopted the situation had changed greatly for the Germans. The trend away from a continental policy to a world policy had become increasingly marked, and the German fleet had grown to a point where it could dispute British naval supremacy with prospects of success. Although it is true that the German army and navy staffs interchanged their plans before the war, there was no cooperative planning. They were considered as instruments entirely apart. Apparently the Germans did not conceive that one service could influence the strategical situation of the other. Furthermore it was felt that their army would crush France and Russia in a short war and that the Allies would sue for peace before British sea power could exert any important influence. Thus would Germany emerge victorious and with her fleet intact.

Based on a rapid mobilization of the French army and a slow mobilization of the Russian army, the general plan was to strike quickly in the West capture Paris, and crush France; to hold, meanwhile, in the East; and finally to overwhelm the Russian army.

For a time it appeared that the German army was to repeat its brilliant exploits of 1870. They advanced rapidly through Belgium and began a ~~great~~ great enveloping movement through northern France with Paris as their goal. By the advance of August 18, 1914, the Germans were in a position to threaten Ostend and this, according to the British Admiralty, endangered the whole defense system of the Channel. Ostend and Zeebrugge were evacuated by the Belgians. The British retreat from Mons on August 23 had serious naval reactions. The Admiralty felt that the danger to Dunkirk, Calais, Boulogne, and even Le Havre was so imminent that these ports were evacuated for the purpose of troop disembarkation. Troop movements were temporarily stopped and later were diverted to Cherbourg and even to St. Nazaire. The battle of Mons had an important bearing on naval strategy. At this time the Admiralty informed Admiral Jellicoe of the danger threatening Calais and ~~war~~ warned him that in case the Germans occupied Calais it would be necessary for the Grand Fleet to leave Scapa Flow and move farther to the southward. With the enemy established on the Strait of Dover, all of her vital trade routes, her linkage to France, and the British Isles themselves would have been threatened. Had Calais been occupied and had the British fleet been forced to operate from a more southern base, the British would have lost their firm support of the northern blockade of the North Sea; but most important of all the Grand Fleet would have been brought within striking distance of the High Seas Fleet. It was just the favorable condition which was the premise of all German naval plans. It seems, however, that neither the army nor the navy had any conception of the strategical importance of this move.

When the German advance was stopped by the battle of the Marne (Sept. 6 - 10, 1914), they retreated to the Aisne and intrenched. Now developed the race to the sea. The plan of the Germans was to gain the French Channel coast, while the Allies sought to effect a junction with the Belgian army in Antwerp and hold their foe east of the Scheldt. With the bombardment of

Antwerp, the British recognized the seriousness of the situation and determined to reenforce the Belgians with the Royal Marine Brigade and the 1st and 2nd Naval Brigades. All were in the Antwerp defenses by October 6 but the fortress was becoming untenable and had to be evacuated. Antwerp surrendered October 9. It was now necessary for the Belgian army to effect a junction with the Franco-British forces and to establish themselves in a strong defensive position. This was to be found no nearer than the Yser. The culminating point of this fighting was the battle of Ypres which began October 21 and here the Germans were brought to ~~an~~ a standstill. British naval vessels supported the land forces and by means of the ships' batteries the locks at Nieuport were held.

Meanwhile what was the German navy doing? Nothing! Foch said, "Of all mistakes, one only is disgraceful: Inaction." Even that energetic leader, Tirpitz, in a letter dated August 2, 1914, says, "We of the navy can do very little and that makes our situation a very painful one". There had been no peace-time cooperative planning between the German army and navy before the war and thus not only was there no combined strategy but one service was at a loss how to assist the other. The army considered the British Expeditionary Force as a "quantité négligeable" - a serious error. It proved to be exactly the same number of troops that had to be sent to the East Front to stop the Russian invasion of East Prussia. Military authorities agree that the loss of these troops on the West Front was a factor of great importance in causing the execution of the Schlieffen plan to founder at the Marne. Thus, upon inquiry of the navy at the outbreak of the war, the Chief of the General Staff made it clear that he did not consider the interruption of the transport of this force of sufficient importance to justify the engagement of considerable naval forces. His view was therefore in general agreement with the Naval Staff who had abandoned the idea of a fleet advance against the English Channel position. It seems that the Naval Staff made absolutely no reference to the importance of the capture of the Channel ports on the part of the army.

On August 7 the Germans were advised that the transport of British

troops would begin in the near future and this movement actually started on the 9th. The Emperor gave orders to attack British transports without engaging the High Seas Fleet. The German Naval Staff confided this task to four submarines who were to act independently and who were to take as their primary objective not the transports but the war vessels covering the movement. This operation brought no success.

While the greatest concern of the British Admiralty was the security of troop transports, the destruction of same was regarded by the German Naval Staff as a very minor affair, judging by the force employed to accomplish same. At this time, and whenever the British made a large troop movement, they maintained a close blockade of the German Bight so that a ring of British forces extended from Terschelling to Horns Reef. It was an ideal opportunity for the Germans to attack in force. To be sure this was probably not well-known to the Germans at the time but had they used their forces actively it would have been known. Contacts and actions would have occurred and the British close blockade would have been interrupted unless the Grand Fleet were brought into action.

On August 17 the two German light cruisers, STRALSUND and STRASSBURG, with two submarines undertook an operation against the British forces in the Hoofden covering the approaches to the Strait of Dover. The British recognized this as a vital area, particularly at this time when important troop movements were underway. Consequently strong forces were at sea to close this entrance to the Channel. Instead of the whole High Seas Fleet, an insignificant force was launched against this Achilles heel of England. Launched into a hornet's nest 150 miles from their nearest base, it is wonder enough that these two intrepid cruisers were able to return to their home port. This advance gave the Germans a fairly accurate picture of the Channel patrol and it would seem that they could have used this to advantage by employing stronger forces. Instead of that however, a cruiser raid is launched against British shipping at Dogger Bank. This was the last heavy day of the transport work. Between August 15 and 17 British troop transports crossed the Channel 137 times between the English and French coasts. The German fleet had done nothing to stop

them, nor even delayed their sailing. As a matter of fact, it was not until September 15, 1914, that the Army Command first asked the navy to hamper the transportation of troops. The whole Expeditionary Force was safely landed and in position on the left flank of the French army to take part in the fighting at a crucial time. A result of this cruiser raid into the Humber was the stationing of two British battle cruisers and three cruisers in the Humber. This marked beginning of dispersion of forces along the east coast of England and Scotland.

When the execution of the Schlieffen plan foundered at the Marne, it should have been apparent to all German leaders that they were confronted with a long war and that the longer it lasted the less chance they had of coming out on top. Sea power would wear down the Central Powers and bolster up the Allies with troops from their colonies overseas and with munitions, equipment, and supplies from all the world. Oddly enough the German Naval Staff at no time urged upon the General Staff the importance of the Channel ports although they were primarily concerned, affording as it did a great opportunity to improve the strategical position of their fleet. However, certain naval men, like Tirpitz, had from the beginning suggested that the army make this their objective. Now the General Staff decided for reasons of its own to adopt this objective and the "race to the sea" began.

In spite of the critical situation in Flanders, the Grand Fleet remained in Lough Swilly (northern Ireland), while the battle raged on the Yser. On October 27 the AUDACIOUS was sunk by a mine and 5 other capital ships were undergoing repair, leaving only 22 British capital ships to oppose 19 for the Germans. Of course the Germans did not know how many British ships were not available but Tirpitz amongst others surmised that they were having trouble due to heavy duty since beginning of the war. If at all, it was when the battle for Calais was at its height that an attack of all German naval forces should have been made.

The first major advance of the German fleet took place on November 3, 1914, at a time when the fighting at the Yser had already been decided. Thus this operation bore no strategical relationship whatsoever to

the campaign on land. With the battle of Ypres, the opportunity passed whereby the German fleet could have improved its strategical position. It also lost some splendid opportunities to give battle to inferior forces and thus have made some marked progress in attaining the equalization desired.

It would seem that had the Germans had a proper appreciation of combined strategy the following general plan might have been adopted. Both the army and navy are to hold on the East and strike on the West Fronts. The primary objective of the army should be not Paris but the Channel ports with the view to crushing the Allied forces and at the same time to improve the strategical position of the German fleet. The direction of their main thrust should be toward the mouth of the Somme River with a feint toward Paris, drawing as actually happened great forces to the defense of that city. Having cut off the Allied forces in northern France and Belgium, roll up and capture them.

As actually happened in the war, when the Channel ports were threatened and the British shifted their disembarkation ports, thousands of men, horses, and tens of thousands of tons of supplies had to be loaded and transported. When the Germans appeared before Amiens latter part of August, 1914, they cut off the only avenue of retreat by railroad for the Allied troops then in northern France. French transports transferred some of their troops from Dunkirk to Honfleur and British transports took the remaining 25,000 men and landed them at La Rochelle. In addition 10,000 French troops were transported from Calais to Cherbourg. These troops arrived in time to facilitate the Allied counter-stroke at the Marne. Such facility and security in transferring troops by sea would have been impossible had the German fleet been active.

To go on with the projected plan. With the surrender of the ~~the~~ Allied troops in northern France will fall the important Channel ports, Boulogne and Calais, and the North Sea ports, Dunkirk, Nieuport, Ostend, and Zeebrugge.

The navy should likewise hold the Russians in the Baltic and gather all available forces for a powerful thrust against British naval su-

premacv. First of all they should by every means possible prevent British troops from reaching the continent. The simplest way, of course, is to hold them in the British Isles, and this could very largely have been accomplished by playing on the English fear of invasion.

So firmly, and rightly, did the Germans believe that an invasion of England with their troops was impossible as long as the British controlled the seas that they could not understand that any real fear existed there. Before the war this fear of invasion had been nourished by military and naval men with an eye to increased appropriations. Inflamed public opinion was to act as a boomerang on them during the war. Yet oddly enough this fear of invasion had taken hold of even military and naval men. On August 2, 1914, The French ambassador to England was informed "in view of our enormous responsibilities all over the world and the primary exigencies of Home Defense, there could be no question at present of a promise to send our Expeditionary Force or any part of it to France". The War Office, Kitchener in particular, and amongst naval men even Sir Arthur Wilson, a man of highest authority amongst the older flag officers, felt that an invasion was not only possible but probable. Naval Officers in general did not hold this view, yet the disposition of their naval forces was affected thereby throughout the course of the war.

When the British Expeditionary Force had crossed the Channel and no German invasion developed, it was felt that the Germans were waiting until England had been stripped of troops and then to strike the fatal blow. Consequently on August 15, 1914, the VI Division was sent from Ireland to Cambridge instead of to France. The Grand Fleet was ordered to remain closer to the decisive area than had previously been thought necessary. End of November, 1914, Sir Arthur Wilson expressed the opinion that in case of battle with the German fleet the Harwich force at least must be maintained in reserve, because the main object of an advance would be to land troops on the English coast. Harwich force was to fight off the transport fleet. "To add to the distractions

of this hard month of November, 1914, an invasion scare took a firm hold of the military and naval authorities. It was argued by the War Office that the lull on the fighting line would enable the Germans to spare large numbers of good troops - 250,000 if necessary for the invasion of Great Britain." (Churchill). This fear of invasion affected British naval dispositions all during the war and actually at the time of Jutland resulted in holding back the Harwich force.

All this had transpired without the Germans adding even a stick of kindling to the fire. The dissemination of reports, leakage of false information to enemy, assemblage, loading, and pretended dispatch of transports and lighters from a suitable German port, and finally greater activity of the German fleet should have been resorted to at various times during the war and particularly during this critical period of the attack on the French Channel ports.

In coordination of the army's attack on the Channel ports, all arms of the navy should be utilized for the attainment of this objective. All available submarines should be concentrated against the troop ships themselves. Strong raiding forces, closely supported by the High Seas Fleet, should be launched into the Channel or at least against the Dover patrol. Particular effort should be made to destroy the first troop movement to the continent. This will arouse public sentiment against further dispatch of troops. Thus, British troops will be held in England, transports destroyed en route, others materially delayed, and thereby the navy will render a great service to combined strategy.

C. NAVAL STRATEGY TO ATTAIN EQUALIZATION OF FORCES

1. MINE WARFARE

This was one of the means by which the Germans hoped ~~might~~ to attain equalization of forces. Shortly before Great Britain declared war, the British Admiralty received reliable information that "the Germans intended carrying out a very extensive mine-laying policy in British waters in the event of war between the two countries". Although the Germans had no real and comprehensive plan for this warfare, the British believed that such a one existed and it influenced the conduct of their

operations. Particularly did the latter anticipate that the former would lay large mine-fields in the North Sea with a view to drawing the Grand Fleet into such areas.

In the beginning, the Germans sought to mine off British ports and in one of these fields laid by the KÖNIGIN LUISE the British lost their first naval vessel, the light cruiser AMPHION, on August 6, 1914, off the Thames. In general such mine-fields did not produce the ~~results~~ results hoped for, because they were frequently detected by fishing boats, or at best sank ships of relative insignificance. Poor judgment prompted the sending out of four torpedoboats carrying a total of only 48 mines to be laid in the mouth of the Thames. They were intercepted off the Texel on October 17, 1914, by British light forces and sunk. It is true they were old ships but more important than the loss of material was the loss of some 260 highly trained officers and men. Such a sacrifice was out of all proportion to any probable mining success.

More success was had by converted merchant vessels carrying a large number of mines, when they were laid in fleet operating areas farther afield where the enemy did not expect them and where they would not be so apt to be prematurely detected. Such a mine-field was laid by the BERLIN north of Tory Island (Ireland) and resulted in the sinking of one of the most powerful of British dreadnoughts, AUDACIOUS. It had a strategical effect of importance and for this, as well as political reasons, an attempt was made to keep this loss a secret. It reduced the Grand Fleet at a time when it could ill afford it. As the actual extent of this mine-field was not known, the Grand Fleet felt threatened by unexpected dangers and, in spite of the critical situation in Flanders, Jellicoe decided to give up the contemplated advance into the North Sea and to remain in Lough Swilly. A similar success was scored by the MOWE which laid a mine-field covering the western approaches to Pentland Firth (north of Scotland), and caused the loss of the British battleship, KING EDWARD VII, in January, 1916. This mine-field is particularly interesting. It consisted of 252 mines laid in separate sections, each one being laid on a different course with an interval be-

tween. While it would be easy to sweep a channel through it and thus locate one section, it would be a tremendous task to clear away a whole field laid in this manner. So it proved to be and was a source of annoyance for a long time thereafter.

From the standpoint of personnel employment, mine warfare was good strategy on the part of the Germans. At the beginning of 1918, mine warfare occupied more than 1000 small Allied ships manned by approximately 30,000 men.

While mining may be carried on as an independent operation, still it would seem that maximum effectiveness can best be achieved when coordinating mine-laying with fleet operations. For instance, the mining at night of approaches to a fleet base or the mining of a sea area should be coordinated with fleet operations causing the enemy to move immediately and without warning through such fields.

2. SUBMARINE WARFARE.

The second means to attain equalization was initiated on August 6, 1914, with an attack operation of 10 submarines making a sweep to the northward for the Grand Fleet. They did not sight the enemy battle-ships and lost two submarines (one rammed by a British cruiser and the other for reason unknown). However their presence in the northern North Sea caused the precipitate withdrawal of the Grand Fleet to the Atlantic. Although this was not known to the Germans, it left the English east coast and the Strait of Dover open to attack.

As much as the British feared the submarine, so the Germans had faith in its technical capabilities. This was further enhanced when the latter found how readily this type could maintain itself at sea on long cruises without support. On September 22, 1914, Weddigen scored his famous success when U-9 torpedoed and sank in rapid succession the 3 British cruisers, ABOUKIR, HOGUE, and CRESSY. Thus was built up the German overestimation of the submarine as a military weapon, and they believed it to be the means whereby equalization could be attained. However, subsequent events did not bear this out and the submarine was to be directed more and more against commerce.

Yet, according to Jellicoe, the German submarines and minelayers

constituted such a serious threat to the Grand Fleet as to be of decisive importance in operations. These weapons had an important strategical effect, forcing as they did the British fleet ever farther from the German bases. Thus, had the Germans cared to utilize it, the control of the middle and southern North Sea was theirs.

3. FLEET OPERATIONS.

At the outbreak of the war, the German Naval Staff, desiring to deny the British fleet access to the Baltic, requested that Denmark mine the Belts and this the Danes readily agreed to do. On the grounds of international law, Great Britain could have protested such closure of an international waterway. That she did not do so would indicate that she did not consider this disadvantageous to her fleet operations. Germany was led to make this move by reason of a faulty strategical conception. She believed that the British fleet must strike at her defensive position in the German Bight. Therefore she desired to mass all possible strength in the North Sea and with a minimum force to hold the Russians in check and to control the Baltic. Thus, since it seemed that Germany had no real occasion to use the Belts, it would be wise to deny them to the enemy. It has already been pointed out that this conception was fallacious. Since the German fleet must act on the offensive, it would have improved its strategical position had the Belts been kept open. Its advance and more particularly its retirement would have been facilitated had the German fleet been able to do so in not just one but two directions. At the same time it would have provided a lure for the British fleet to send forces into the Baltic and thus would have been created the very situation which the Germans longed for, that is, the dispersal of British forces and the concentration of their own fleet on detached formations.

After six weeks of war and no British attack had developed, the German fleet commander, Ingenohl, asked for greater freedom in using the fleet. Also he recognized a certain inherent weakness in passively awaiting an attack, permitting as it did a concentrated force to strike the outlying scouts and then to retire before superior forces could be

brought to bear, as demonstrated by the Heligoland Bight action. Most other ranking naval officers, including Tirpitz, urged greater activity of the fleet but this was refused by the Emperor, who was strongly seconded by Pohl, the Chief of the Naval Staff. As happened so often in French naval history, German naval power was condemned to a passive defense by the restrictions of policy.

A concession was made at this time permitting the use of the battle cruisers in offensive operations. Thus, on November 3, 1914, with the raid on Gorleston, began the advances of German forces against the English east coast. The purpose of this, and subsequent operations, was to exert pressure on the British to force them to attack and to inflict damage on the enemy. Without expecting or knowing of it, they had another important influence on the conduct of war. Lord Sydenham says thereof, "The moral effect was invaluable to the Germans because it assisted the invasion mongers."

On November 1, 1914, Spee added the brilliant victory of the battle of Coronel to the laurels of the German navy and dispelled the nimbus of invincibility of British sea power. Although the British received reliable information that enemy battle cruisers would be sent out, and in particular that the battle cruiser, VON DER TANN, had actually broken out, nothing was done to assist Spee and his squadron of 2 heavy and 3 light cruisers. Spee was informed, "Advance of large cruisers from Germany into the North Atlantic impossible". It was suggested however that Spee should attempt to break through and return to Germany with all ships. Not only was no support sent to him but no fleet operations were undertaken until after this ~~squadron~~ squadron had been destroyed at the Falkland Islands. Thus, the British found it possible to dispatch the three battle cruisers, INFLEXIBLE, INVINCIBLE, and PRINCESS ROYAL to the western Atlantic.

Something should have been done to support Spee. The inactivity of the German fleet at this time is disgraceful. It ignobly sacrificed the prestige which Spee had won for the Germans at Coronel. This squadron of five modern cruisers - none older than 8 years - is in itself a prize

worth fighting for. There was also a chance of striking two severe blows; first, against Allied commerce off the east coast of Brazil, and second, against Allied commerce to Canada and the United States. Finally should have been considered the prestige of Germany in the eyes of the nations of the world and especially the moral effect on own personnel.

The least the Germans should have done was to launch a vigorous offensive with the whole High Seas Fleet and to keep hammering away. If this had been done it is entirely probable that the British would not have released the three battle cruisers from the Grand Fleet. A rendezvous with the German fleet could then have been established in the vicinity of Bergen and the break through to Germany have been accomplished.

A still better move would perhaps have been to secretly send out two battle cruisers to rendezvous with Spee in the south Atlantic; to strike successive blows with this combined force at Allied trade routes to South and North America; ^{mean} while, to strike vigorous blows with the High Seas Fleet; and finally to effect a junction of both forces for the dash through the North Sea. This might have resulted in the loss of not only Spee's squadron but the two battle cruisers as well. It would have been risky but then that is war. As Napoleon said, "Where did the French admirals learn that a war can be carried on without some kind of a risk?" The coal supply of such an augmented force would have been a serious problem but not an insurmountable one.

Spee's squadron was destroyed at the Falkland Islands on December 8, 1914, and the Germans then learned that two battle cruisers had taken part in the action. British cruisers were still scattered over the seven seas and the work of mopping up the German raiders was just about finished. It was to be expected that many of these would now join the Grand Fleet. For one reason or other, Jellicoe had part of the time only 18 capital ships ready for action, while Ingenohl had 19. Surely then was the time to strike. Never again would the strength relationship be so favorable for the Germans. Yet the latter continued to adhere to their original concept of the war at sea.

It was not until December 16, 1914, that the next major advance of the German fleet took place and then in the form of another battle cruiser raid on Scarborough and Hartlepool, distantly supported by the battle squadrons. This attack was expected by the British and to counter it the Second Battle Squadron and the Battle Cruiser Squadron with light forces were ordered to a rendezvous south of the Dogger Bank, which they were to reach early morning December 16. They were unsupported by the rest of the Grand Fleet because a raid of the enemy battle cruisers only was anticipated. This position was 180 miles from Heligoland and only 30 miles away at the same time from the rendezvous of the High Seas Fleet with their battle cruisers after the bombardment of Scarborough and Hartlepool. British force was caught between the jaws of the two German forces and a wonderful opportunity presented itself for the Germans to attain the equalization desired. Unfortunately Ingenohl, in view of the Emperor's restrictions in his operation directive, did not adhere to his original plan and, following a night destroyer contact, he turned back prematurely. He believed he was face to face with the enemy main body and felt that he could not risk an action. What had appeared as a golden opportunity, now looked ominous for the German raiding force. Good luck and the excellent scouting work of the light cruiser, Stralsund, enabled Hipper to evade the enemy.

The strategical effect of this advance was that the transfer of the battle squadrons of the Grand Fleet to the Humber or Thames was seriously considered and actually resulted in moving the Battle Cruiser Squadron from Scape to the Firth of Forth. It showed that the bombardment of the English east coast entirely sufficed as a means of pressure in order to draw out the Grand Fleet from its defensive position.

On January 23, 1915, an advance of the German battle cruisers, unsupported by the High Seas Fleet, took place against British naval forces at the Dogger Bank. Here Hipper made contact with the superior British Battle Cruiser Squadron and in a running fight lost the armored cruiser, Blücher. Although Ingenohl had received early

information that Hipper was engaged by superior forces, he made no timely move to support him. As a result Pohl relieved Ingenohl in command of the High Seas Fleet in February, 1915. The new Commander-in-Chief was in entire agreement with the Emperor in the realm of naval strategy. In a memorandum to the latter, Pohl says, "Concerning the actual military situation I believe, therefore, that offensive advances should be very short and limited to demonstrating that we dominate the German Bight." Pohl made 7 advances with the entire High Seas Fleet but at no time did the main body go farther than 120 miles from Heligoland and then only when air scouting was possible.

On January 24, 1916, Scheer relieved Pohl in command of the High Seas Fleet. The former had long been an advocate of greater freedom of action for the German fleet and this was now granted by the Emperor. Thus began a period of activity and all operations therein are close interrelated with a view to exerting pressure on the enemy - "to induce the enemy to take counter-measures which would afford us an opportunity to engage part or the whole of his Fleet in battle under conditions favorable to ourselves". (Scheer)

The first major advance under Scheer occurred on April 24, 1916, in accordance with a plan by which the German battle cruisers with light forces were to bombard Lowestoft and Yarmouth at daylight, April 25, while at the same time the rest of the High Seas Fleet was to take up a rendezvous position about 25 miles west of Haaks fireship. Scheer believed that if the enemy answered the challenge he would have to move into the vicinity of Terschelling Bank in order to block the retreat of the raiding force. These waters were favorable to the Germans for offering battle. "With luck we might even succeed in attacking the enemy advancing from the Hoofden on both sides; on the south with the forces told off ~~the~~ to bombard the coast and on the north with the main body." (Scheer)

The British Admiralty had received early word of the undertaking and had ordered Jellicoe out with the whole fleet. The latter, however, was not yet ready for action. In expectation of some German

operation, the Grand Fleet had cruised on April 23 between Horns Reef and the Skagerrack and was fueling at their bases when the German advance took place.

While the objective was not known, the Admiralty considered that Yarmouth and Lowestoft were threatened. Also in spite of the minefields guarding the Strait of Dover it was held entirely possible that a strong German raiding force supported by the High Seas Fleet might advance into the Channel and interrupt the communication line of the British army in France. Another likely objective was the mass of merchant ships which gathered every night in the Downs. Hundreds of these ships might be destroyed at one fell swoop - with serious consequences to the British supply of war materials, raw materials, and provisions. In addition to a troop landing on the English east coast, there was also considered the possibility of the German fleet covering a troop landing on the continent between Nieuport and Dunkirk in the rear of the Allied army. Thus, while other strategic considerations favored a distant base for the Grand Fleet such as Scapa Flow, every German advance in the direction of the Strait of Dover indicated the necessity of close protection for this vital area.

At daybreak the 25th, the bombardment took place as scheduled. Commodore Tyrwhitt, then at sea with the Harwich Force, sighted the battle cruisers and maintained contact. At noon, the German battle cruisers were north of Terschelling only about 45 miles from the British advance force and in close supporting distance of own main body. As the British main body was not immediately available the advance force was recalled and thus no battle took place.

The strategical effect of this German advance was that the Fifth Battle Squadron was moved from Scapa to the Firth of Forth, while the Third Battle Squadron and Third Cruiser Squadron were moved to the Thames. It worked exactly in the direction contemplated by Scheer, that is, to draw the British fleet out of the strategic defensive and to cause a dispersal of the enemy forces. It proved

so effective that Scheer determined to use the same means of pressure for the projected undertaking the end of May, 1916. It was planned to advance against Sunderland but weather conditions necessitated a change of objective. This led to the battle of Jutland.

The battle of Jutland has generally been regarded, even by some naval men, as an accidental collision of two fleets. Certainly from the strategical point of view this is not at all the case. Since Scheer had taken command of the High Seas Fleet, his one aim had been battle. The strategic situation had meanwhile become more compelling for Germany. The hopes of the Verdun offensive had not been fulfilled. Unrestricted submarine warfare had to be called off after only one month due to pressure of political considerations. The submarines which had thus been released could now be utilized against military objectives and this was an additional inducement for the Germans to give battle. The planned and increased demand to draw the British from their strategic defensive was having its effect. Public opinion was aroused over the repeated bombardment of the English east coast and the British Admiralty could no longer remain passive. Discontent and unrest was manifest amongst certain of Great Britain's allies, particularly Russia. Stronger and stronger representations were made by Russia indicating that their power of resistance would collapse if the German control of the Baltic were not broken and Russia provided an adequate supply of war materials. This could only be accomplished, according to British views, by the defeat of the German fleet in battle. Their aim was to let the Germans advance farther and farther from their base and then to draw them into a trap.

The German plan was for the battle cruisers and light forces to appear in the Skagerrack on May 31 and by means of commerce warfare to induce the British to send a force against him. The enemy was to be drawn to the German main body which was in close supporting distance. The British plan was that a battle squadron and two light cruiser squadrons were to appear off the Skaw on June 2 and from there to advance through the Cattegat to the northern outlets of

the Great Belt and Sound. This, it was believed, would draw German forces from the Bight to the northward. The rest of the Grand Fleet was to take station between Horns Reef and Fisher Bank and intercept the enemy. The German advance was planned and developed sooner than the British and therefore the initiative fell to the former. That Jutland was not fought to a decision was because the strategical aim of the British was not yet compelling enough for them to risk their whole fleet.

The undertaking against Sunderland finally took place on August 19, 1916. The plan was for the battle cruisers and light forces to appear at dawn before Sunderland, bombard, and draw out the enemy forces. The rest of the High Seas Fleet was to take up a supporting position between Dogger Bank and the Humber. The German and the British fleets put to sea almost simultaneously and this time the latter was successful in intercepting the enemy in the advance. Early in the afternoon, the two fleets were only 45 miles apart. Action was believed to be imminent - on the British capital ships the fire distribution signals were already flying. However, shortly before the two main bodies would have made sight contact, Scheer received an erroneous report from an airship that the main force of the enemy was to the southward and consequently he turned off in that direction. Thus the two fleets drew apart and a battle did not ensue.

These fleet operations brought the Germans no nearer their aim of attaining equalization. Even Jutland - brilliant achievement as it was for the Germans - left the two fleets in about the same relative strength. This method brought no success because (1) it was not begun early in the war when the strength relationship was most favorable to the Germans (2) no decision in execution (3) infrequent repetition and (4) no coordination of individual operations with the strategic situation. Had Germany been able to attain by battle a superiority of naval strength, she could then have dominated the Channel, immeasurably improved her strategic position, and

unquestionably would have won the war then and there. On the other hand, had the German fleet been decisively beaten in battle it would probably have meant the loss of naval supremacy in the Baltic, the submarine war on commerce would no longer have been possible, and thus Germany would have lost the war at that time.

D. WAR ON COMMERCE

1. Cruiser Warfare

Prior to the World War, the one objective of Tirpitz had been the building of a battle fleet. On account of the financial burden thus imposed on the country, the building of cruisers suitable for warfare on commerce was wholly neglected. As the battle fleet was nearing completion Tirpitz was considering the fitting out of a cruiser squadron for commerce warfare but when the war broke out nothing had been done on this project. Such cruisers as were on foreign station had been sent out for political rather than strategic considerations. Plans for cruiser warfare did not go beyond utilizing such war vessels as were away from home ports. Lack of bases in foreign waters was a severe handicap and caused the Germans to underestimate the prospects of cruiser warfare.

The most important effect of cruiser warfare for the Germans was the drawing of combatant ships away from the enemy fleet. This caused a weakening of the latter out of all proportion to the strength of the German cruisers. No less than five squadrons - each superior to Spee - were drawn together to oppose him which ever way he turned. Spee's attack on the Falklands was a strategical error. Thus, when this German squadron was destroyed, the 3 British battle cruisers were again available for service with the Grand Fleet. The battle cruiser, AUSTRALIA, was released to the Grand Fleet. Many British cruisers were recalled from abroad to be utilized in the blockade of Germany. Then had passed the time when the strength relationship was most favorable to the German fleet. The greatest service Spee could have rendered Germany was to maintain his squadron as a powerful threat to Allied control of the seas. This would,

of course, have been impossible for very long and consequently he should have worked his way homeward if possible.

Cruiser warfare was also to have important economic, military, and political effects which were out of all proportion to the strength of these raiders. They not only did honor and glory to the German nation but they took their full part toward winning the war.

Australian and Indian troop transports were delayed for weeks through the work of the EMDEN. Important as was the commerce destruction of such raiders as EMDEN and KARLSRUHE they exerted an effect which went much farther than their immediate operating areas. It was found that these cruisers could operate effectively even without bases. When their coal supply ran low, they found it possible to replenish same from an enemy collier.

It would seem that the Germans missed a good bet when they failed to fit out an adequate number of auxiliary cruisers for commerce destruction. Unlike Great Britain, Germany had not made pre-war preparations for arming merchant ships. Yet, had they properly appreciated their value, they might have done much better. Their merchant marine was tied up in ports all over the world and was of no use otherwise. As it was the Germans fitted out only 5 auxiliary cruisers at the beginning of the war and only one of these the passenger liner, KAISER WILHELM DER GROSSE, was fitted out in home waters. That ships could get through the British blockade is illustrated by this vessel which broke through at a time when the whole Grand Fleet was cruising between Norway and the Orkneys.

On August 31, 1914, the passenger liner, CAP TRAFALGAR, was armed and fitted out at Trinidad Island by the German gunboat EBER. At Tsingtau, PRINZEITEL FRIEDRICH and CORMORAN were fitted out.

KRONPRINZ WILHELM left New York on August 3, 1914, and was armed with two light guns on the high seas three days later by the KARLSRUHE. She operated for over 8 months in the middle and south Atlantic; she steamed some 40,000 miles, and sank 13 ships with a total tonnage of 50,000 gross tons. That she was able to operate so long undiscovered is attributable to the fact that she did not at once sink the prizes and send the crews in to neutral ports but

carried the prizes with her. Finally, due to sickness of personnel, lack of ammunition and coal, she had to run in to Newport News on April 11, 1915, and was interned. She was by far the most successful of these five auxiliary cruisers.

As the German raiders were swept from the seas, the losses of British merchant tonnage sank rapidly from 88,000 gross tons in September, 1914, to 74,000 in October, 1914, and finally to 7,000 in March 1915.

The success of the converted minelayer, METEOR, led to a new development of ~~the~~ cruiser warfare, that is, the use of merchant ship of moderate speed fitted out to initially lay mines and then to act as an auxiliary cruiser for war on commerce. The MÖWE was the first ship so fitted out and she gave a brilliant account of herself. One of her mines accounted for the British battleship KING EDWARD VII. The MÖWE remained at sea over two months and sank 15 ships with a total of 57,855 gross tons. She returned to Germany with a supply of precious raw materials and about \$190,000 worth of uncoined gold.

The MÖWE made a second cruise from November 22, 1916 to March 22, 1917, and sank 21 steamers and 2 sailing vessels with a total of 119,000 gross tons.

About Jan. 1, 1917, the armed sailing vessel, SEEDLER, went out and operated with good success until she stranded in the South Seas in August, 1917.

Soon thereafter the auxiliary cruiser, WOLF, left Germany and in spite of her low speed of 10.5 knots was able to maintain herself at sea for over one year. An unparalleled record in history for a steamer. With 465 mines, she infested the approaches to Cape Town, Durban, Singapore, Colombo, Bombay, and Sidney. She destroyed by mines or otherwise 35 ships of about 210,000 gross tons. Scurvy and beriberi as well as necessity for docking forced her to return home. She was always able to maintain her coal supply from prizes. An interesting feature of this raider was the small airplane which she carried for scouting work.

The auxiliary cruisers, GREIF and LEOPARD, were less fortunate. They were intercepted by the British blockade forces on the way out and destroyed.

The brilliant work of such auxiliary cruisers, as MÖWE and WOLF, indicates what may be done. The Germans believed at first that high speed was necessary for a vessel to operate successfully in commerce warfare, yet it is interesting to note that a low speed vessel has the record for total tonnage sunk, as well as for sea endurance. Germany had many of such ships available and should have used them more freely.

2. Submarine Warfare.

As has been shown previously, the Germans at first expected to use their submarines against military objectives. In fact they had not foreseen the use of this type against commerce. However, after the first two or three months of war, submarine officers were to learn that warships are elusive and dangerous targets but that merchant ships are easy prey. In September, 1914, Lieutenant Commander Bauer writes "much better results are obtainable by combined action against enemy commerce than by isolated hunts for warships".

Submarine warfare on commerce first commenced on February 22, 1915, and was carried on in a restricted form. Germany then had 30 submarines suitable for this work of which 7 were for some unaccountable reason left in the Baltic. Two-fifths of the remainder, or about 9 submarines, could be maintained on attack stations simultaneously. Yet, even with this small number, startling results were obtained. Nineteen British lines completely stopped service, while 42 continued in a limited way. Beginning of March, 130 ships were laid up in English east coast ports. On May 7, 1915, the LUSITANIA was sunk and on demand of United States led to further restrictions. Sinkings fell off rapidly - from 40 in the second week of June the number fell to 7 in the last week in June. In order to investigate the ships, the submarines had to surface and thus exposed themselves to destruction. During this first phase of the war, 12 submarines were lost - the majority of these were probably attributable to this restriction. In the summer

of 1915, the number of submarines available for commerce warfare had grown to 44, but due to restrictions and vacillating policy on the part of Germany the sinkings averaged only about 100,000 tons monthly in 1915.

In January, 1916, Germany had available 68 submarines. Rapid building of submarines was taking place and from March to December of this year 100 additional boats were placed in service. Thus in spite of restrictions the average monthly losses increased from 134,000 tons during the first half of the year to 248,000 tons during the last half of the year. Meanwhile it had become increasingly evident that Germany must resort to unrestricted submarine warfare. Scheer in report of July 4, 1916, to the Emperor says, "There can be no doubt that even a most fortunate result obtained in a naval battle would not compel England to conclude peace. The military disadvantages of our geographical situation compared to that of the island empire, the enormous material superiority of the enemy, our fleet cannot neutralize even if the submarines are wholly devoted to military purposes. A victorious conclusion of the war in a reasonably near future can only be obtained by ruining British economic life, a result that cannot be secured except by devoting the submarine arm to the struggle against British trade".

Defensive measures against submarine attack were really begun in 1916 but did not reach an effective stage until 1917. In April, 1916, out of 100 British ships sunk only 9 were armed; in February, 1917, this number had increased to 45; in October, 1917, to 84. Other measures such as the use of aircraft, Q-ships, sub-chasers, listening devices, and particularly the depth charge increased in effectiveness month by month. Also the British mine was considered comparatively harmless but by 1917 an effective one was available and were laid in great numbers.

Early in 1917 Germany declared her unrestricted submarine warfare on commerce. Sinkings increased at an alarming rate; in January, 351,490 tons; in February, 540,344 tons; and in April, reached a peak of 874,576 tons. Then the rate declined steadily but in March, 1918, rose again over 700,000 tons and then declined steadily to the end of the war.

The number of submarines had increased steadily in 1917 but in 1918 the losses of submarines rose to 8 per month and this exceeded the new additions. Yet, compared to the results obtained in 1915 and 1916, the results were not proportionate to the increased number of submarines due to enemy defense measures. The entry of the United States into the war in April, 1917, and the formation of convoys were the vital factors which doomed the submarine campaign.

The submarine war on commerce was far more destructive than any other previous commerce war in history. "It was in scale and in stake the greatest conflict ever decided at sea." (Churchill). A total of 18,716, 982 tons of world shipping was sunk; world new construction was somewhat over 10 million tons, leaving a net loss of not less than 8 million tons. At beginning of 1918, it is estimated that the submarine war on commerce employed 120,000 men, while Great Britain had to employ 770,000 men in work counter thereto.

A war exclusively of commerce destruction has never won a decision. Yet that such a decision may be won there can be no doubt provided the enemy is vitally dependent upon her overseas communications. In the World War, Great Britain was dependent upon them to a degree never even approached in any previous war. Therefore Germany's strategic aim was sound. She could have won the war by that means and in fact very nearly did. However she began her campaign with vacillation and restriction, which would nullify any military effort. Not only did she sacrifice military advantages but she lost political face and prestige among the nations of the world. By her sporadic efforts she gave her foe time to recuperate in her economic life and she permitted defense measures to be developed and improved before the great test. Early in 1916 was the time for the major stroke - Germany was then ready and the Allies were not.

A serious mistake that the Germans made was to let the submarines carry practically the whole load. Since they had abandoned fleet operations, the Grand Fleet was able to release many cruisers and destroyers to combat the submarine. Further advances of the High Seas Fleet would have prevented this. The submarine should have been

supported in its fight against commerce by surface craft. An instance of how this may be accomplished is the attack of the German cruisers, BRUMMER and BREMSE, on a convoy plying between Shetland and Bergen. When the submarine drove the merchant ships into convoys, then was the time for cruisers to put out to attack them. At the same time Germany should have avoided diversions and concentrated on her main objective. An instance of such a diversion is the capture of the Baltic Islands in September, 1917. This took out a large naval force which should have been supporting the submarine campaign.

The unrestricted submarine warfare was the immediate cause of the United States joining forces against Germany. Had the latter known how complete the collapse of Russia was at this time, she might not have embarked on this campaign. This would probably have kept the United States out - at least for the time being. With only one front to fight on, she could probably have crushed France in a military campaign. As it was, when Russia collapsed, the United States came in and with her fresh man-power and tremendous material resources paved the way to victory.

E. OUTSTANDING LESSONS APPLICABLE TO THE PRESENT DAY.

German naval strategy during the World War was generally poor. A reason for this appears to be that the Germans were neither by thought nor by tradition naval men. Military ideas were born and bred in them. Also their technical training was so intense that they could give little thought to the larger aspects of strategy. Thus, while they could build a most efficient war vessel and fight that war vessel in a superb manner, they had little conception as to where and when to use same. One might say that technical capability requires a concentrated but narrow scope but strategy requires a broad survey. A knowledge of strategy cannot be acquired over-night; it results after years of development. Thus the seed must be sown early in the naval officer's career, so that it may bear fruit when that officer is called on to make strategical decisions.

The greatest weakness of German strategy was that there was absolutely no conception of a combined strategy. Each service was used as an

independent weapon without any strategical consideration for the other. A proper conception of the Clausewitzian theory should have indicated to them clearly that the two services are only component parts of the pressure which a nation will apply for the attainment of her objective. German strategy affords interesting examples of how very necessary it is to coordinate the means to exert the most effective pressure.

Combined strategy requires that cooperative planning be carried out by the fighting services before war. It is too late to start considering it when war breaks out. Policy indicates the objective and the efforts of the services must be coordinated for the attainment of same. This requires a knowledge of the capabilities and limitations of the sister service and this can only be acquired by association of army and navy officers in time of peace in joint study, planning, and maneuvers.

Both services are vitally interrelated. What one service does or does not do affects the other. Thus the raids on the English east coast unwittingly assisted the German army by keeping troops in England. The army's race to the sea increased the opportunity for the effective employment of the fleet. No effort which requires the enemy to make a correspondingly greater effort should be neglected because in so much it weakens the foe. Men employed by Great Britain in the campaign against mine and submarine warfare took just that many troops away from the army or from vital war industries.

Similarly the interdependence of weapons, types, and forces within a service must be recognized. When the Germans gave Spee's squadron no support the British were enabled to send important units against him and when the ~~many~~ submarines were left to carry on the war at sea alone the Grand Fleet was able to release many cruisers and destroyers to combat them.

Wherever the German navy fought, they fought brilliantly; but this is not sufficient unless the ships are also fought at the right time and place. This requires a well-rounded education for our naval officers, in the technical development of our material, in training to develop skill in using it, in tactics, and in strategy. Finally we must have an appreciation of combined strategy to coordinate our efforts with the sister

service and an appreciation of grand strategy so that we can coordinate the military effort with the national effort.

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