

World War I and Aftermath

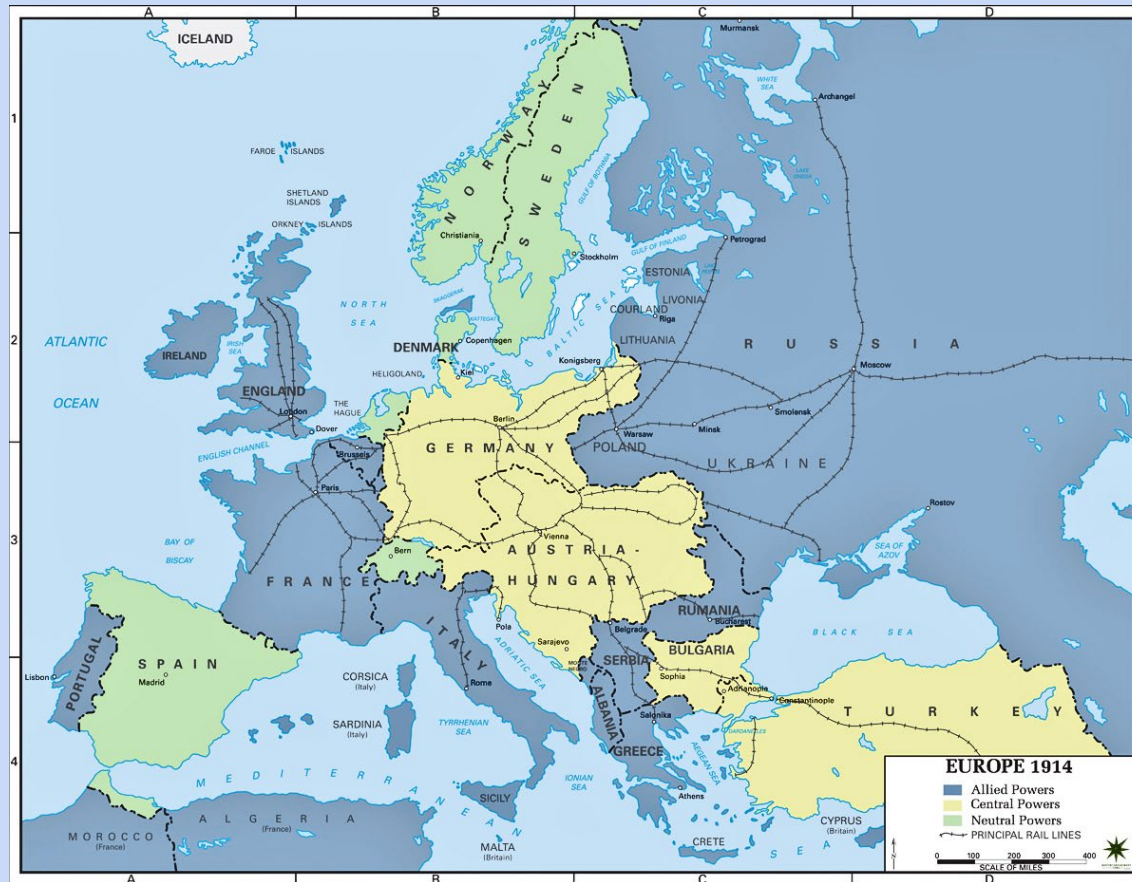
The Emergence of RMA I

OLLI Lecture #2

Peter A. Wilson

March 16, 2022

The Bipolar Europe of 1914



The Pre-World War I Debate About the Future of War

Debates about the implications of the late 19th combat experience

On Land Warfare

- Mass mobilization armies – reliance on the railroad and telegraph – theory of striking first
- Obsession about demographics
- War of operational maneuver – Schefflen Plan and French offensive plans
 - Expected war of maneuver in the East with Central Powers versus Russia

Two points of view:

- Belief in superiority of morale over material – the offensive spirit – French view
- Fear of stalemate with mass casualties and protracted mass production dominated struggle – Ivan Bloch's vision
- Consensus of military planners: war of the future would look like Sedan in 1870 and not Port Arthur of 1905 or the siege of Richmond during the U.S. Civil War

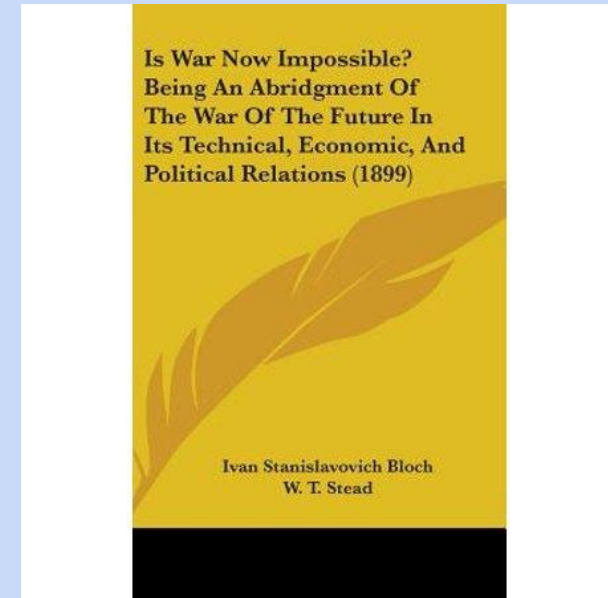
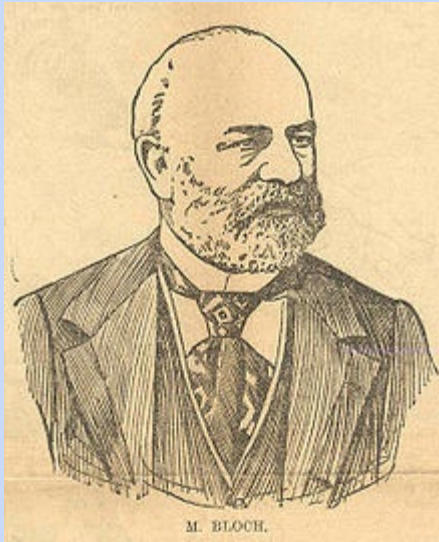
On Naval Warfare

- Rapid emergence of the *Dreadnought*-class capital ship
 - 15,000 ton late nineteenth century battleship to 30,000 super battleship
 - British switch to fuel oil in 1908
- Breakthroughs in too the horizon fire control
- The challenge of the French School – the submarine, torpedo, and commerce raider

On Air Warfare

- 1st generation aircraft as a means for battlefield reconnaissance
- Early hints of a close support role – little thought about air-to-air combat

Ivan S. Bloch



- **Jan Gotlib (Bogumił) Bloch (July 24, 1836, Radom – December 25, 1902/1901, Warsaw; (known in Russian as Ivan Stanislavovich Bloch)^[1]), was a Polish banker and railway financier who devoted his private life to the study of modern industrial warfare), Born Jewish and a convert to Calvinism), was a Polish banker and railway financier who devoted his private life to the study of modern industrial warfare. He spent considerable effort to opposing the prevalent Antisemitic policies of the Tsarist government, and was sympathetic to the fledgling Zionist Movement.**
- **Bloch had studied at the University of Berlin, worked at a Warsaw bank and then moved to St. Petersburg, capital of the Russian. Bloch had studied at the University of Berlin, worked at a Warsaw bank and then moved to St. Petersburg, capital of the Russian Empire (which governed much of the Polish lands at the time). There, he took part in the development of the Russian Railways, both in financing the construction of new railways and in writing research papers on the subject. He founded several banking, credit and insurance companies. In 1877 he was appointed a member of the Russian Finance Ministry's Scientific Committee.**

“Is War Now Impossible? Being an Abridgment of The War of the Future In its Technical, Economic, and Political Relations (1899)” – Ivan Stanislavovich Bloch

“The introduction of the needle gun and of breech-loading cannon may be said to mark the dawn of the new era, which, however, was not definitely established amongst us until the invention of the magazine rifle of very small calibre.” ---

“rapidity of fire does not stand alone. The modern rifle is not only much more rapid firer than its predecessors, but it has also an immensely wider range and far greater precision of fire. To these three qualities must be added yet a fourth, which completes the revolutionary nature of the new firearm, and is the introduction of smokeless powder.” ---

“The effect of artillery-fire to-day is at least five times as deadly as it was, and being two or three times as fast, you may reckon that a battery of artillery is from twelve to fifteen times as potent an instrument of destruction as it was thirty years ago.” ---

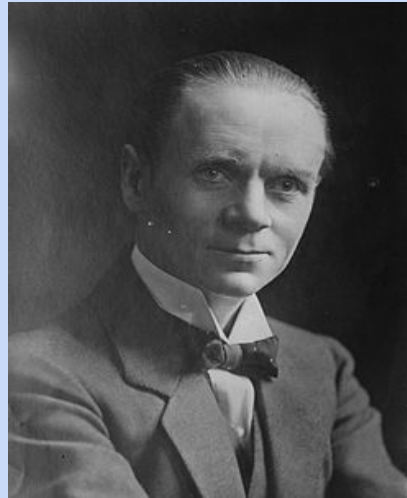
“Certainly, everybody will be entrenched in the next war. It will be a great war of entrenchments. The spade will be as indispensable to a soldier as his rifle.” ---

“Battles will last for days, and at the end it is very doubtful whether any decisive victory can be gained.” ---

“In any event, it is not reckless to predict in the near future the invention of subterranean (submarine) torpedo-boats, which will carry torpedoes of such power that even aluminium armour will not avail to save the vessel attacked.”

“Such are the consequences of the so-called armed peace of Europe – slow destruction in consequence of expenditure of on preparations for war, or swift destruction in the event of war – in both events convulsions in the social order.”

Ralph Norman Angell



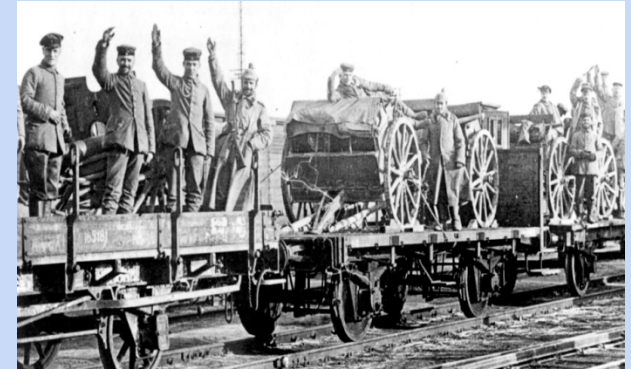
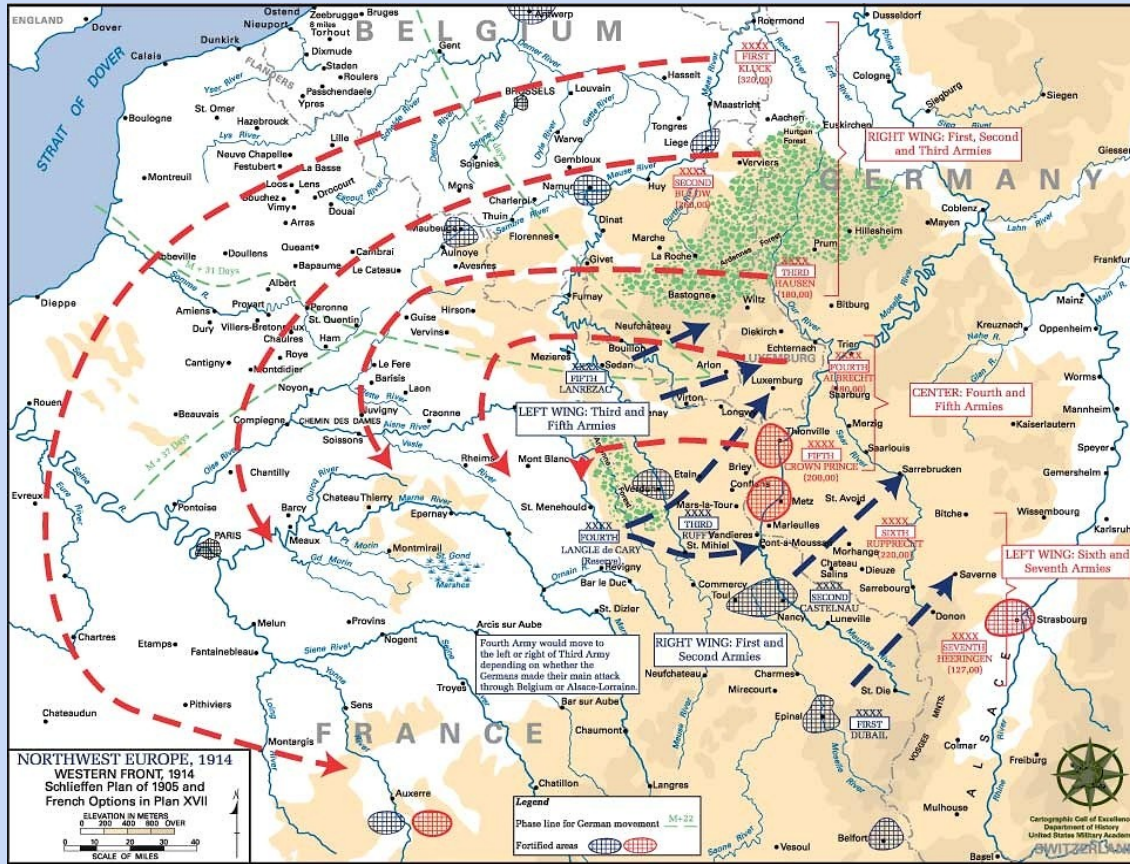
- ***The Great Illusion* is a book by Norman Angell, first published in the United Kingdom in 1909 under the title *Europe's Optical Illusion* and republished in 1910 and subsequently in various enlarged and revised editions under the title *The Great Illusion*.**
- **In this book, Angell argued that war between industrial countries was futile because conquest did not pay. J.D.B. Miller writes: "The 'Great Illusion' was that nations gained by armed confrontation, militarism, war, or conquest."^{l*})The economic interdependence between industrial countries meant that war would be economically harmful to all the countries involved. Moreover, if a conquering power confiscated property in the territory it seized, "the incentive to produce [of the local population] would be sapped and the conquered area be rendered worthless. Thus, the conquering power had to leave property in the hands of the local population while incurring the costs of conquest and occupation."**^{**}

^{*}Miller, J. D. B. "Norman Angell and Rationality in International Relations," in D. Long and P. Wilson, eds., *Thinkers of the Twenty Years' Crisis* (1995)

The Superiority of the Offensive



The French and German Pre-War Plans



Pre-War Plans

- **Interlocking alliances**
 - France-Russia
 - The Central Powers: Germany-Austria-Italy
 - Great Britain
- **Mobilization-based plans**
 - French Plan 17
 - Rapid offensive to retake Alsace-Lorraine lost in 1870
 - German Schlieffen Plan
 - Quick march on Paris, via neutral Belgium, to defeat the French Army, then redeploy against the Russians
 - British plans to deploy forces to the Continent
 - Russia
 - Mobilize as rapidly as possible and conduct simultaneous offensives against East Prussia and eastern Austrian-Hungarian provinces
 - Austria
 - Offensive against Serbia, holding action against Russia

The Road To World War I

Great Britain's Strategic challenges

- Relative economic decline
- Germany and the United States as emergent global economic powers
- Geostrategic detente with U.S. and Japan – failure with Germany
- Managing the Irish question
- Difficulty of maintaining the two fleet rule
- Germany dreadnought race while facing U.S. naval build up
- Decision to accept U.S. hegemony in Western Hemisphere
- Decision to build an alliance with Japan
- Should it prepare for a large continental war with Germany?
- Moroccan Crisis of 1905 – military entente with France
- Triple Entente with France and Russia
- Central Powers alliance of Germany and the Austro-Hungarian Empire

Germany's strategic challenges

- Rise of Russia after the military disaster with Japan and aborted 1905 revolution
- Russian military modernization funded by French banks
- Russian railroad build-out in western Russia including Polish region
- Doubts about the von Schlieffen Plan
- Doubts about the dreadnought race with UK – possible détente with UK?
- 1914 as a “window of opportunity” or the strategy of strategic despair
- Austria as an increasingly besieged and decaying ally – Multiple Balkan wars and the rise of Serbia

The Road To World War I (2)

France's strategic challenges

- Demographic inferiority to Germany
- Emerging German economic and military superiority on land
- Reliance on UK naval power to reduce naval spending
- Forging and sustaining the Triple Entente
- Rapid offensive action in event of German mobilization

Russia's strategic challenges

- Industrial weakness compared to Germany and Austria
- Sustaining the Triple Entente – rivalry with UK over ME and China
- The cost of rebuilding a navy with large warships
- The demands of pan-Slavism to support Serbia
- The prospect that war with Austria automatically draws in Germany
- Revenge for Austria's success during the 1908 Bosnian crisis
- The multiple wars in the Balkans – whom to support?
- The desire to gain the Bosphorus Straits from weakened Turkey
- The elite fears of war – Bloch taken to heart

Austro-Hungarian Empire's strategic challenges

- Failure to modernize the constitutional structure of the empire
- Rising tension between the Austrian and Hungarian nationalism
- Challenges of the periphery in the Balkans – rise of Serbia
- Fear of German abandonment
- Fear of rapid Russian industrialization and military modernization
 - The Russian rail build-out in Polish region – vulnerability of Galicia

Happily On To a Short and Victorious War

Widespread elite view that war would “purify” increasingly weak bourgeois societies – end in their life



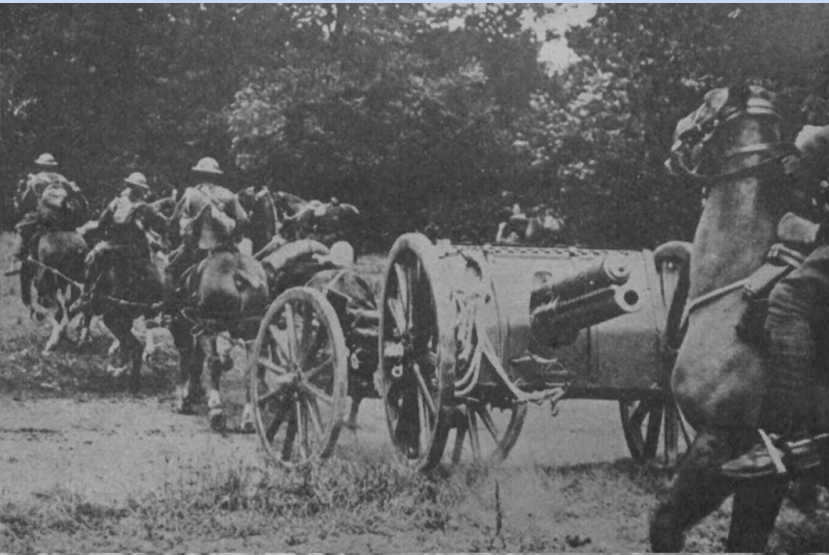
The Western Front, 1914

- Initial French offensive (Plan 17) defeated with heavy losses
- German's use heavy artillery to demolish frontier forts in Belgium
- German drive through Belgium met by French and British Expeditionary Force (BEF) at French-Belgian border
- Retreat toward Paris
- “Miracle of the Marne”
- “Dash for the sea”
- First battle of Ypres
 - Destruction of the “Old Contemptables”

World War I's Early Weapons (1)



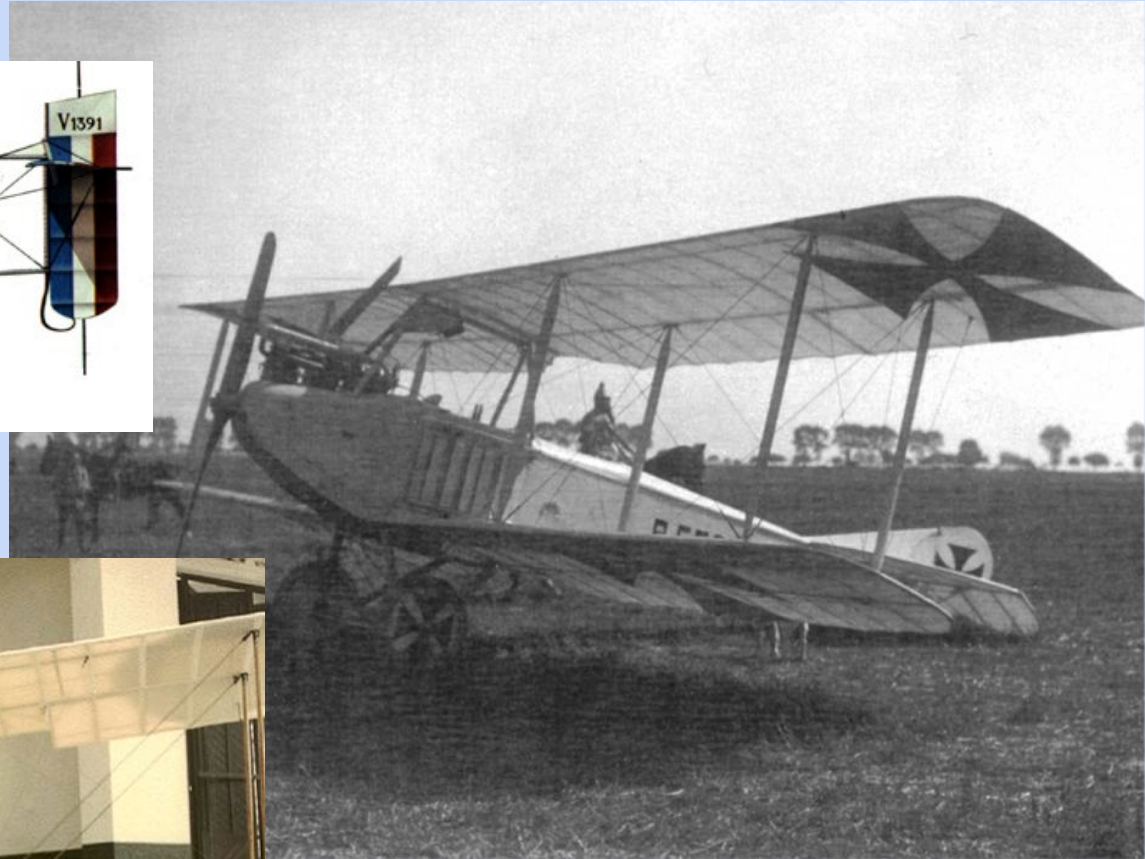
World War I's Early Weapons (2)



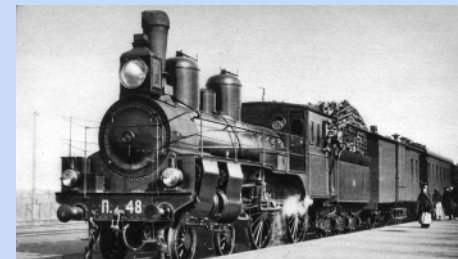
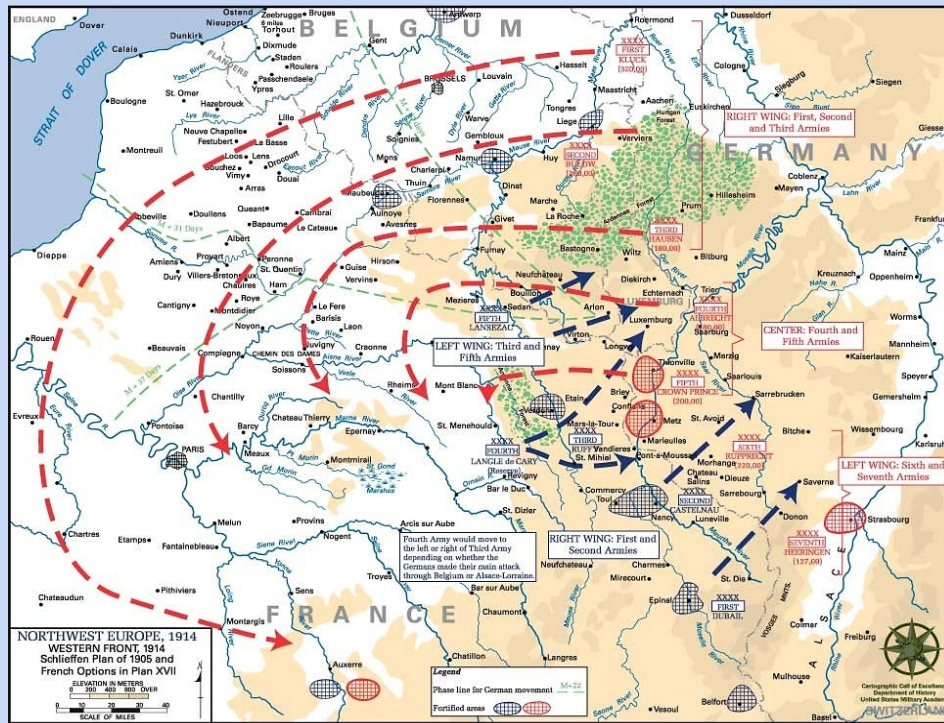
World War I's Early Weapons (3)



World War I's Early Weapons (4)



The French and German Pre-War Plans



Western Front Map - 1914

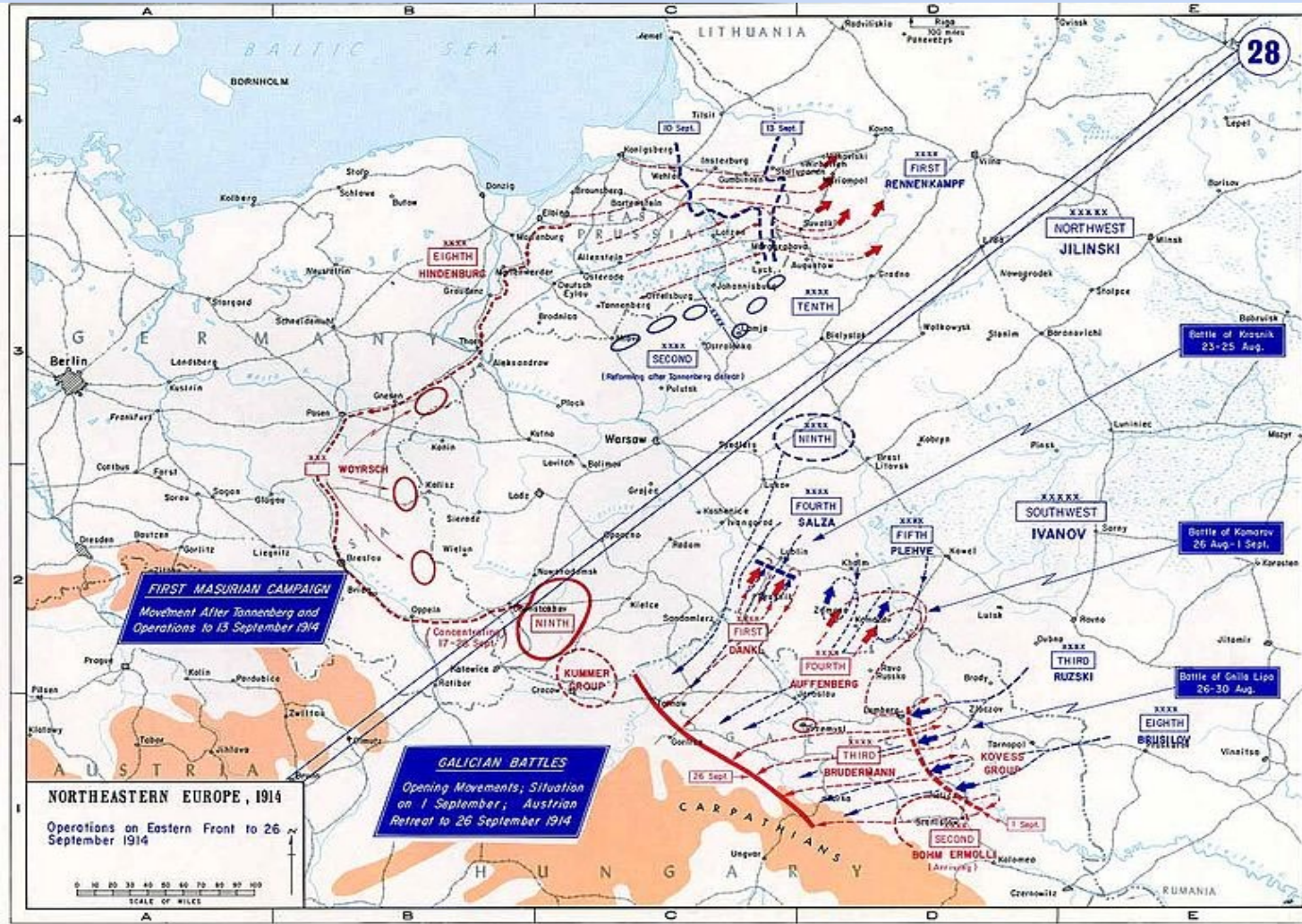


Eastern Front - 1914

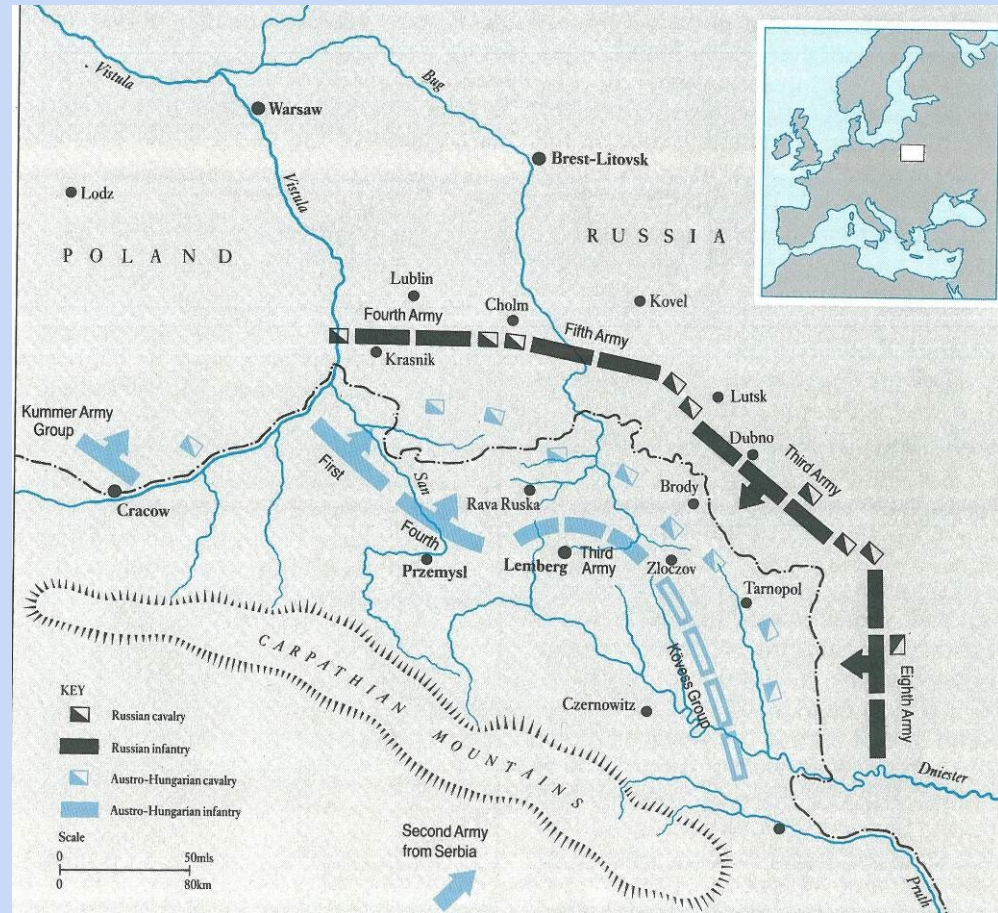
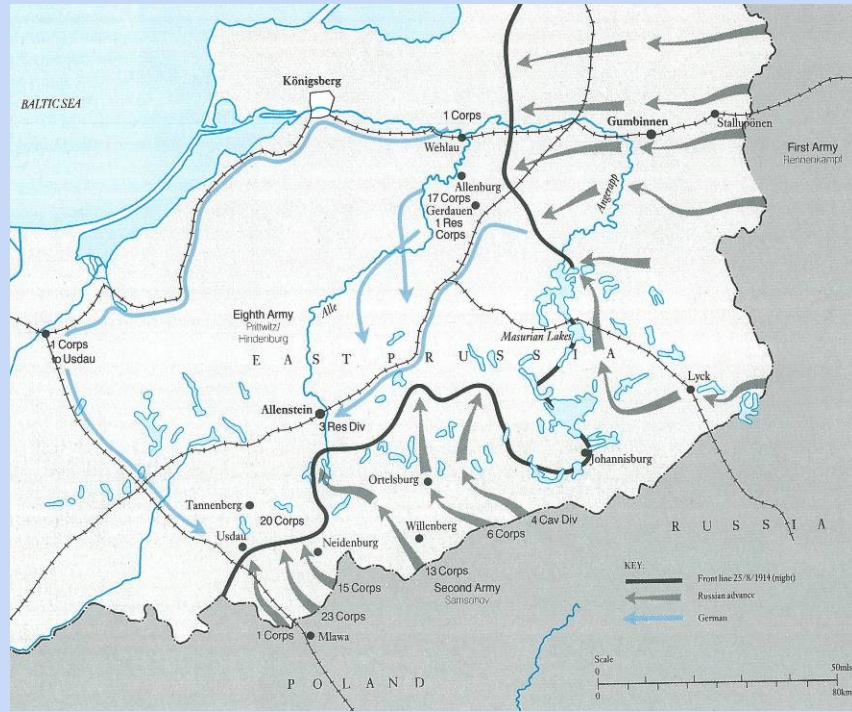
- **German holding action in East - attempt to retain East Prussia**
- **Austrians conflicted**
 - **Offensive against the Serbians**
 - **Holding action against the Russians NE of Carpathians**
- **Russians also conflicted**
 - **Dual offensives against the Germans and Austrians**
- **Turkey drawn into the war by entry of German battle cruiser *Goeben* into Constantinople**

- **Major actions**
 - **Severe Austrian defeat at Lemberg (Lwow)**
 - **Austrian offensive against the Serbs stalls; siege of Przemysl**
 - **Major German victories at Tannenberg and Masurian Lakes**
 - **Turkish offensive into Caucasus stalls**

Eastern Front 1914



Eastern Front Map - 1914



1915 - The War of Attrition Begins

- **Germany begins the year deep in northern France, but must divert resources to Eastern Front to bolster Austrians**
- **Franco-British offensives against increasingly dug in German positions**
 - Continuous 350 mile front from Alps to English Channel
- **Heavy artillery bombardments cannot negate effect of dug in machine guns**
- **Aircraft becoming increasingly important for reconnaissance and combat**
- **First use of poison gas use at Ypres**
- **Italy joins the Allies - May 23**
- **Beginnings of unrestricted submarine warfare**
 - British steamer *Lusitania* sunk May 7 - American protests against U-Boats
- **Major offensives**
 - Neuve Chapelle (March)
 - Ypres (April)
 - Champagne and Loos (September)

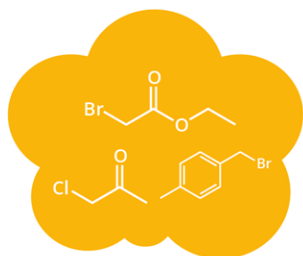
Introduction of War Gas Spring of 1915



Evolution of War Gas

CHEMICAL WARFARE WORLD WAR I

WORLD WAR I IS SEEN AS THE DAWN OF MODERN CHEMICAL WARFARE, WITH A VARIETY OF DIFFERENT CHEMICAL AGENTS BEING EMPLOYED ON A LARGE SCALE, RESULTING IN APPROXIMATELY 1,240,000 NON-FATAL CASUALTIES, AND 91,000 FATALITIES. A VARIETY OF POISONOUS GASES WERE USED THROUGHOUT THE CONFLICT, WITH EACH HAVING DIFFERING EFFECTS UPON VICTIMS.



TEAR GASES

(ethyl bromoacetate, chloroacetone & xylyl bromide)

SMELL & APPEARANCE

Both ethyl bromoacetate and chloroacetone are colourless to light yellow liquids with fruity, pungent odours. Xylyl bromide is a colourless liquid with a pleasant, aromatic odour.

EFFECTS

Tear gases are what is known as 'lachrymatory agents' - they irritate mucous membranes in the eyes, mouth, throat & lungs, leading to crying, coughing, breathing difficulties, and temporary blindness.

FIRST USED

1914 In August 1914, the French forces used tear gas grenades against the German army, to little effect.

ESTIMATED CASUALTIES

0 fatal These gases were used to incapacitate enemies rather than to kill; symptoms commonly resolved within 30 minutes of leaving the affected area.



CHLORINE

SMELL & APPEARANCE

Chlorine is a yellow-green gas with a strong, bleach-like odour. Soldiers described its smell as 'a distinct mix of pepper and pineapple'.

EFFECTS

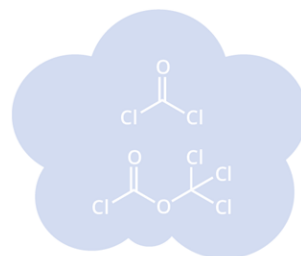
Chlorine reacts with water in the lungs, forming hydrochloric acid. It can cause coughing, vomiting, and irritation to the eyes at low concentrations, and rapid death at concentrations of 1000 parts per million.

FIRST USED

1915 Used by German forces at Ypres in April 1915. British forces used it for the first time at Loos in September.

ESTIMATED CASUALTIES

>1,100 number of fatalities in first use of chlorine at Ypres Chlorine was devastating as troops were initially unequipped to deal with it. Later, gas masks limited its effectiveness.



PHOSGENE & DIPHOSGENE

(carbonyl dichloride & trichloromethane chloroformate)

SMELL & APPEARANCE

Phosgene is a colourless gas with a musty odour comparable to that of newly mown hay or grass. Diposgene is a colourless, oily liquid.

EFFECTS

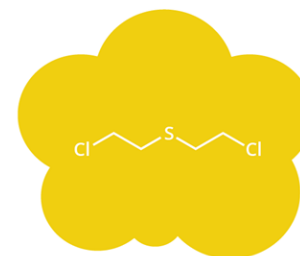
React with proteins in lung alveoli, causing suffocation. Cause coughing, difficulty breathing and irritation to the throat & eyes. Can cause delayed effects, not evident for 48hrs, including fluid in the lungs & death.

FIRST USED

1915 In December 1915, the German forces used phosgene against the British at Ypres.

ESTIMATED CASUALTIES

85% of all gas-related fatalities in WWI It's estimated 85% of all gas-related fatalities in World War I resulted from phosgene and diposgene, which were both used to fill artillery shells.



MUSTARD GAS

(bis(2-chloroethyl) sulfide)

SMELL & APPEARANCE

When pure, mustard gas is a colourless and odourless liquid, but it's used as a chemical agent in impure form. These are yellow-brown in colour and have an odour resembling garlic or horseradish.

EFFECTS

Powerful irritant and vesicant (blistering agent) that can damage the eyes, skin, & respiratory tract. Causes chemical burns on contact with skin. Forms intermediates that react with DNA leading to cell death.

FIRST USED

1917 On 12th July 1917, German forces used mustard gas against the British at Ypres.

ESTIMATED CASUALTIES

2-3% mortality rate of mustard gas casualties The mortality rate of mustard gas casualties was low, but its effects were debilitating, and patients required elaborate care.



Sazonov, Sykes, Picot Deal Dismembering the Ottoman Empire

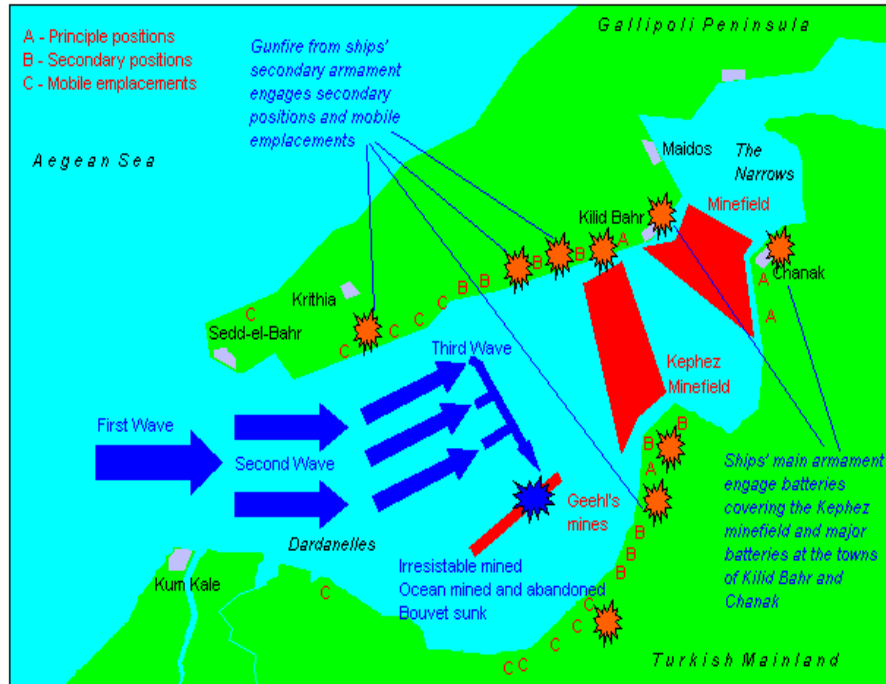


War in the East 1915

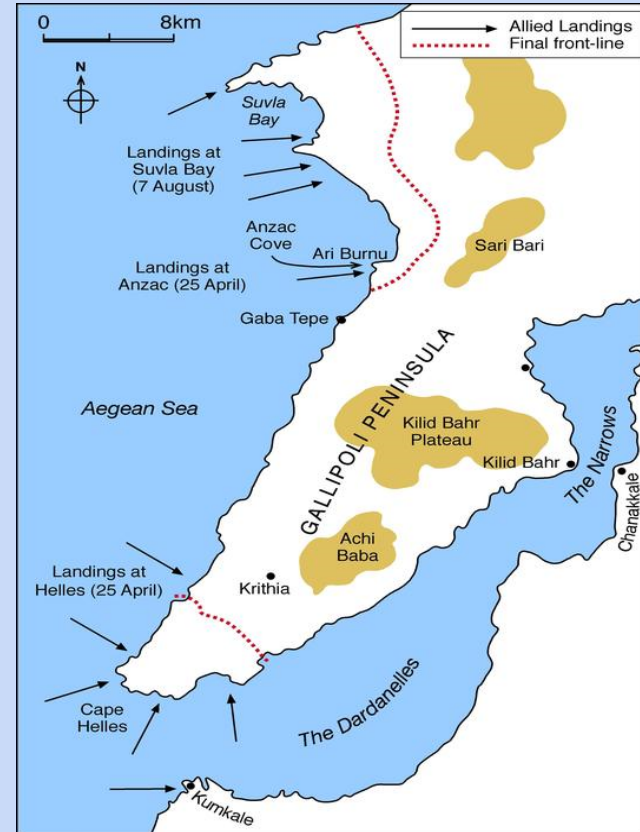
More Maneuver

- **Fall of Przemyśl - March**
- **Von Mackensen's counteroffensive in Galicia, April-May**
 - Major Russian defeat
 - Russians falling back until November
- **Bulgaria joins the war with the Central Powers, September**
- **Serbia overrun**
- **Gallipoli campaign**
 - Anglo-French amphibious landing to drive on Constantinople
 - Fighting from March-December
 - Heavy ANZAC involvement
- **Abortive British offensive up Tigris-Euphrates Valley toward Baghdad (10,000 British-Indian prisoners at Al Kut)**
- **Most German colonies overrun (except East Africa)**

Gallipoli 1915



Gallipoli Map 1: Naval Attack, 18 March 1915



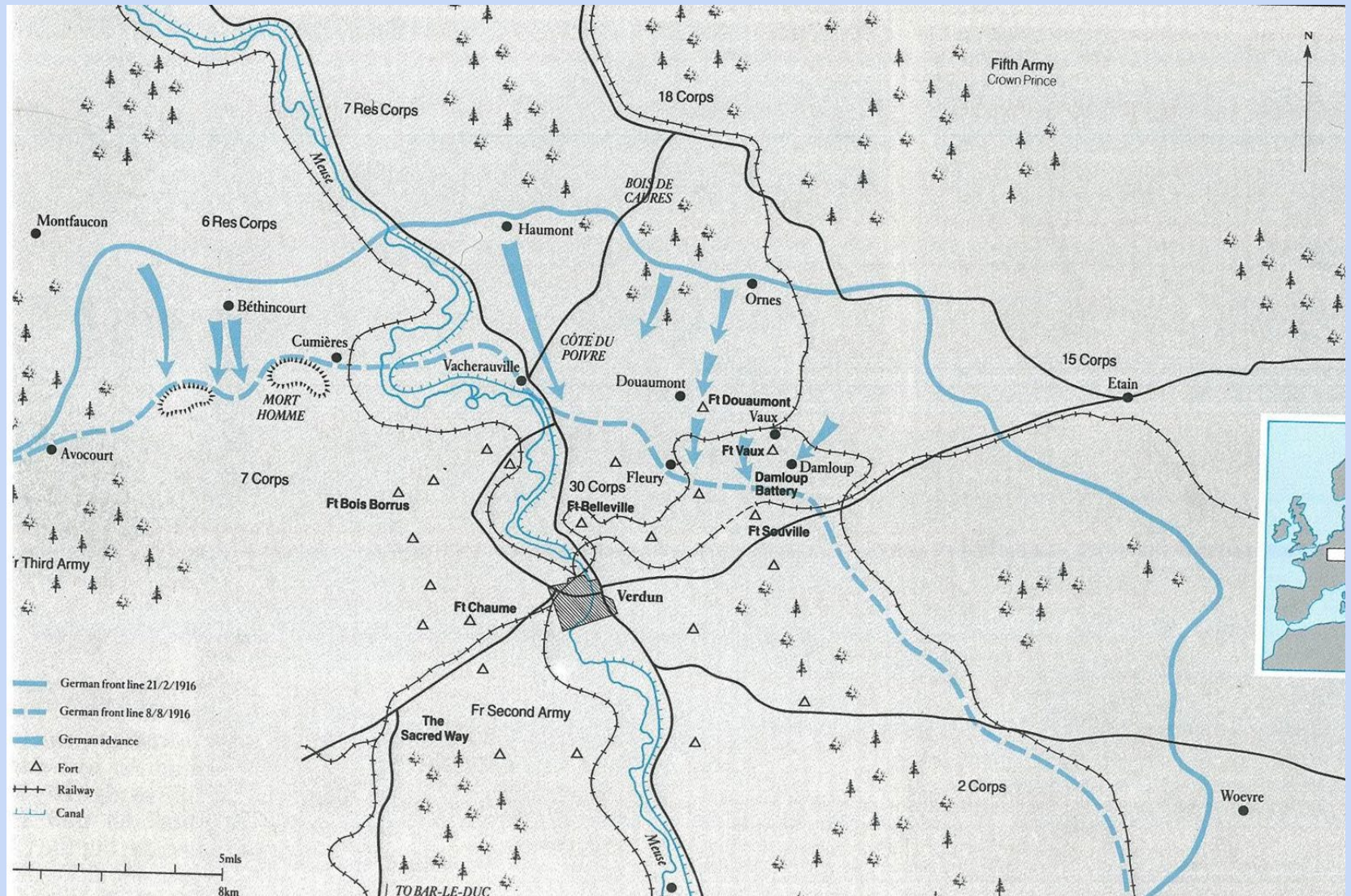
- **Russians promise Black Sea operation but blocked by two German Warships**

Western Front - 1916

The Real Bloodletting

- **Verdun, February - December**
 - Huge artillery bombardment, including gas
 - “They shall not pass”
 - 377,000 French casualties
 - 337,000 German casualties
- **The Somme, June-November**
 - 60,000 British casualties on first day (19,000 dead and missing)
 - Superiority of defense (as at Verdun) demonstrated
 - Massive artillery barrages
 - 600,000 Anglo-French casualties; 440,000 German
- **Battle of Jutland - 31 May**
 - Largest battleship action in history
 - British lose 14 ships, 6,100 dead; Germans 11 ships, 2,500 dead
 - No major strategic change - “The prisoner has assaulted his jailer, but he is still in jail”
- **Ever-increasing use of aircraft on Western Front**

Western Front Maps - 1916



Eastern Front - 1916

- **Brusilov Offensive: June - September**
 - Major Russian offensive against the Austrians
 - Best Russian general, Alexei Brusilov, in command
 - Initial major gains against the Austrians
 - Offensive finally defeated with heavy losses, Russian army becoming demoralized
- **Romanians enter the war - and are knocked out**
 - Romania declares war on Central powers in August when Brusilov offensive seems on the verge of victory
 - When Brusilov offensive stopped, German-Austrian-Bulgarian offensive forces Romanian surrender by December
- **Multiple offensives by Italy against Austria**
 - No major gains, heavy losses on both sides

Eastern Front Map - 1916



Evolution of Military Art 1914-1916 (1)

- **Pre-war expectation is for a short, rapid war of maneuver**
- **Only period of significant maneuver on the Western Front is August-October, 1914**
- **Onset of trench warfare takes both sides by surprise**
- **Artillery and machine guns rapidly become dominant**
- **Contest is between how well the defender can dig in, versus how much firepower the attacker can bring to bear on his defenses**

Evolution of Military Art

1914-1916 (2)

- **War in the air**
 - Initial use of aircraft is reconnaissance only
 - By late 1914 aircraft are becoming increasingly armed
 - By 1916, major, sophisticated air operations are taking place
 - Aircraft are still limited in range and payload
- **War at sea**
 - Submarines become important immediately (three old British cruisers sunk by single U-Boat in one action)
 - Unrestricted submarine warfare against merchant ships still controversial
 - Pre-war expectations of prolonged “cruiser war” generally unrealized
 - Both sides very cautious in the use of major capital ships, few major actions:
 - Heligoland Bight (1914)
 - Dogger Bank (1915)
 - Jutland (1916)

Battle of Jutland

May 31 – June 1, 1916

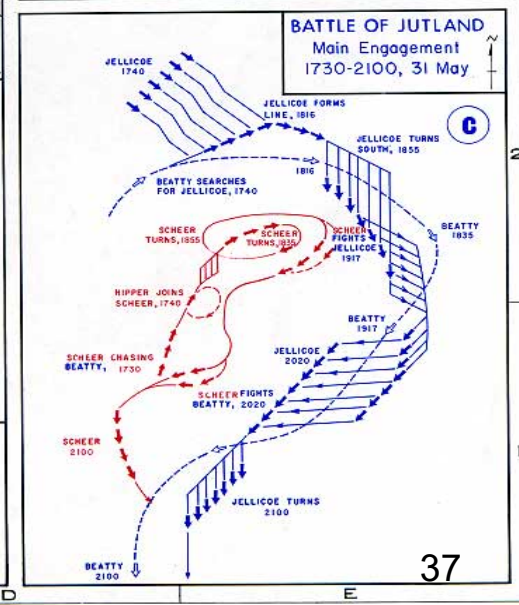
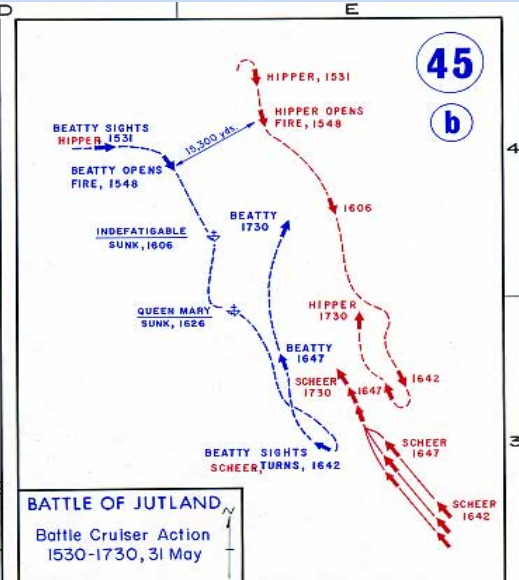
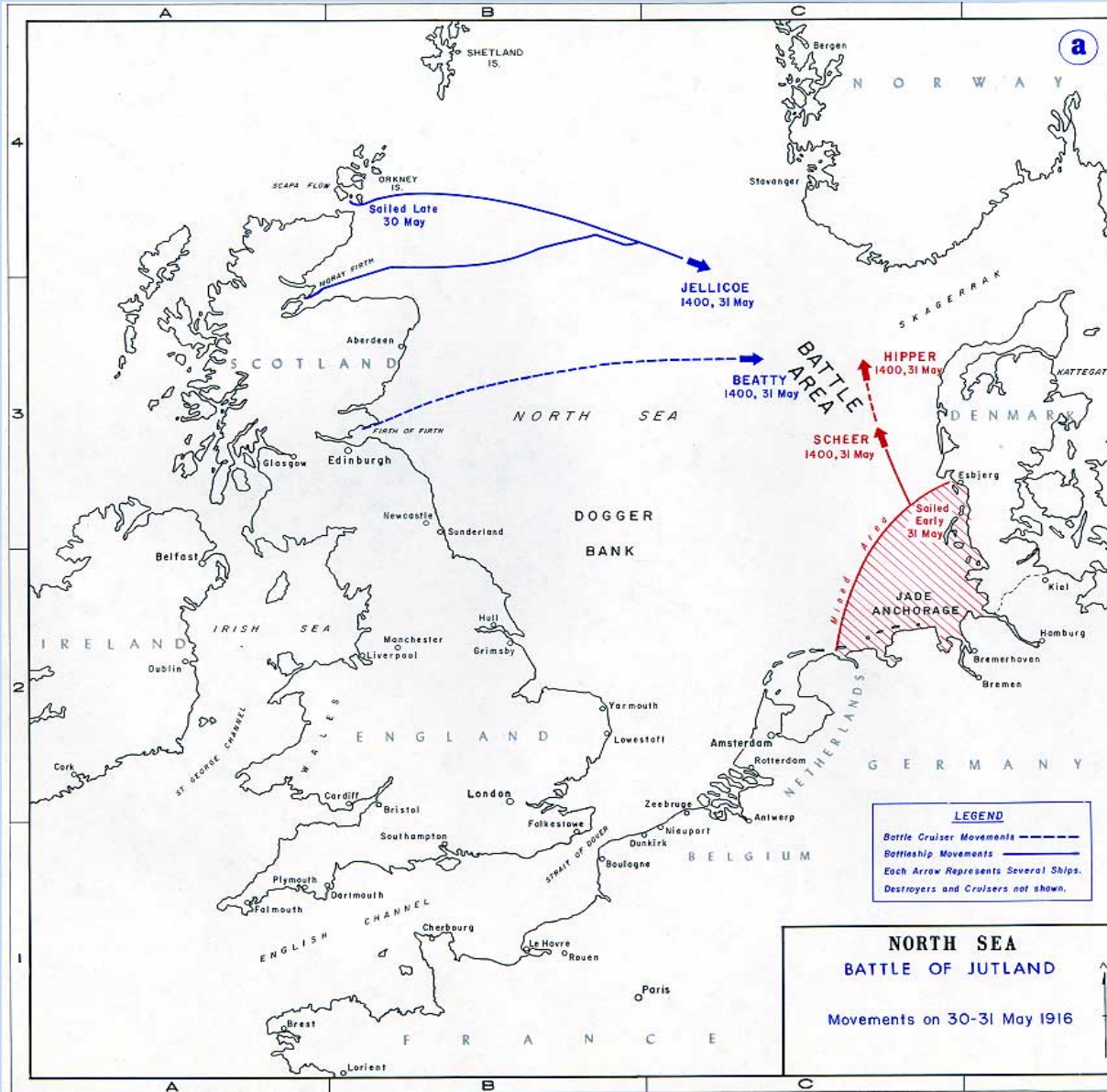


World War I Battleship

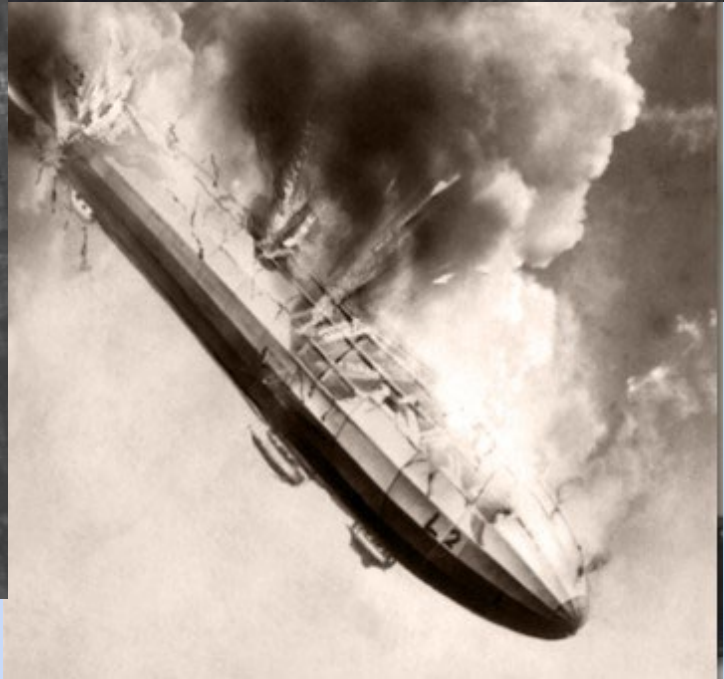
German *Koenig* class



Jutland



Terror from the Skies



The Quest for a Breakthrough

- **Both sides want to break the attrition stalemate**
 - More artillery
 - Poison gas
 - Introduction of tanks
- **Defenders have the advantage, tactically and operationally**
 - Firepower advantage over attacking infantry
 - Ability to move reserves forward in the rear area
 - Most offensives on the Western Front make less than 5 miles, for terrible cost in casualties
- **Eastern Front is significantly more mobile than West**
 - Greater troop density in West
 - Germany has material superiority over the Russian Army

The State of the War at the End of 1916

- **Stalemate in West**
- **Russia dealt major blows**
 - **Morale of Russian Army starting to crack (Bolshevik agitators and subversives infiltrate ranks)**
- **Turkey losing ground in Middle East, but main borders are intact**
- **Romania and Serbia knocked out of the war**
- **Austrian-Italian deadlock in the Alps mountains**
- **Most German colonies gone (except East Africa)**
- **Germany considering two major options for 1917**
 - **Revert to unrestricted submarine warfare**
 - **Major offensive in the East to knock Czarist Russia out of the war**
- **Importantly - USA is still neutral**
- **Japan the “big winner” in Asia**

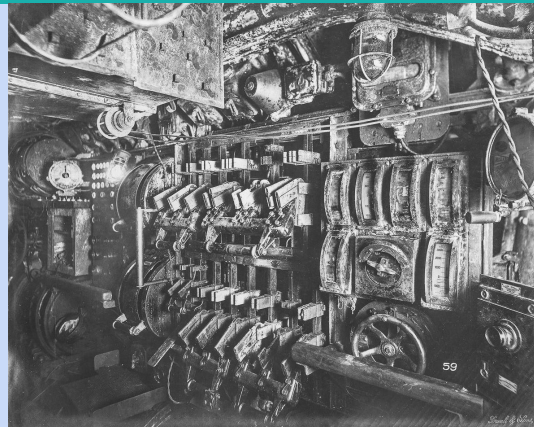
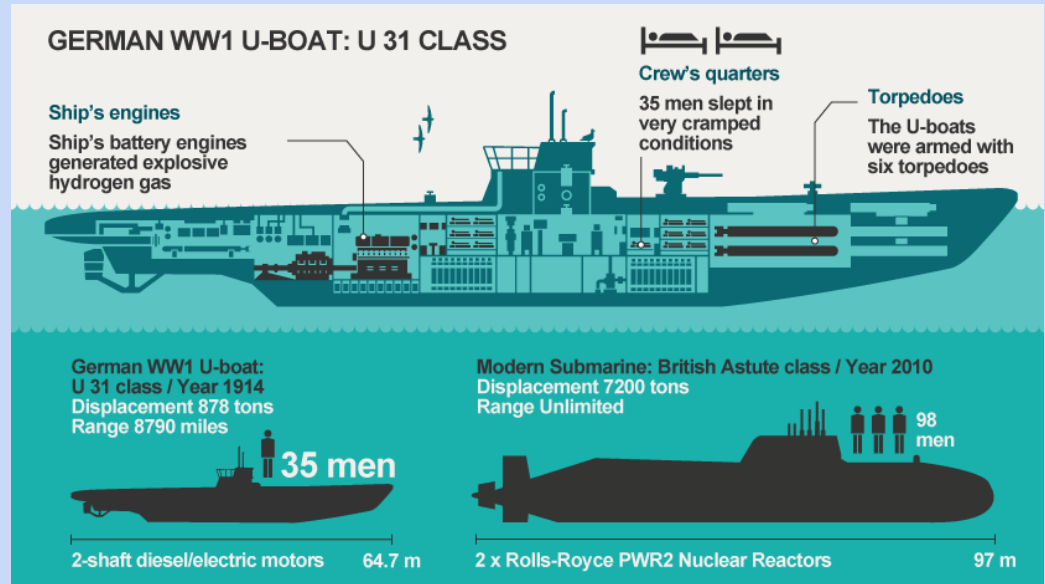
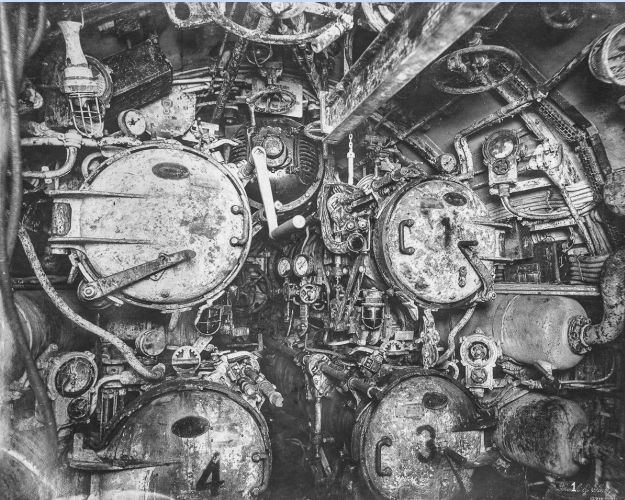
The Western Front, 1917

- **Germans conduct withdrawal in the Soissons-Arras region; move back to previously prepared “Hindenburg” or “Siegrfried” line (March-April)**
- **British-French offensives (April-May) result in huge casualties**
 - French Army experiences major mutiny
 - General Petain replaces General Nivelle
- **To keep pressure off French, British launch series of offensives from June-December**
 - Ypres
 - Cambrai
 - Limited French attacks around Verdun in August-Sept
- **By late 1917 allies are making increasing use of tanks**
 - November attack at Cambrai supported by several hundred tanks
 - Breakthrough achieved, but no ability to keep the attack moving

Eastern Front 1917-18

- Riots in St Petersburg in March
- Czar agrees to abdicate - Provisional Government formed
- Country on verge of revolution, “Soviets” formed in various cities and within the army and navy
- Germans suspend all offensive actions so as to not provoke a defensive, nationalistic response
 - Germans facilitate the return of Lenin from Finland to Russia
- Final Russian offensive against Austrians, July
- German-Austrian counteroffensive throws Russians back, followed by new offensive in north toward Riga
 - This defeat seals Russia’s fate
 - Provisional Government collapses
 - Bolsheviks seize power in St Petersburg in October
 - Civil war begins in Russia
- Russians sign Treaty of Brest-Litovsk in March, 1918
- Russia out of the war

Resumption of Unrestricted Submarine Warfare



Resumption of Unrestricted Submarine Warfare (2)

- **Battle of Jutland shows the Germans that their surface navy cannot overcome the British Royal Navy**
- **Previously, submarines have to surface, stop, and search merchant ships - very risky for the submarine**
- **February 1, 1917 Germans decide to resume unrestricted submarine war in attempt to strangle British economy and force them out of the war**
- **Recognition that US will probably enter the war, Germans hoping to knock Britain out before US can have effect**
- **Results:**
 - **December 1916: 308,000 tons of allied shipping sunk**
 - **February 1917: 520,000 tons**
 - **March: 564,000**
 - **April: 860,000 (373 ships)**
 - **May: 593,000 (287 ships)**
 - **16 U-Boats sunk in same period**

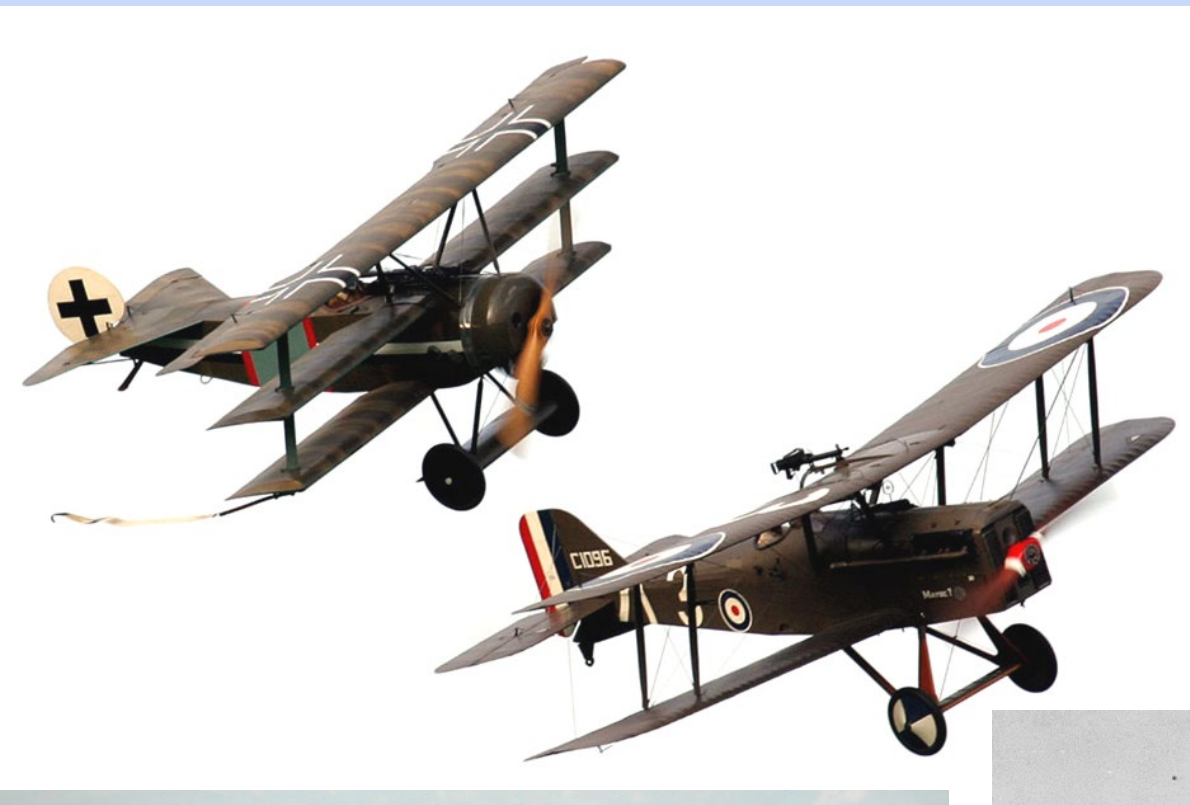
British Countermeasures and the US Entry Into the War

- **US declares war on Germany, 6 April**
- **By June 1917 food stocks in Britain had dropped to less than three months**
- **British realize that drastic actions are needed:**
 - **Convoy system introduced (April)**
 - **Large mine barriers placed in English Channel and North Sea**
 - **Attacks made on U-Boat bases along Belgian coast**
- **US Navy starts operations in Atlantic alongside British**
- **By November, 1917 complete Atlantic convoy system introduced: sinking of ships fall dramatically**
- **32 U-Boats sunk in last four months of 1917**
- **US starts shipping troops to Europe**

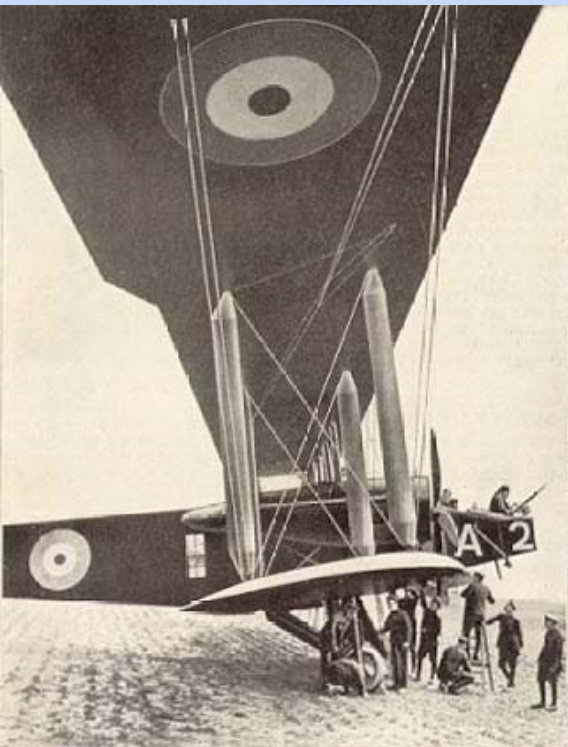
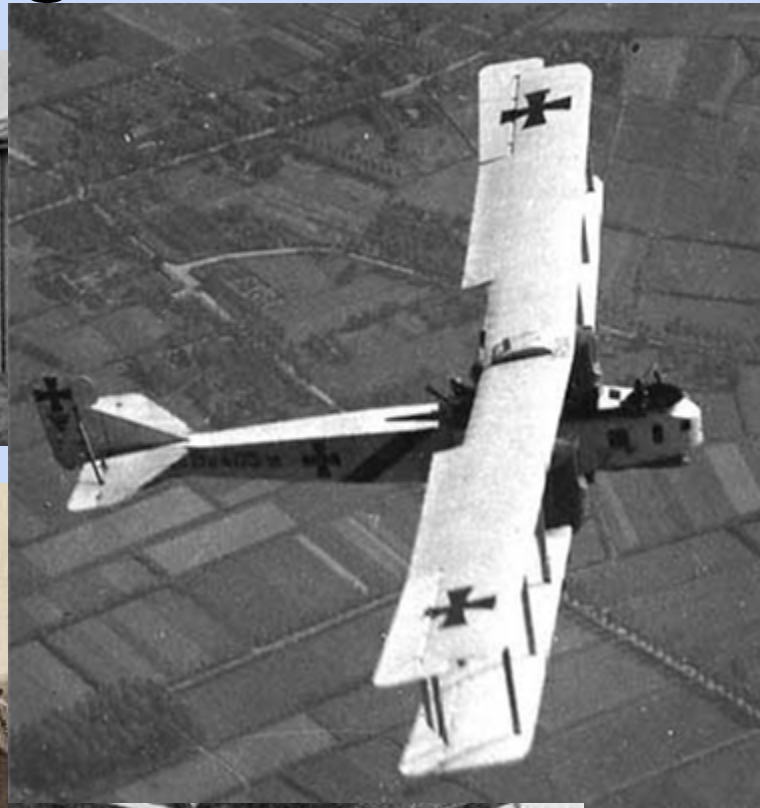
Weapons of Late WW I (1)



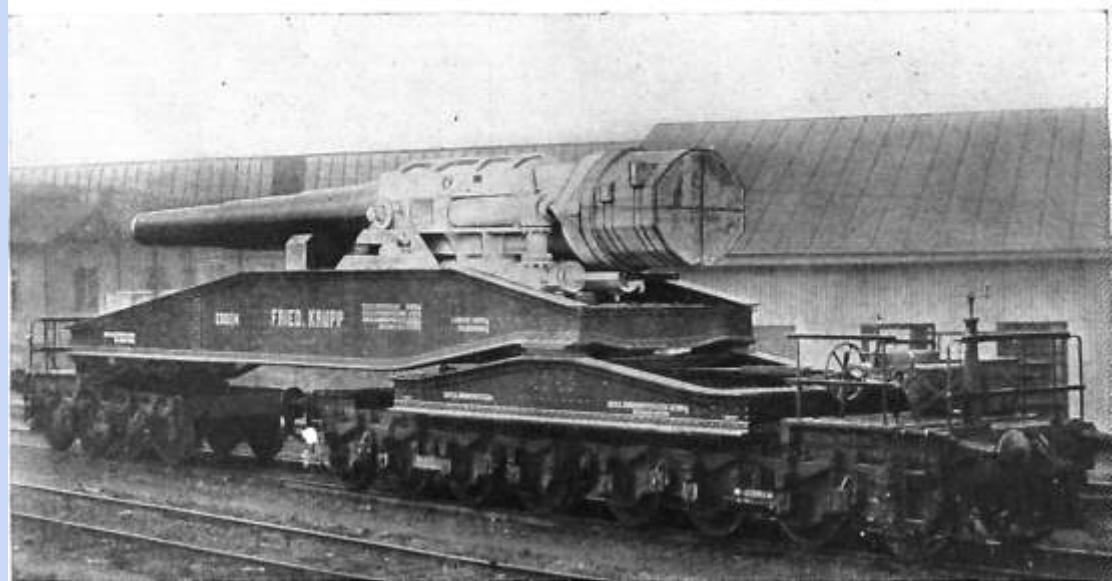
Weapons of Late WW I (2)



1st Generation Strategic bombers



Weapons of Late WW I (3)



British Primary War Aim – Gain Control in GME Petroleum



- British Launch “Dunster-Force” to seize Baku Oil Fields to block seizure by either Germans or new Turkish government
- Expedition fails – Oil fields partially destroyed
- Germany signs Armistice November 11, 1918

Western Front - 1918 (1)

- **“The Kaiser’s Offensive”, March-June**
 - Last German attempt to win the war in the West
 - New infiltration infantry tactics and improved artillery techniques leads to quick German breakthrough
 - Germans advance toward Paris, finally stopped by early June
 - US 1st and 2nd Divisions participate in battles northeast of Paris (May-June) to stop Germans
- **End of offensive hurts German morale**
 - Supplies and replacements running low
 - Casualties high
 - Knowledge that things are not going well on other fronts
 - Awareness that huge, new, American force is on the way

Western Front - 1918 (2)

- **Allied counteroffensives**
 - American troops becoming available in large numbers throughout summer of 1918
 - US divisions are huge by allied standards of 1918
 - US division is 25,000 (+) men
 - Most French and British divisions are 10,000 - 12,000
- **British and French now using hundreds of tanks in their offensives**
- **Air attacks taking place deeper into each side's lines**
 - German bombing of England
- **Major allied counter offensive July-November**
 - Germans cannot replace losses
 - Austria, Turkey, Bulgaria all drop out of the war (Oct-Nov)
- **Germany accepts armistice, 11 November**

The Four RMAs of the 20th Century

Four 20th-Century Revolutions in Military Affairs (all continuing)

RMA	Nominal Period of Change (all with older roots)	Characteristic Developments	Label for Resulting Strategy
I	1917–	Mechanization: self-propelled combat vehicles (air, sea, and land)	Industrial warfare
II	1930–	Insurgency; revolutionary, partisan, and guerilla warfare; terrorism	Insurgency
III	1945–	Nuclear weapons; long-range missile delivery	Mass-destruction weapons and strategic bombardment
IV	1980s–	Precision weapons; unmanned combat vehicles; persistent ISR; networked forces; computer-network operations (CNO)	Information technology