

Fools and Crazy Men

Outline

I. Beginnings

- A. Between 1600 & 1900 130 known design proposals
 - Cornelius Drebbel probably built first one about 1620 based on a 1578 design by William Bourne (both English)
 - Early ideas were all semi-submersible rowboats
 - Coastal defense? Certainly, a weapon.

- B. Bushnell's TURTLE (Sept 7, 1776)
 - First operational mission by a submarine
 - Sergeant Ezra Lee (world class athlete)
 - Failed probably due to copper sheathing.

- C. CSS HUNLEY (Feb 17, 1864)
 - "The Peripatetic Coffin"
 - Successfully sank USS HUSATONIC
 - Did not return

- D. So, what do we need for a real submarine?
 - Surface propulsion ("legs")
 - Submerged propulsion
 - True submergence capability (ballast and trim systems)
 - Stand-off weapon

- E. All of this arrived in the late 19th century
 - Internal combustion engines
 - Adequate power/weight ratio generators and motors
 - Pumps and valves
 - Whitehead torpedoes

- F. USS HOLLAND (SS-1) (1900)
 - John Holland; First to really put it all together
 - Sold both boats and licenses to many nations.
 - Training (submarine school)
 - British A Class lost 7 of 10
 - Sub Pay - 1905 (Roosevelt)

- G. By World War I
 - 16 countries had a total of > 400 submarines, but all were Hollands or close to it.
 - Nobody knew what to do with them (coastal defense, fleet attack??)

II. Germany First World War Campaign

- A. Cruiser Rules (Prize rules)
- B. The real submarine birthday; Sept 22, 1914
 - a. U-9, Otto Weddigen
 - b. Aboukir, Cressy & Hogue (36K tons & 1420 dead sailors < 1 hour)
 - c. British tactics all wrong
 - d. Major impact on both British and German strategy & tactics.
- C. In response to British blockade and as they now see the U-boat as an offensive weapon; on 2/4/15 Germany declares a war zone around England (no prize rules for **British** ships.) Sinkings take off.
- D. May 9, 1915 Lusitania is sunk by U-20 (Sweigger)
 - a. Legitimate target, but
 - b. Huge outcry (1198 dead, 128 Americans, 94 children)
 - c. HMS Southampton runs to port.
 - d. Germany stops sinking passenger ships.
 - e. Shifts many boats to the Med.
 - f. Caused US to start “leaning” towards England.
- E. The war at sea rolls on
 - a. Q-ships, seagulls, etc.
 - b. 31 May 1916; Jutland
 - c. High Seas Fleet will play no future role in the war
 - d. For Germany, it is submarines or nothing.
- F. Unrestricted Submarine warfare declared (Feb 1917)
 - a. German’s final plan to win the war
 - b. Starve England out and beat France before US can have an impact by using unrestricted submarine warfare and half a million troops released from the Russian front.
 - c. US declares war on Germany as expected in April 1917

- G. The U-boat is defeated in the summer of 1917
 - a. US and British agree to N. Atlantic convoys
 - b. This removed the targets from the equation.
 - c. Brits had not convoyed earlier because of
 - i. The three cruisers (destroyers)
 - ii. Loading/unloading inefficiencies
 - iii. Adverse to “clumping” targets
 - d. U-Boats sank almost 25% of all the tonnage in the world. If convoys had not worked, the plan to drive England out of the war would almost certainly have succeeded.

H. Between the wars

- a. Versailles eliminates U-Boats
- b. Efforts to limit or eliminate submarine warfare always an important part of Naval Treaty negotiations.
- c. French refused to outlaw subs.
- d. London Naval Conf. of 1930 mandated Prize Rules for all submarine attacks on unarmed merchants.
- e. Hitler takes over in 1933 and rejects Versailles treaty.
- f. The 1936 British German Naval Treaty
 - i. WHY would the Brits agree to this? (ans: SONAR)
- g. Sub improvements were evolutionary; not revolutionary

III. World War Two German Campaign

A. Getting started

- a. Strategic goal 500000 tons / month
- b. 57 U-boats available (26 Type VIIs and a few IXs)
- c. Torpedo problems (Solved very quickly)
- d. Hitler mandated redeployments
- e. Scapa flow

B. Sept 1939 to Mar 1940

- a. Did well even with few boats
- b. Cruiser rules suspended in Oct 39.
- c. By Mar 1940 276 ships for 920000 tons
- d. Then came the Norway redeployment.

C. June 1940 to Oct 1940

- a. The First “Happy Time”
- b. B-Deinst code breaking

- c. Introduced Wolf Packs
 - d. Averaged about 300000 per month.
 - e. Then came the “winter break”
- D. 1941 Period of back and forth as both sides got better.
- a. Total 457 ships for 2.2M tons (40 ships @ 183K tons / mo.)
 - b. Enigma machine captured in Mar 41.
 - c. The “Air Gap”
- E. Early 1942
- a. Jan to August – The Second “Happy Time”
 - b. Operation Drumroll
 - c. 100 ships/mo. for 500Ktons/mo. (GOAL!)
 - d. By Sept, escort and air patrols got good enough to force the U-boats off the American coast.
- F. Late 42 and early 43
- a. Continued to average 100 ships for 500Ktons / month.
 - b. U-Boat losses continue to be small (about 3 per month)
 - c. Donitz gets more boats (200+)
- G. The Battle of the Atlantic ends in the spring of 1943
- a. Technology
 - cavity magnetron
 - Huff Duff
 - Hedgehogs
 - Torpex
 - Long-Range aircraft
 - Leigh light
 - Rockets
 - Jeep Carriers
 - Fido
 - Sonobouys
 - b. Tactical
 - Well trained and experienced escort groups
 - Aircraft training
 - Code breaking: Enigma gets more reliable
 - B- Deinst goes blind.
 - Important point: This all didn’t happen at once but it all sort of came together in the spring of 1943.
 - c. After the Spring of 1943 the U-Boat arm became cannon fodder

H. Summary

- a. The Myth is debunked – The U-Boat never came close to driving England out of the second world war.
- b. The 500Kton goal was bogus because it did not account for US ship building and British recovery. 3500 ships sunk; 5800 built.
- c. Other statistics
 - Germans lost 75% of their submariners (30000 men) and 700 U-Boats
 - Allies lost 80000 seaman and 3500 ships

IV. US World War Two Campaign against Japan

A. US advantages

- Very good subs
- Well trained crews
- A real belief in technology

B. US Disadvantages

- Terrible torpedoes
- Mismatch between doctrine & strategy
- CO's could not carry out assigned mission.
- Result – A very slow start

C. Took almost two years to fix the torpedoes

- a. “local” fixes
- b. Bureaucratic inertia
- c. Lockwood finally drove the fixes

D. During this period 2/3 of all CO's were replaced.

E. By the end of 1943 they were ready (A classic war of attrition ensued (see graph)).

F. Final result

- Japan's ability to wage war was destroyed; no food, no oil, and no war materials.
- See Strategic Bombing Survey results
- Probably was not necessary to use A-bombs but Truman et al could not have known that.

- G. Why did this campaign succeed?
- Japan failed to see submarines as a mortal threat (saw things through their own experience) plus the slow start gave them nothing early to worry about.
 - Believed Americans were too soft to be submariners
 - US flexibility in doctrine, tactics, & technology.
 - Finally got the right COs.
- H. Costs
- See graph
 - JANAP briefly

V. Cold War

- i. Type XXI
1. Russian Whiskey (231)
 2. US GUPPY conversions (66)
 3. BUT, not the final answer.
- ii. Race for nuclear power
1. Rickover & Nautilus
 - a. Safety over all other considerations
 - b. Design, procedures, training (in order)
 2. Nautilus was spectacularly successful (1954)
 3. Soviets produced the November (1958)
 - a. Faster, deeper diving and much less safe
 4. Both sides started serious building programs
- iii. Ballistic Missile Submarines
1. Adm. Radford & Polaris
 2. George Washington (1960)
 3. Soviet Golf
 4. Soviet Hotel (junk)
 5. Soviet Yankee & Delta (Good submarines; albeit copy?)
- iv. SSBN Operations
1. MAD concept
 2. Philosophical difference in op tempo
 - a. 70% versus 15%
 - b. RFCO vs. Blue & Gold crews
 3. Discuss US “pull back” and why
 - a. Polaris, Poseidon, Trident
 4. Discuss Soviet pull back and why (Show SSBN bastions)
 - a. Walker & Pelton
 - b. SOSUS

- v. Attack boat operations
 - 1. Early on, subs were recognized as good spy boats and potentially the best sub killers
 - 2. No more diesel boats
 - 3. Basic strategy (forward operations)
 - 4. The Thresher class
 - 5. SpecOps became more and more routine
 - 6. Three objectives
 - a. Warning
 - b. "At sea" presence
 - c. Intelligence gathering
 - 7. Sturgeon was designed first and foremost as a sub killer but intel gathering was also built into these boats.
 - 8. Los Angeles class designed to also include direct support and eventually strike warfare.
 - 9. Tomahawk (3d gen. 688's got VLS tubes)

- vi. Soviet Attack operations.
 - 1. Anti-carrier operations
 - 2. Convoy interdiction.
 - 3. SSG/SSGN/SS/SSN; mixed bag
 - 4. Soviet strategy aligns with NATO's; War in Soviet waters
 - 5. The impact of spying (Walker, Pelton)

- vii. End of the Cold War
 - 1. Soviets were now building good albeit very expensive boats
 - 2. Gave rise to SEAWOLF
 - 3. The speed of the collapse surprised us. We were seeing rapidly increasing capability when the wheels suddenly came off.
 - 4. Their economy could not afford to do what they were doing.
 - 5. From our perspective, the goal was to be so dangerous that they would not resort to war until they had collapsed under the weight of their internal contradictions. SUCCESS!!!!

VI. The future

- i. Current world state
 1. 40 countries operate submarines (6 have nuclear boats)
 2. Total is close to 500.
 3. Submarine warfare is not going away soon.
- ii. US has used subs for strike warfare and beat this drum loudly.
 - a. Four SSGN's
- iii. However, every CV has a DS submarine and intel missions abound
 - a. Today, 52 SSNs, 14 SSBNs & 4 SSGNs (69 total)
 - b. Running about 50% rejection rate on NCA / Combatant Commander tasking
- iv. Same old missions still in play
 - a. Warning
 - b. Intelligence gathering
 - c. "presence"
 - d. Direct support
- v. However, the new ones are increasingly important
 - a. Strike
 - b. Special operations (SEALS)
- vi. VIRGINIA is designed to allow flexibility in all these areas plus any new ones that might surface (mine warfare, aerial surveillance, etc.):)
- vii. The need for a replacement SSBN (USS Columbia)
- viii. Summary: Still lots of jobs & missions in today's environment.
 - a. Lots of people have modern capable subs and the SSN is still the best submarine killer once they are loose
 - b. Chinese and Russian aspirations
 - c. Countries that still require our watchfulness (N. Korea, Iran: (intelligence gathering)
 - d. Still a need for strike warfare and sometimes without warning.
 - e. Real need for special warfare operations again often without warning.

- f. Submarine building is a perishable art and if we don't maintain it, recovery when we need it would prove very time-consuming and expensive.

Chances are high that we will continue to need the force for the foreseeable future.

Bibliography

There are thousands of books and movies on submarines, some of them actually pretty good. An Amazon key word search will give you about 60000 hits with many being associated with the Beatles "Yellow Submarine". Most others however are actually submarine related. I do not pretend to have read or seen them all and I certainly do not claim to be a literary or film critic. What I am providing below are some that I think do a good job of telling their particular story or provide a good picture of what it was or is like. I also couldn't help commenting on a couple that I found particularly bad.

Non-fiction:

Silent Victory (Clay Blair, Jr. 1975) Clay Blair was the fount of knowledge on World War II submarine warfare. Silent Victory tells the story of the US Pacific campaign and is the definitive source on this subject. His books are extensively researched, detailed, and well written. They are also long (this one is 1000 pages).

Hitler's U-Boat War (Clay Blair, Jr. 1998) Again, this is the definitive work on the subject. This book come in two volumes; The Hunters, 1939 – 1942, 770 pages and The Hunted, 1942 – 1945, 850 pages) This book is a myth buster that puts to rest the often-stated idea that the U-Boats almost put England out of the war.

Operation Drumbeat (Gannon, 1991) A very good book on the World War Two U-Boat campaign on the American coast. He and Blair do not always align completely but this is still an excellent book.

Blind Man's Bluff (Sontag and Drew, 1998) The best book by far on US submarine operations in the Cold War. I can't comment on specifics of what I was doing out there but when asked I lend out this book. I also gave my sons each a copy to help explain why I missed so many of their school events. There are a number of other related books, probably the two most notable being:

The Silent War (Craven, 2001) John Craven was a civilian scientist involved in several cold war projects and an important player, but I found the book to be somewhat self-serving especially in those areas where he disagreed with what was done or said (such as the loss of the Scorpion).

Rising Tide (Weir and Boyne, 2003) This book is supposed to be a “Blind Man’s Bluff” as seen from the Soviet side. It is based on interviews with Soviet submariners and frankly a lot of these men seem very confused to me. In many cases their assessments do not line up with what was actually going on. Still it is an interesting perspective.

Intelligence in War (Keegan, 2002) You must be very careful when choosing a book about code breaking in World War II. Basically, the information remained classified until the late eighties or later. Anything written before then (and there are lots) simply doesn’t have the facts. John Keegan as always has the facts. This is a general book on intelligence but pages 144 through 161 plus chapter seven combine to give the best discussion I know of on Enigma, how it was broken and how it was used in the U-Boat war.

The Secret War (Paterson, 2007) This is another good and factual book. Chapters 1 through 4 and chapter 8 cover general code breaking and the submarine part of the story. Blair and Gannon also do a good job of putting code breaking into context.

The Rickover Effect (Rockwell, 2003) Without knowing something about the KOG (kindly old gentleman as we used to call him) you cannot understand the US Nuclear Submarine Force. This book is as good as any and better than most.

Submarines (Hutchinson, 2001) This is a general history done in connection with Jane’s (a British nautical publisher) and the Smithsonian. It’s an easy read, has lots of pictures and gives you the whole history in an easy to digest package.

Castles of Steel (Massie, 2003) This is a book about the First World War at sea. It is mostly about Dreadnoughts and such, but at the end he addresses the defeat of the U-Boats and he does this wonderfully.

Time-Life Books: Time-Life Books addressed submarine warfare in two of their series; the first is in The Seafarers series named The U-Boats. It covers both wars but is especially useful in its treatment of the First World War. The other series is World War II. The two related books in this series are The Battle of the Atlantic and War Under the Pacific. All three books are well written with lots of great pictures, drawings, maps, and charts.

Submarines at War (Gunton, 2003) An English book that traces the whole history of submarine warfare in a very readable 250 pages.

Personal Memoirs: There are many of these, and most tell a narrow story of what they were specifically up to, but they are good at telling what it was like at the sharp end of the spear and many of these books tell truly heroic stories. Some of the best include Fluckey,

Beach, Enright, (American) Orita, Hashimoto, (Japanese) Kretschmer, Ruhe, Werner, Suhren, Cremer, and Prien (German). My personal favorites however are the two by Dick O’Kane. Wahoo tells his story as XO under Mush Morton on the Wahoo (he left Wahoo just before she was sunk) and Clear the Bridge tells his story as the highly successful CO of the Tang.

The Wake of the Wahoo (Sterling, 1960, reprinted 1999) Chief Sterling wrote this firsthand account as a tribute to the men he served with on Wahoo almost all of whom went down with her (like O’Kane he left the ship just before her last patrol). It’s a “deck-plate” view and the reason it’s on this list is because it’s the first submarine book I ever read. I read it in 9th grade and became immediately and permanently fascinated with submarines.

The loss of the Scorpion: There are several books on this topic, but the best is Silent Steel (Johnson, 2006). Conversely there are two books, Scorpion Down (Offley, 2007) and All Hands Down (Sewell & Preisler, 2008) which take several more or less unrelated events and concoct a theory that the Russians sank her. The first book is pure conjecture and the second uses several (unnamed) Russian Navy sources who have no first-hand knowledge but claim they had heard from someone who had known someone who had heard that someone knew something about it. No credible authority buys into this and these books only appeal to the conspiracy theory types. Two newer books, Red Star Rogue (Sewell & Richmond, 2006) and Red November (Reed, 2009) also blames the Soviets and are equally unbelievable and discredited.

Fiction

There are many many really bad fiction submarine books and I generally suggest staying with non-fiction which is plenty exciting enough. However, I must acknowledge two very good fiction works:

The Hunt for Red October (Clancy, 1984) We will neither confirm nor deny how much of the technology and tactics he got right and how much he didn’t, but does Clancy ever make us look brave, smart, heroic, and all that stuff. Great story.

The Boat (Buchheim, 1975) Buchheim was a war artist who made U-Boat patrols to paint propaganda pictures. After the war he took many of the things he had seen and gathered them into one fictional patrol on one boat. By far the best book in capturing what life must have been like on a World War II U-Boat.

Movies

The two books above both gave birth to two very good movies. Das Boot is hands down the best submarine movie ever made. I recommend the German version with subtitles. The English dubbed version seems to lose some of the intensity of the original.

Other good ones include Run Silent Run Deep (best of the WWII US submarine movies; silly story but good movie), The Enemy Below (a good study from both sides of an extended engagement between a US destroyer and a U-Boat), The Bedford Incident (good study of how a cold war engagement between a US destroyer and a Soviet submarine could have gotten out of hand), and K-19 (a very accurate and realistic movie of an actual nuclear accident on the first Soviet Hotel class SSBN). Final movie note: Crimson Tide is junk. It's a contest as to whether the technical flaws outweigh the plot flaws but the whole movie is nonsensical. There are lots of bad submarine movies but this one always gets my goat because it's often not perceived as bad (Netflix and Amazon both rate it 4 stars ???)