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A History of War at Sea

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would be helpful. Second, in view of the high-low mix issues in the Navy today, Lanchester's combat "laws" on possible tradeoffs between mass and technology or firepower should at least be carried in an appendix. (For naval officers who desire to refresh themselves on Lanchester ideas Peter W. Zehna, ed., *Selected Methods and Models in Military Operations Research* (Monterey, Calif.: Naval Postgraduate School, 1971) and Chantee Lewis, "A Method for Conceptualizing Combat Theory," *Naval War College Review*, Fall 1975, pp. 45-56 are suggested.) Third, the end of the book section on systems effectiveness and reliability is limited and does not reflect such techniques as fault-free analysis or the post-World War II work of Barlow, Prosehan or Jorgenson on military reliability issues. The reader should be aware of these limitations.

All in all, the Operations Research faculty of the U.S. Naval Academy has given us an excellent book, useful as a text at the undergraduate level or by naval officers wishing to update themselves on recent quantitative applications relating to tactical and strategic decisionmaking.

The shortcomings mentioned are more than compensated for by the strengths of this book, a broad and imaginative attempt to show the role of a logic process to increase objectivity in military decisions.

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Pensel, Helmut. *A History of War at Sea*. Annapolis: Naval Institute Press, 1977. 176pp.

The 1975 German edition of this book was titled *Von Salamis bis Okinawa* but this edition is more up to date with the addition of a new chapter, "The Nuclear Age," which covers Suez, Cuba, Vietnam, the Indo-Pakistan War, and the Yom Kippur War. The author

intended to "provide an easily accessible chronicle of all significant armed conflicts at sea from the time of the Persian Wars to the present day . . . favoring the history of no one nation above the other." He succeeded.

The book does not pretend to be detailed history but is more a chronology of naval battles. The accompanying maps (there are well over 200) do not permit recreating actual ship or fleet movements but they do serve to fix an engagement in place and time. The first dated entry is 1210 BC: Battle off Cyprus (the first recorded sea battle) in which the Hittites defeated the Cypriot fleet. The last entry is for May 1975: the recovery of *Mayaguez* and her crew. The intervening 3000 years are covered in 150 pages with no lacunae evident.

A History of War at Sea is not only a useful research aid but is good recreational reading. The latter, however, will accent an unusual character of the book; the entries are written entirely in the present tense and the language cadence is evocative of a Lowell Thomas newsreel narration:

The combined squadrons approach the Korean Coast. Togo, well-informed of the Russian strength and movements, awaits them in the Korea Straits, off Tsushima Island.

Beatty overhauls the Germans, and outflanks them on an easterly course, but the weather closes in and prevents continuous action.

A bomb and torpedo attack wave takes off from *Hiryu* for *Yorktown*, which is hit by 3 bombs and 2 torpedoes and loses way, apparently doomed.

There are several appendixes including the oldest surviving naval order of battle (that of the *Iliad*), tonnage and ship numbers tables, lists of ships sunk by various weapons, etc. Of more interest, if not of practical value, are the tables which rank great naval battles.

Pensel assigns points to four factors: numbers involved, strategic significance, political significance, and tactical execution. By this scheme history's greatest naval battle (many will agree) was that of Leyte Gulf in 1944. World War II has four other battles in the top 35, eight in that list have B.C. dates, and Trafalgar and The Armada are sixth and twelfth, respectively.

This atlas and chronology will be of value and interest to both the serious researcher and the casual reader.

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Price, Alfred. *Instruments of Darkness.* London: Macdonald and Jane's, 1977. 284pp.

"It seems that every time we go to war we have to re-invent the wheel." Alfred Price ascribes this statement about Electronic Warfare to a USAF officer and uses it as one of the chapter headings of his book. Besides revealing the short corporate memory of the armed services, aggravated by the rigid compartmentalization of experience gained in previous electronic engagements, this quotation also illustrates the cyclic nature of the campaign in the electromagnetic theater of operations of a modern war.

Although subtitled "The History of Electronic Warfare," this book is largely concerned with just one part of it, the long campaign between the Royal Air Force and the Luftwaffe over northern Europe between 1939 and 1945. Nevertheless, many key battles of this campaign turned on the use of electronics.

Using clear, jargon-free language, Price explains and illustrates the principles of electronic warfare and their links with intelligence and general tactics. He also points up another important facet of modern war, the organization and application of scientific effort. The undoubted scientific skills of the Germans had produced electronic systems superior to those of the British and the Americans by 1939, yet by May 1943 Goering was forced to say "I did hope that even if we were behind we could at least be in the same race."

The centerpiece of the book is the story of the introduction of "window" (the strips of metal foil now known as "chaff" used to confuse radar). The idea of window was thought of in Britain and Germany almost simultaneously but what the decisionmakers did about it reveals much about the direction of scientific effort in both countries and also of how scientific developments must always be closely related to operational developments in the frontline-- particularly in the dynamic area of electronic warfare.

The tale also goes through one of those mazes so familiar to students of the subject. Each side thought that if it used a technique first, that technique would be adopted quickly by the other side who would then gain more from it. This cannot be true for both sides, yet both persuaded themselves that it was. Goering ordered the destruction of his force's initial trials report and stringent measures to prevent any leakage of information—all experiments, even those aimed at developing a countermeasure, had to cease.

In Britain, window was found to be highly effective against the radar used by night fighters. RAF Fighter Command immediately asked that Bomber Command not use window until an antidote had been developed. After 4 months, the requisite new procedures and tactics had been developed, and Fighter Command dropped their objections, but then Bomber Command demurred. Their spokesman, Air Marshal Saundby said: "There are only so many tricks that my force can use against the enemy, and once these are exhausted there is nothing." He therefore wanted to use each new trick until it was played out, and as two other forms of jamming ("mandrel" and