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Naval Radar

Edwin B. Hooper
U.S. Navy (Ret.)

Norman Friedman

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Evidence from past disasters like the Black Death tend to support this contention.

The warning is clear: mankind stands at the brink of self-destruction. Those strategists and officials for whom nuclear war has become a conceivable option would do well to pause and consider the folly of their position.

RICHARD NED LEBOW
Johns Hopkins University School
of Advanced International Studies,
The Bologna Center

Friedman, Norman. *Naval Radar*. Annapolis, Md.: Naval Institute Press, 1981. 240pp. \$31.95

Naval Radar, published first in Great Britain by Conway Maritime Press, Ltd., is now offered in this country by the Naval Institute. The volume is extensively illustrated. Regretfully, portions of the text appear to have been composed in haste. Despite an advanced degree in electrical engineering, introduction into radar development in 1940, assignment as fire control officer in a new capital ship and also radar officer from the time the CXAM-1 came on board, experience with radar in combat, and postwar responsibilities in research and development, this reviewer found Part 1, entitled "Theory, Function, Performance," to be very laborious reading. One reason is the author's apparent predilection for details, often covered in fragmentary and seemingly disjointed fashion. Clarity of the work suffers from the extent to which abbreviations are used and the frequency with which technical or quasi-technical phraseology is inserted, sometimes unnecessarily or not in proper context. This first part of the book would have benefited from more synthesis and correlation of bits and pieces. Yet another problem lies with the number of statements or interpretations

that could be subject to misunderstanding, might lead to confusion, or are in error. Anyone seeking to use the volume as a reference work should do so selectively and with caution.

There is some historical background in Part 1, followed by peripheral material on radio and on electronic warfare.

Part 2 is a comprehensive "Catalog of Naval Radar." This includes capsule summaries on almost four hundred "radar" types or series of the United States, Great Britain, Germany, Japan, Italy, The Netherlands, and France. There is also a four-page discussion of Soviet radars. Insofar as the United States is concerned, the coverage appears to be complete. There is much good material, although some of the commentary suffers from faults similar to those one encounters earlier in the volume.

Here is a sample of the sort of statement in *Naval Radar* which this reviewer found to be troublesome. The author refers on page 13 to "the Mk 8 surface gunnery set, which could observe both splashes and target." This implies that the Mk 8's predecessors could not observe both. Yet, on page 172 he refers to ranges on splashes by the Mk 3. Unfortunately the figures he gives are wrong. It is stated that "reliable ranges" of a Mk 3 "at an antenna height of 80ft" were 20,000 yards for a 16in splash. Yet the range of the optical horizon at that height is over 30,000 yards and the tall splashes of 16 inch projectiles were in fact observed reliably by these main battery radars at well beyond the horizon. And then the author goes on to assert that "reliable ranges" for this surface fire control radar (mounted on the main battery directors) also were "bomber (10,000ft) at 45,000 yds!" Furthermore, the forward directors

were much higher than 80 feet—their radar antennae being about 120 feet above the waterline in the case of the new battleships.

An appendix entitled “Examples of Radar Operations during World War II” consists of some excerpts from action reports of but one warship, the cruiser USS *San Francisco*.

EDWIN B. HOOPER
Vice Admiral, US Navy (Ret.)

Polmar, Norman and Kennedy, Floyd D., Jr. *Military Helicopters of the World*. Annapolis, Md.: Naval Institute Press, 1981. 370pp. \$29.95

Since the dawn of history, man has envied and sought to imitate the bird's ability to fly. After centuries of effort he finally learned to fly, after a fashion. Today he does so by hurling tons of metal horizontally into the air, and he remains airborne as long as this frantic rush forward continues. But for many years man has longed to leave the earth in a more majestic manner: vertically! For nearly 200 years balloons have been used to transport passengers aloft vertically, but they provide the pilot with little control over the direction of the travel. Thus, it was left to the inventors of the 20th century to devise a craft which could lift pilot, passenger, and payload vertically into the air, move at will in any direction, and even hover over a given piece of terra firma. This craft is the remarkably versatile helicopter, and the Naval Institute Press has recently published a book which is sure to become the reference source for information on the military uses of rotary-wing aircraft.

Military Helicopters of the World is the joint work of the well-known defense writer Norman Polmar, and Floyd D. Kennedy, a highly respected analyst of Soviet naval and air doctrine.

Their encyclopedic effort covers over 200 helicopter models which have been designed and flown since 1917. The authors have taken an unusual approach toward organizing the tremendous amount of data which fills the book's 370 pages. The book is arranged alphabetically by nation of design origin, and then alphabetically by the name of the firm or individual who designed rotorcraft within that nation. There are twelve such sections, and since the book deals with helicopter development for the past 65 years, we find sections for Austria-Hungary and Germany (Third Reich).

Preceding the nation-by-nation review, the authors have included a section entitled “Perspective” which provides a historical overview of helicopter development ranging from Leonardo da Vinci's “air gyroscope” in 1483 to the Soviet Union's new Mi-26 *Halo*.

Adding to the book's usefulness as a reference publication are a glossary of helicopter-related terms and acronyms, and four information-packed appendices.

The longest appendix provides biographical data on individual helicopter designers (such as Igor Sikorsky and Frank Piasecki) as well as information on design organizations (such as Sud Aviation and Hughes Aircraft Company).

Three other appendices discuss rotary-wing aircraft designations; armament; and serial number assignment.

The authors have done an impressive job of assembling the facts, figures, and photographs to document over six decades of helicopter design and operation.

The serious researcher will enjoy the depth of information provided on designs which were built and flown in large number by the nations of the world. The casual reader, however, may be more