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## U.S. Naval Weapons: Every Gun, Missile, Mine and Torpedo Used by the U.S. Navy from 1883 to the Present Day

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If you want a single fundamental reference on the subject of naval weapons, classified or unclassified, *U.S. Naval Weapons* is it—it is meaty and filled with information without being the least bit dull or opaque.

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William D. O'Neil

Friedman, Norman. *U.S. Naval Weapons: Every Gun, Missile, Mine and Torpedo Used by the U.S. Navy from 1883 to the Present Day*. Annapolis, Md.: US Naval Institute Press, 1983. 287pp. \$24.95

Once again, Norman Friedman has produced a fine and useful book of reference. Anyone with a professional or personal involvement in naval weapons will find much of interest and value in it. As is usual with Dr. Friedman's books, this one is meaty and filled with information without being the least bit dull or opaque.

Its title notwithstanding, the book's coverage is not restricted to weapons, but also includes weapons control systems and most detection and tracking systems (the chief exception being shipboard radar systems, the subject of another of Dr. Friedman's books). The bulk of this effort is narrative in form, divided into six topically oriented parts: Guns (Surface Fire); Fleet Air Defense Before 1945; Underwater Ordnance; Fleet Air Defense After 1945; Air-to-Surface Weapons; and Surface-to-Surface Missiles. Each part has an introduction giving a general overview, followed by chapters devoted to specific systems or categories of systems—"Gun Design and Development, 1883-1983," "Sonar Systems," "Fighters in Fleet Air Defense," "Harpoon," etc. There is also a general chapter on "Antisubmarine Strategy and Tactics." The story starts with the dawn of the "New Navy" in the 1880s; there is no coverage of earlier systems.

The organization of these chapters is fundamentally historical; they tell the story of each system's development and how one system led to another. In most cases there is considerable description of the decision process and of the positions taken by the bureaus, OpNav, SecNav, and other players. The systems are described in terms of their gross physical characteristics, basic principles of operation, general performance, and relationship to other systems. At least one good black-and-white photo or diagram is provided to illustrate nearly every system.

The narrative sections are followed by 45 pages of densely packed appendixes, which provide additional discrete data. Together, the narrative and appendixes furnish information on virtually every system the Navy has so

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much as considered over the past century. The comprehensiveness and precision of the information inevitably falls off somewhat as the most recent systems are reached and security becomes a significant consideration. For the most part, however, Dr. Friedman has avoided the kinds of gross inaccuracies that books on weapon systems commonly fall prey to (thus depriving professionals of a good deal of innocent merriment which they are accustomed to derive from such works), largely by being very careful about his sources and refusing to accept ill-informed speculation when hard information is lacking.

Books such as this are not without their dangers, which are perhaps magnified here by the solid virtues of this one. There is a fine air of completeness and certitude that clings to the book's accounts of weapons and their development, lent not by any immodest claims on Dr. Friedman's part but by his careful and precise accumulation of detail. "Surely," one is likely to say to oneself, "here at last is the true and veritable story." And to be sure, in most cases it is the nearest thing to the true and veritable story that has been seen in print, or ever will be seen. But it is by no means the full truth, and indeed the full truth would in most cases lie beyond the reach of this or any other book.

Naval weapon systems have always represented substantial feats of engineering and organization, all the way back to Tyre, and our century has seen their complexity growing exponentially. The decisions on major systems are bound up with power, money, pride, and diverging alternate futures for great institutions—and men (and nowadays women) contest them with all their passion. The truly important moves in the development histories often are not recorded, and often the records that do exist were written with an eye more to advantage than to accuracy. Naturally it is impossible to deal with all the labyrinthine details in such a book as this, even if the necessary information were available.

Even "hard facts" about weapon design and performance can be treacherous. The design of a major weapon system may involve many hundreds of interlocked critical choices. Dr. Friedman has sought (with varying degrees of success) to select and illuminate a few of the most important design issues for some systems, but for the most part confines himself to straightforward descriptions of system characteristics. As a result it is often difficult to form any very precise idea of the physical principles which underlie a system's operation, or to understand the constraints and tradeoffs which shaped it. Nor are the descriptions sufficient, in many cases, to provide a clear picture of the system's operating sequence or performance. Finally, there is very little data on effectiveness in service. In all of these matters, of course, the author is handicapped by the outright absence of much of the vital data, and to some extent by his own lack of any extensive experience in weapon system design, development and testing.

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Limitations it has, yes, but make no mistake: this is an excellent book. No more solid, reliable, comprehensive compendium on US naval weapons will be found anywhere. If you want a single fundamental reference on the subject, *U.S. Naval Weapons* is it.

Russett, Bruce. *The Prisoners of Insecurity—Nuclear Deterrence, The Arms Race, and Arms Control*. San Francisco: Freeman, 1983. 192pp.

The thesis of this book is that the most fundamental questions about national security and arms control are political rather than technological, and there exists an elite that perpetuates a myth that arms control and security questions should be left to the experts. The purpose of the book, then, is to consider some of the basic questions that should be addressed by the "conscientious" citizen and to provide some of the technical information necessary to an informed discussion.

The author, a professor of political science at Yale University, views the arms race and war as an acute problem and makes no apparent attempt to present his arguments dispassionately. Intended to provide data to support the basic arguments of the nuclear arms activist, the book is an excellent primer on the subject.

The centerpiece of the book is the prisoners' dilemma. This is a game where two people are arrested for a crime and held incommunicado. The prosecutor does not have enough evidence to convict them; but each is told that, if he confesses first, he will be set free—if his accomplice con-

fesses. If both confess on the same day, they will receive stiff sentences. If neither confesses, they will be convicted of some lesser crime for which the prosecution has sufficient evidence. On reviewing the choices in this game, each player is better off if he does not trust his accomplice and confesses, even though they are both likely to end up worse off than if they could trust each other to cooperate. The author draws the analogy to the security dilemma where both sides arguably would be better off if they devoted their resources to social programs rather than to defense but where the consequences of misplaced trust are indeed dire.

The author prepares the reader to enter into arguments on how to reduce the stakes of the prisoners' dilemma by tracing the history of the Soviet-American arms race and analyzing stable deterrence. All of the arguments as to why arms races are bad—guns vs. butter, increasing the destructiveness of war, and arms races as a cause of war—are trooped out. But he then makes it apparent that most of these arguments miss the mark. The key is an element of trust that requires some degree of communication between the superpowers. This communication can be open, including exchange of technical data