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## The Future of Air Power

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with a long shelter deck, by Thornycroft's, previewed the modern postwar British antisubmarine frigates.

The design history of the Hunts presented by John English is detailed and informative. It rounds out information published in earlier books and monographs, such as the classic on the subject, *British Destroyers* by Edgar J. March (London: Seely Service, 1966). Tables are provided, giving dates of laying down of keels, launch, and completion; pennant numbers; a table showing the building program by numbers only (date ordered, laid down, and launched); wartime deployment; and analyses of losses and damage. To help the reader understand the status of inactivated Hunts, the author has provided the most thorough explanation of the categories of reserve vessels between 1944 and 1958 that this reviewer has seen in print. There is further commentary on losses, proposed conversions of Hunts to antisubmarine escorts postwar, and postwar service of the class. Also discussed are plans made in 1942 to build further Hunts in addition to the 86 in progress or completed at that time and plans for an armored version of the Hunts.

Photo coverage is impressive. There are 124 photos showing 82 of the 86 Hunts, most of which have never been published before. Only the *Exmoor* (i), *Grove*, *Southwold*, and *Hursley* were omitted from photo coverage. In this regard it should be noted that, with the exception of the last named, these Hunts were lost

after very brief wartime careers. *Hursley* served in the Greek Navy until 1958. There is complete photo coverage of all four Hunt types, yet it seems logical that the author or publishers would have included a page of drawings comparing the four Hunt designs, but only one fold-out plan, a poor tracing from builder's plans, of a Type I Hunt is included. For those interested, there are illustrations of the four Hunt types in camouflage colors in Alan Raven and John Roberts, *Man O' War 4: HUNT Class Escort Destroyers* (London: Arms and Armour Press, 1980), pp. 25-30. The U.S. Navy Office of Naval Intelligence publication ONI 200 of 1 July 1950 has nicely drawn profile and plan views of all four types.

WILLIAM H. CROFT  
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Brown, Neville. *The Future of Air Power*. New York: Holmes & Meier, 1986. 300pp. \$49.50

No one seriously interested in the future of military aviation should miss this book. Given the price, owning it is another question.

The author is a professor of international security affairs at the University of Birmingham, England. His approach to the subject reflects his keen and continuing interest in military aviation and is simultaneously academic and eminently practical. The book is both broad-ranging and insightful; historically analytical and anticipatory.

Professor Brown's themes include:

- "... [T]he crux of the matter with airpower will always be the ability to sortie into enemy air space for purposes of attack and surveillance."

- "... [I]t is never possible neatly to distinguish between airpower and other modes of military force."

- "... [T]he whole debate about military aerospace these days boils down to the question of where various balances are to be struck between . . . human factors and the electronic."

- "Perhaps the most vexing question . . . about the future of warplanes is their susceptibility to immobilization on the ground."

- "... [I]n all situations short of heavy nuclear exchange political constraints will continue to supervene."

Although some experts might consider the foregoing statements banal and others may argue with them on their face, the strength of the book lies not in its simplification but in its amplification of arguments about such things as single-purpose versus multi-purpose aircraft, manned versus unmanned aircraft, and quantity versus quality. Evidence is drawn from a wide variety of sources. Arguments are based on insights gained from a range of disciplines including geography, geometry, econometrics, human engineering, meteorology, physics, and probabilistic statistics. The arguments presented are per-

suasive both because of their internal logic and because they are multifaceted.

If there are general faults in the book, they are few. Two omissions are worthy of note. The first is the absence of attention to lighter-than-air systems, especially in their role as platforms for electronics. The second is the total lack of attention to the Achilles' heel in strategic airlift in these days of force projection and uncertain basing rights, *viz.*, refueling capability. Both omissions have important ramifications throughout the discussion.

The chapter on airpower at sea contains insights about mines and missiles which have proved prescient in light of recent events in the Persian Gulf. The treatment of carriers is a balanced discourse on a variety of controversial issues. Professor Brown's careful discussion of carrier vulnerability leads him to suspect "... [E]ven one missile homing onto a key radar, say, might turn so magnificent a vessel into more of an obligation than an asset." Once again, however, his intellectual journey to that suspicion is more valuable than the suspicion itself.

Overall, the book is highly rewarding. It can be read as a series of essays. It can be read as a *tour d'horizon* or *tour de force*. In any of those modes, the author has succeeded in combining description and argumentation to help a careful analyst draw on the history of military aviation while working to

understand its present state and its potential in the near future.

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Hartcup, Guy. *The War of Invention: Scientific Developments, 1914-1918*.

Brassey's Defense Publishers, Ltd., 1988. 226pp. \$43

The reader may ask, "Why do I want to know about old technology and the first generation of what may be considered *standard* weapons?" The answer lies in the aphorism that President Harry S. Truman was so fond of quoting, "The only thing new is the history that you don't know." Throughout this generally readable book are depicted problems and solutions that may rise again should the world ever again be plunged into prolonged military and economic warfare. I find the lessons particularly interesting in light of my association with the Global War Games at the Naval War College, and as a result of my long-held belief that technology can be a strategically decisive element.

Technology is the application of scientific, technical, and industrial principles. Guy Hartcup recounts the ways that talented individuals on both sides used initiative and imagination under the extreme urgencies of war to solve operational problems. The author takes pains to point out that each idea was tested and reduced to industrial practice so that the fruits of the inventions were available in quantity and in time. In

several of the vignettes, the "inventor" is seen as triumphing over mindless military bureaucracies that were unable to grasp the technical dimensions of either problems or their solutions. The more things change, the more they stay the same.

World War I is often ignored in the education of the modern military or civilian national security professional. This is a mistake in my opinion. There are myriads of traps and pitfalls just waiting for the most powerful industrialized countries in the world to step into in 1989. For example, in recounting the unsatisfactory state of British naval gun-laying at Jutland and in other encounters, part of the difficulty was the quality of optical glass for range finders. The author notes, "The British glass industry had become so dependent upon German and French imports that it had declined into a comatose condition and was absolutely stagnant. . . ." The reader may want to ponder the similar state of American computer chip, steel, and automobile manufacture.

Parenthetically I might add that the impact of the concatenation of shortfalls in naval weapons led to missed opportunities to inflict serious losses on the German Fleet at Jutland. Such shortcomings did not end then: remember the U.S. submarine torpedoes that failed to explode in World War II.

Those of us who were educated in science and engineering in the immediate post-World War II epoch will find interesting Hartcup's accounts of contributions to World