

sweeping aside the old, and doing so in the form of the Docklands project. The shipping and warehousing may have disappeared, the hewing and quartering, and all the heavy lifting. But still the throbbing heart of global commerce, insurance and finance lay headquartered on the immediate shores of the Thames.

There is a romance to this that Peter Ackroyd missed, but now we have it in Margarette Lincoln's treasured book. The many illustrations, extensive bibliography, and index combine with the delightful and edifying text to open to us a world we had lost but are now happily recovering.

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Norman Polmar and John O'Connell. *Strike from the Sea. The Development and Deployment of Strategic Cruise Missiles since 1934*. Annapolis, MD: Naval Institute Press, www.usni.org, 2020. xix+217pp., illustrations, tables, appendices, notes, bibliography, indices. US \$49.95. cloth; ISBN 978-1-68247-389-4.

One iconic image from the high Cold War years 1960-85 is of an intercontinental ballistic missile bursting out of the sea to ignite and race on its high-arc way to rain thermonuclear catastrophe on the enemy, be it the U.S. or Soviet Union. But years before the ballistic missile, first the U.S. and then the U.S.S.R. had developed initially short-range cruise missiles (i.e. guided from launch to target) carrying conventional, and then nuclear, warheads. The introduction of intercontinental ballistic missiles in the arsenals of both powers did not terminate cruise missile programs but enhanced them.

This is the absorbing story that Polmar and Connell tell in some 165 pages

of text and a half-dozen appendices. As with all of Polmar's books, *Strike from the Sea* rests on formidable scholarship, mastery of the material and an engaging writing style. It is a tale that the specialist will relish and continue to consult, while the general reader will obtain an education in a key weapon system that in many ways shaped Cold War strategies and has emerged once again in the hands of the Russian Federation Navy (RFN).

Even as German "buzz bombs" rained down on hapless London in the summer of 1944, America's Chief of Naval Operations, Admiral Ernest J. King, grasped the potential of rockets as future naval weapons. From 1946 on, American scientists worked assiduously to develop and elaborate both cruise missile technology and the surface and subsurface vehicles to deploy them both in a land attack and anti-ship configuration. Soviet naval strategists and scientists were no less aware of the possibilities of cruise missiles employed in tandem with submarine torpedoes and, just as promptly, began their own development programs in the early Cold War years. Thereafter, both sides advanced developments in near-lock step, with America's initial "Regulus" program matched by a Soviet missile system designated "Shaddock" by NATO observers. Between 1956 and 1964, the Soviet program was hobbled by Premier Nikita Khrushchev's general disinterest in pursuing advanced naval technologies, preferring land-based assault/deterrent programs. But after his overthrow, Navy chief Admiral Sergey Gorshkov was able to pursue a vigorous naval buildup in which sea-based missiles of both strategic- and cruise-missiles played a prominent role.

From the outset, the U.S. and Soviet navies equipped both surface ships and surfaced submarines with cruise

missiles. In the fifties and sixties, the Americans converted several heavy and light cruisers into missile carriers with the Soviets following soon thereafter. Later, both sides began building dedicated surface vessels as missile ranges steadily increased and payloads advanced from conventional to nuclear. But it was the development of submarine technologies that most bewitched both sides. Even as the American *Loon* (carrying the first generation surface-launched "Regulus") and Soviet *Whiskey* boats that deployed the "Shaddock" came into service, both sides sought to solve the interlocking problems of guidance and submerged launch capabilities. In the former instance, first generation missiles had to be launched from surfaced submarines and directed to targets roughly three hundred miles away employing aircraft and other surfaced submarines to literally guide the missile to its target. Polmar and McConnell trace how both sides succeeded in developing onboard guidance systems and subsurface capabilities that made the cruise missile a truly formidable weapon system on a par with, though not as nearly powerful as, its ballistic missile cousins.

The authors emphasize that the Soviet naval leadership was ever spurred onward in its cruise missile development by an obsession with American aircraft carriers that most symbolized the West's ring of sea power around the Soviet Eurasian empire. They write dramatic accounts of American "Regulus" submarine patrols off Kamchatka so close to that Peninsula laden with Soviet military and naval bases that navigators could estimate their position by referencing mountains ashore. Perhaps fortunately for the world, they were never detected.

The most striking impression one takes away from this study is how formidable the Soviet sea- (and land-) based missiles apparently became. I

say apparently because until quite recently, the Russians never really employed their cruise missiles against adversaries as the Americans did on several occasions, most notably post-Cold War when attention shifted to anti-terror warfare. In August 1998, American missile destroyers and a submarine launched somewhere between seventy and eighty Tomahawk Land Attack cruise missiles ("TLAM"s) against suspected and existing al Qaeda pharmaceutical, base, support and training facilities in Sudan and Afghanistan with devastating effect. The assaults were in retaliation for Osama bin Laden's recent bombing of the American embassies in Kenya and Tanzania. More recently, however, reports have surfaced demonstrating more or less successful Russian cruise missile attacks against Islamic State bases in Syria from destroyers and submarines operating in the eastern Mediterranean.

These attacks once again raise a question insistently posed during the Cold War: how good is the Russian cruise missile capability? The question has added urgency now that the Federation Navy has emerged once again as a formidable challenger to American sea power. Polmar and McConnell's answer is, very good, indeed. While the Americans have seemingly been content to rest upon the nearly half-century old (if still formidable) subsonic, 1,000-1,200 mile range "TLAM" system, the Russians have forged ahead with new systems of missiles that are both faster and of longer range. They are also beginning to experiment with subsurface drone weapons that could readily threaten America's coastal cities and military/naval installations.

In many ways, the Cold War at sea has resumed.

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