

he was deployed. The author poignantly describes how his wife coped day to day while he was exposed to the dangers of war. One of the great aids McAdams utilizes in doing this is including letters written to each other during his tour. Obviously, this tremendously personalizes the volume and stresses the powerful impact the “home front” has in enabling a Soldier to face the incredible challenges of combat.

I believe one of the strengths (among many) of *Vietnam Rough Riders* is McAdams’ ability to depict the tests a young officer is confronted with in war. The author shares many of the tests he faced. These included the difficulties he had working with his company commander and some of the field grade officers in the battalion, how he met the physical and emotional challenges of war, and how like many Soldiers (in any war) he questioned the purpose of war and its ramifications. McAdams’ candid discussion will have a powerful impact on many readers.

Unquestionably, *Vietnam Rough Riders* is one of the best written Vietnam War memoirs I have read. McAdams is incredibly engaging throughout his volume. He achieves this through a crisp and descriptive writing style, superb organizational skills creating a smooth flow for readers, and his ability to select events which appeal to readers. Perhaps, most impressive is that McAdams is equally adept at describing the action of an enemy ambush or sharing his feelings regarding his wife.

McAdams has crafted a volume which I consider one of the best Vietnam War memoirs I have read in many years. In fact, it is one of the best books I have read in recent memory. Do not let your apprehension on reading “another” Vietnam War memoir deter you from obtaining this book. Its combination of uniqueness and quality make *Vietnam Rough Riders* a must read.

fielding of mass swarms of small, cheap, smart, and deadly UAS on the battlefield.

These future UAS — or drone — swarms will be said to be made with off-the-shelf electronics and draw upon the characteristics of robustness, low cost, and rapid evolution. Such armed drones can be thought of as “flying minefields” and, while not singularly threatening, en masse will be impossible to defeat. Given ongoing U.S. Soldier concerns related to static improvised explosive device (IED) use by insurgents in Afghanistan and Iraq, the threat of IEDs — especially smart ones — chasing after or, even worse, relentlessly hunting down our troops is a chilling concept. Additionally, such UAS can be armed with pistols, light machine guns, and even anti-tank type systems.

The book opens with a short introduction to the subject matter and the book’s companion website (www.swarm-troopers.com). The individual chapters include content relating to drone history; Predator and Raven use; solar power and energy harvesting for drones; the science of swarming behavior; small drones as weapons; counter-UAS (C-UAS) technologies; and weaponized drone swarm futures. Each chapter has a modest listing of references that is adequate but rather undeveloped. The website is very useful with an image gallery of older and newer UAS systems (since none are found in the book); an updated blog also provides new drone technological developments.

A detracting component of the work is that the author at times has very much of an outsider’s take on UAS threat activities and C-UAS military developments. Active C-UAS programs are being implemented by a number of U.S. governmental and affiliated non-profit groups. As a result, many of the insights and conclusions provided are somewhat off-base though the overall thesis of the book — that autonomous and weaponized drone swarms of thousands, possibly tens of thousands of devices, drawing upon off-the-shelf commercial technologies will be deployed on future battlefields — is still sound.

For U.S. Infantry personnel, *Swarm Troopers* represents a good basic primer and introduction to this emerging threat — and new Army capability — area. While Army troops are already familiar with the Raven UAS for scouting and situational awareness capabilities, we are at the beginning of far larger battlefield changes. This has already incrementally begun with the fielding of the compact Switchblade UAS system that can be fired from a tube launcher and operates as an attack (e.g. kamikaze) drone with a small explosive warhead. Fast-forward a decade or two, however, and one can imagine a battlefield populated by thousands upon thousands of teleoperated and autonomous robots. These systems will not only be operating in the deserts of Iraq and the mountainous terrain of Afghanistan but also in the slums of mid-21st century megacities. On one hand, such autonomous and armed UAS will be the infantry’s best friend while other such drones — that fly, drive, walk, and crawl — will represent a dystopian “terminator-like” threat as human and machine forces are integrated into new forms of combined arms operations.

Swarm Troopers: How Small Drones Will Conquer the World

By David Hambling

Venice, FL: Archangel Ink, 2015, 323 pages

Reviewed by Dr. Robert J. Bunker

The author, David Hambling, is a South London-based technology journalist who has written for *Wired*, *Aviation Week*, and other technology magazines as well as authoring an earlier book about military technologies that eventually were applied to civilian applications (*Weapons Grade*, Da Capo Press, 2006). In the new work, *Swarm Troopers*, he focuses on the world of small drones or unmanned aerial systems (UAS) and their future military potential. He argues that the scientific research balance has now shifted, with consumer electronic advances outstripping military electronic advances. As a result, we are the cusp of a technology revolution which will see the future



How small drones can carry out missions lasting weeks or months, by extracting energy from the environment with solar cells, dynamic soaring and power scavenging. The power of swarms. How drone researchers are borrowing from nature and using a few simple rules to meld hundreds of robots into a single, co-ordinated unit as efficient as a swarm of bees. Miniature Terminators.Â Swarm Troopers explains why small military drones will be cheap and plentiful, and how researchers made a military-grade drone for less than \$2,000 in a basic workshop using smartphone components and 3D printing. With modern combat aircraft costing upwards of \$100,000,000, the military will face a choice between a single manned plane or a swarm of fifty thousand drones.