

Ground War is an ITV Studios Production for THIRTEEN in association with ITV Global Entertainment, National Geographic Channels International, and WNET.ORG – one of America’s most prolific and respected public media providers.

“As was the case with *Warship* and *Warplane*, this series highlights the remarkable stories behind the technologies,” says Jared Lipworth, executive producer and director of science programs at THIRTEEN. “It’s not a laundry list of weapons or battles, but an in-depth look at the impact of technological advances—some planned and some serendipitous—that have transformed battlefields and forced commanders and soldiers to adapt to changing conditions on the battlefield.”

Warrior Weapons and **Battlefield Mobility** air on May 19th, followed by **Firepower** and **Command and Control** on May 26th. The episodes link pivotal historical battles to the technological and tactical turning points that transformed them.

Warrior Weapons (May 19) traces the evolution of soldiers and their gear. From the phalanx formations of Alexander the Great to the gladiuses of the Romans and the longbows of the English, the film starts in a world without gunpowder, than examines the transformative arrival of the explosive elixir, and the matchlock and flintlock muskets, rifled barrels, expanding bullets, automatic weapons, and assault rifles that followed. On the defensive side, we see how personal armor evolved, became outdated, then returned with the arrival of Kevlar and ceramic composites. And looking towards the future, we see the development of wearable exoskeletons that will one day soon make human soldiers stronger and faster, and advanced robotic soldiers that may one day replace them completely.

Battlefield Mobility (May 19) explores mobility on the battlefield, and the never-ending challenge to maximize effectiveness and find the right balance of protective armor, speed, mobility and firepower. The nimble Egyptian chariots led the way as an effective firing platform. The stirrup and selective breeding turned the horse into a true weapon of war and set the stage for the mounted knight as a self-contained mobile battle-system. And then came the tanks, which evolved from the first British efforts in World War I with boxy Little Willie and hulking Big Willie, to the fast German Panzers and powerful Russian T-34s of World War II, to today’s heavily armed and armored machines like the American Abrams, which comes complete with massive gun, sloping, explosive reactive armor, thermal sights and even stealth coatings.

Firepower (May 26) tracks the development of artillery from the ancient Greeks, through the invention of gunpowder in China, to the very latest generation of big guns and directed-energy weapons. Throughout the ages, the ability to strike from a distance has been critical to success in battle, and time and again, artillery weapons have forced armies to adjust to ever-more powerful technology. Starting with the Greek *gastrophetes*—a *tension*-powered mechanical bow, artillery evolved into the *torsion*-powered Roman *ballista*, and then the massive counterweight *trebuchet*, which was used to toss everything from rocks and fireballs to severed heads and whole people. But once again, it was the arrival of gunpowder that truly transformed artillery warfare. The marriage of gunpowder and barrel sparked a

revolution in every aspect of firearms design. From bamboo, iron, bronze and then steel barrels, to changes in the formulation of the gunpowder itself, to elongated, spinning projectiles, to advanced recoil mechanisms and special tools and calculations for aiming, every generation built on the previous to create ever-more-accurate, far-reaching and deadly big guns.

Command and Control (May 26) considers the ways in which armies have used or modified the terrain of the battlefield to their advantage for both defense and attack. From Hadrian's Wall and the Great Wall of China, to the mountain fortress of Masada and the great ramp the Romans built to conquer it, to the rooftops and alleyways of Baghdad, battlefield engineers have worked creatively for thousands of years to make their landscapes work for them. Massive Crusader castles like Craq de Chevaier, with its multiple walls and concentric layers of defenses, provided "defense in depth," as did later features like bastions, star forts, moats, and earth-backed walls. But offense too benefited from battlefield engineering, as soldiers tunneled under enemy lines, dug complicated systems of trenches, and used barbed wire to funnel enemies into deadly killing zones. Even in today's conflicts, the shovel remains a staple of battlefield gear, and the manipulation of the conflict zone can be the difference between victory and deadly defeat.

Ground War is a presentation of THIRTEEN in association with WNET.ORG. The series is narrated by R. J. Alison. **Warrior Weapons** and **Battlefield Mobility** were produced and directed by Roger Finnigan. **Firepower** and **Command and Control** were produced and directed by James Millar. Liz McLeod is executive producer for Granada. At THIRTEEN, Jared Lipworth is executive producer. William R. Grant is executive-in-charge. Funding for **Ground War** was provided by the Alfred P. Sloan Foundation and by PBS.

About WNET.ORG

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