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Soldiers benefit from — and are subject to — huge amounts of research.

MILITARY SCIENCE

Among the warriors

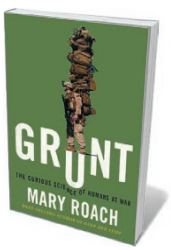
Sharon Weinberger finds much to amuse and disturb in Mary Roach's tour of conflict's wilder shores.

In *Grunt*, Mary Roach reveals herself as the kind of writer you want at a nap-inducing military press conference. In a culture where dead civilians are 'collateral damage' and air strikes are 'kinetic operations', Roach has a way of peeling back the euphemisms to get to some of the true horrors of war. Unbelievably, she often manages to make it funny.

The book, a tour of the scientific world of "humans at war", sees Roach uncovering the Medicare reimbursement code for maggots and learning how combat medics practise treating an evisceration (the stand-in for faeces-filled intestines involves dyed oatmeal and worse). To find humour in the carnage of war, a writer must walk a fine line, and most of the time Roach does so deftly. Her previous works published by W. W. Norton have focused on sex (*Bonk*, 2008), space travel (*Packing for Mars*, 2010), cadavers (*Stiff*, 2003) and other subjects ripe for snappy one-liners. War is more challenging. Yet even her chapter on genital injuries — urotrauma — strikes an appropriate balance. It is at once harrowing, fascinating and depressing.

Roach is at her best capturing the rational absurdities of the US military, an institution at perpetual war. For instance, there is a task-group dedicated to the "hook-and-loop fastener" (preferred by snipers over the noisier Velcro, which can reveal their position). If the devil is in the details, then war is all devils: "Only a military clothing designer's portfolio would include a mitten that accommodates a lone forefinger in firing position."

Roach's writing has been criticized as superficial, but that is not its greatest weakness here. Rather, there is something disturbing about approaching military science as if it were all so awesome. A public-affairs officer is "likeable", a medical researcher "gorgeous". Who knew that everyone in and around the military was so "droll and adorable"? Roach may never have seen a military representative stonewalling a legitimate inquiry, as happened when the military faced allegations of neglect at the Walter Reed Army Medical Center in Washington DC in the 2000s. Or perhaps she is hesitant to admit it, because that is not her style. More worryingly, Roach's happy world of military science does not include cases in which the military treated people as human guinea pigs, such as in radiation experiments at the height of the cold war.



Grunt: The Curious Science of Humans at War
MARY ROACH
W. W. Norton: 2016.

Roach does give a glimpse of the military's underbelly. Her chapter on the implications of diarrhoea as an impediment to combat readiness takes her to the secretive Camp Lemonnier in Djibouti. This passage says much about the US military, which allowed a writer interested in loose stools onto this drone-operations hub, but has been reluctant to let in national-security reporters. She corners one of the base's mysterious "special operators"; he reveals little about operations, but speaks freely on his bowel movements.

There are some significant gaps. Roach does not, she concedes, cover post-traumatic stress disorder (PTSD), "not because PTSD doesn't deserve coverage, but because it has so much, and so much of it is so very good". That is a shame: Roach's unique voice might have done great things for the mouse models that military researchers use to study psychological trauma (imagine a very timid mouse being menaced by a large one bred for aggression). It's also troubling because PTSD, along with traumatic brain injury, is an important part of current military science. Among other subjects, the military is looking at the links between traumatic brain injuries and dementia (see *Nature* **477,** 390–393; 2011).

Also missing are the central questions that make military science so fascinating. For example, how can the exigencies of national security advance knowledge in areas such as trauma medicine, yet create decades of controversy in others, such as nonlethal weapons? Descriptions of wounds inflicted by roadside bombs in Iraq and Afghanistan are *Grunt*'s strongest passages, but the later chapters on the science of humans under water and the perils and benefits of flies on the battlefield jump around. It's hard to escape vertigo as we skip from penis transplants to shark repellant. Roach misses an opportunity to examine how military science has morphed along with war.

The most telling part of *Grunt* comes early in a chapter on heat, when Roach notes that "genetic differences in thermoregulation" are important "given our seemingly permanent posture of fighting extremism in the Middle East". The medical science of war has never been static, but a constant reflection of where and how the military fights. Here, Roach has inadvertently gone to the heart of the perspective that is missing from *Grunt*. In the era of traumatic brain injury, lost limbs and PTSD, the focus of scientists studying humans at war has evolved from getting soldiers to survive battle to getting them to survive peace. ■

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