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Related Categories: Intelligence and Counterintelligence; Military Innovation; Science and Technology; Israel; Russia

ISRAELI BOMBS GET SMARTER

Israeli "SPICE" bombs - short for Smart, Precise Impact, Cost-Effective - traditionally rely on electro-optical guidance and GPS to arrive on target. However, with the incorporation of artificial intelligence, these weapons are now able to function effectively even in GPS-degraded environments. Each bomb made by defense contractor Rafael is outfitted with scene-matching technology and a deep-learning algorithm that allow it to distinguish a specific target and strike autonomously or, alternatively, abort its mission if the probability of the target selection does not meet a predefined threshold. Additionally, if communication remains persistent via a two-way data link, the bomb can be called off just a few seconds prior to impact. The Spice 250 bombs can serve as ordinance for F-16s and similar planes, and the newest versions have undergone testing and are now nearing deployment. (*Defense News*, June 17, 2019)

THE MARINES GET A NEW LASER...

The Pentagon continues to try and solve the persistent problem of adversary drones. The U.S. Marine Corps has begun testing the Compact Laser Weapon System (or CLaWS), a vehicle-mounted kilowatt laser designed to eliminate drone threats. The CLaWS laser is capable of disabling or destroying small unmanned aerial vehicles from hundreds of meters away by targeting and igniting the fuel supply or searing off critical components in under 15 seconds. The fiber optic laser was specifically chosen for its resiliency during transport and its robust beam quality, and is ready for deployment. (*Popular Mechanics*, June 21, 2019)

...WHILE THE AIR FORCE TAKES AIM AT UAVS

The Air Force Research Laboratory at Kirtland Air Force Base, meanwhile, has opted for a microwave weapon to serve as a defense against drone attack. The Tactical High Power Microwave Operational Responder, known as THOR, directs a cone-shaped beam of electromagnetic energy in the direction of a singular drone or drone swarm in order to disable it or them. According to THOR program manager Amber Anderson, the system - which provides 360 degree coverage and is operated from a laptop - is "built to negate swarms of drones... operates like a flashlight... [and] spreads out when the operator hits the button, and anything within that cone will be taken down." The system is housed in a flatbed truck shipping container for expedited deployment and can be assembled or disassembled in three hours. The entire prototype was developed in a year-and-a-half for just $15 million.(*Task & Purpose*, June 21, 2019)

NEXT UP: RUSSIAN GENETICALLY ENHANCED BABIES?

Russian molecular biologist Denis Rebrikov has reignited the international debate over human enhancement through genetic modification of human embryos with recent claims that he is able to perform the procedures safely. Rebrikov, of the Kulakov National Medical Research Center for Obstetric, Gynecology and Perinatology in Moscow, says he hopes to create babies that would be protected from HIV, following in the footsteps of Chinese scientist He Jiankui, who created the world's first gene-edited babies using the CRISPR gene-editing technique. The announcement is deeply controversial; some have argued that genetic editing of embryos is unethical, irresponsible, and could possibly create mutations that lead to other diseases. And, according to Sergey Kutsev, the chief geneticist and ethicist of the Russian Ministry of Health, it is unlikely that Rebrikov's research will gain approval. But the scientist is insistent; "I think it's the next step," Rebrikov has said. "In the future, people would like to make those babies more smart, for example. For my child, I'd like smarter, maybe stronger and faster." (*NPR*, June 21, 2019)

LASER BIOMETRIC IDENTIFIER HELPS TARGET TERRORISTS

When looking for help in targeting terrorists, U.S. Special Forces turned to the Pentagon to develop long-range biometric identification methods. Conventional methods, such as facial recognition, have limitations, requiring a frontal image that can be obscured by beard, glasses, and other coverings. But the new system works by using a laser to identify the unique cardiac signature of an individual from a range of 200 meters. The prototype version, dubbed "Jetson," is limited in usefulness because it requires a 30 second dwell time and cannot penetrate very thick clothing. However, it is capable of achieving greater than 95% accuracy in good conditions. While there is currently no database of terrorist cardiac signatures, biometric data is already collected regularly in Iraq and Afghanistan, and this method could be added and utilized in the future to assist in counterterrorism planning. (*MIT Technology Review*, June 27, 2019)