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The Gazette

SEPT. 02 1995

UN conference to debate ban

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THE GAZETTE

It sounds like something out of science fiction: a weapon made of concentrated light. A weapon whose purpose is to blind. But the machinery described in science fiction has a habit of becoming real. And in the 1990s, blinding laser weapons are on the verge of turning from fantasy into military fact.

"The technology is around now," says Myron L. Wolbarsht, a professor of ophthalmology at Duke University in North Carolina. "Laser weapons could be given to individual infantrymen as an attachment to a rifle. They won't be very heavy and, if you mass-produce them, they won't be very expensive, either."

The U.S. is known to have at least 10 laser-weapon systems under development. One of them, the LCMS, can be mounted on an M-16 rifle; it's powerful enough to destroy vision from a range of 1,000 metres. The U.S. has already spent more than \$100 million on the LCMS alone.

France, Britain, Germany, Israel, Russia and other former Soviet republics have also been experimenting with laser weapons. As for China, it recently began marketing a "portable laser disturber" at Asian arms bazaars.

The Chinese system weighs 33 kilograms; despite its name, therefore, it's not as portable as a couple of the American prototypes. But the desired effect is similar: "by means of high-powered laser pulses, to injure or dizzy the eyes of an enemy combatant ... so as to cause him to lose combat ability, or to result in suppression of his observation and sighting operation."

If laser weapons do nothing more than that, there wouldn't be such anxiety about their development. But the problem is, they don't just "injure or dizzy the eyes." They can also cause permanent blindness.

"The scientists we have spoken with," says Louise Doswald-Beck of the International Committee of the Red Cross (ICRC) in Geneva, "are absolutely adamant: it is totally impossible to have a laser weapon that can dazzle the eyes without also having the capacity to blind."

"To have any dazzle effect, you need a certain energy level. The laser goes through the lens to the retina. And so you end up with damage to the eye."

In the publicity material for its "portable laser disturber," China claims that the weapon will succeed in causing temporary blindness at a range of 10 km. A range of 2 to 3 km is given for "effective distance of direct human eye injury."

But at a closer range than that, such a laser would inevitably destroy vision. And whereas you can replace a soldier's arm or leg with a prosthetic device, nothing can replace sight.

"It is the only weapon I'm aware of," says David Warren, executive vice-chancellor of the University of California, Riverside, "that is directed to a particular part of the body. It's the eye's ability to process light that puts it at jeopardy. Laser weapons don't do anything to any other organ."

A psychologist by training, Warren has served as a consultant to the ICRC. Alarmed by the medical implications of rapidly developing laser technology, the ICRC has been lobbying for a ban on laser weapons since 1989.

Its efforts might finally be about to bear fruit. From Sept. 25 to Oct. 13, a UN weapons conference in Vienna will debate a Swedish proposal to prohibit the use of laser beams as a method of warfare. If the resolution is passed, blinding laser weapons would then be banned under the Geneva Conventions.

At least 25 nations support the proposal. According to Ariel Delavay of the Department of Foreign Affairs in Ottawa, Canada is among them.

Of the countries that have been experimenting with laser weapons, France, Germany, Britain and Russia seem willing to support the Swedish initiative. But China and Israel have said nothing. And until recent-

ly, the U.S. was firmly against the proposal.

In May, Human Rights Watch released a detailed report on U.S. laser weapons. Even within the U.S. military, though, there is believed to be unease about their development. And a spate of adverse publicity following the spring report might have embarrassed Washington into rethinking its policy.

Laser weapons have their defenders, however - not just on military grounds, but also on philosophical ones.

"The issue," says Kosta Tsipis, a physicist who heads the Science and Technology in International Security program at the Massachusetts Institute of Technology, "is whether these weapons are particularly vicious and inhumane."

"I don't think they are. All weapons kill and maim. Let's not panic about lasers; I suspect they're not going to be as effective as the Red Cross fears or as the military hopes."

Stephen Goose, program director of Human Rights Watch Arms Project in Washington, emphasizes that "lasers can do good on a battlefield. They can enhance the accuracy of weapons; they can decrease collateral damage to civilians. But we want to draw a distinction between different kinds of lasers: the acceptable ones that are an adjunct to other weapons, and the unacceptable ones that serve as weapons in their own right."

The Swedish proposal to ban laser weapons specifies that "blinding as an incidental or collateral effect of the legitimate employment of laser beams on the battlefield is not covered by this prohibition." The debate centres, in short, on what "legitimate employment" might mean.

Advanced laser weapons are effective not just against enemy soldiers, but also against machines they have the potential to disable helicopters, surface-to-air missiles and armored vehicles. U.S. forces used such technology against Iraq in the 1991 Gulf War.

But American planners also envisage the deployment of tactical laser weapons in "special missions," such as counterterrorism and counterinsurgency. Human Rights Watch points out that such deployment "may be inherently antipersonnel in nature, with blinding the exact intended effect."

Outside the military, of course, lasers are now a com-

mon tool for improving vision. For at least 15 years, doctors have used them to cure eye diseases.

"They work by burning, by micro-explosions or by vaporization," says Montreal optometrist Guy Julien. "Say you have a leaky vessel in the retina, which we often see in diabetes patients. We burn it away. There's always scar tissue that forms - but it doesn't matter because the laser is so precise."

The impact of a laser weapon on the eye depends on many things: distance, laser color, laser intensity, weather conditions, and eye protection (if any). The damage it inflicts is without cure, Tsipis claims that effective protection against lasers is theoretically possible, but other experts disagree.

"I think it will be possible to protect soldiers in tanks or fortified positions," says Duke University's Wolbarsht. "But they're not the important problem. I do not think it's possible to protect soldiers on foot."

And if the U.S. military, with all its resources and money, cannot protect the eyes of its infantrymen, what of the rest of the world? If laser weapons spread, they will sooner or later be used by guerrillas and in civil wars. Imagine an Afghanistan or a Somalia trying to cope with hundreds of thousands of blinded civilians.

As it happens, history does offer one example of blinding as a military technique. In the year 1014, the Byzantine emperor Basil II imposed an overwhelming defeat on his Bulgarian opponents. After his army captured 15,000 prisoners, he decreed that 99 per cent of them should have their eyes put out. The other one per cent were blinded in one eye only. These men were told to lead the others back home.

Basil's ploy was successful. His barbaric action led to the disintegration of Bulgaria. Within a few years, it was incorporated into the Byzantine Empire.

With that kind of precedent, some human-rights activists fear that even a UN ban on laser weapons might not prevent their deployment.

"People who are going to use them," Wolbarsht says, "are unlikely to find an international ban of any consequence."

The counter-argument centres on the sheer power of shame.

"Blinding as a method of warfare has to be prohibited," says Ann Peters of Human Rights Watch in London. "That principle is what we stand for."

Blinding light: laser weapons moving from sci-fi to battlefield