

GURPS

Fourth Edition

ULTRA-TECH™



BY DAVID L. PULVER, WITH KENNETH PETERS

STEVE JACKSON GAMES

WEAPONS, VEHICLES, AND GADGETS

GURPS Ultra-Tech is a sourcebook for science-fiction technology, from the near future to the farthest reaches of the imagination. It's a valuable companion to *GURPS Space*, *GURPS Bio-Tech*, and *GURPS Infinite Worlds*, and for any character or campaign that needs advanced technological equipment.

GURPS Ultra-Tech is full of personal equipment for heroes and superheroes from TL9 to TL12, including:

- Weapons – from caseless assault carbines and monomolecular swords to antimatter warheads and disassembler nano.
- Protection – How do you stop a nanomorph assassin with a field-jacketed X-ray laser rifle? Try a dreadnought battlesuit and a personal force screen . . .
- Medicine – Superscience can heal, rebuild, and improve on nature. Death itself can become a temporary inconvenience.
- Transport – Air cars, hovertanks, tilt rotors, grav belts, supercavitating minisubs, matter-transport booths – lots of ways to get where the action is, for the adventurer on the go!

And still more gadgets! Living biosuits, computer implants, holographic projectors, psionic amplifiers, neutrino communicators, nanofactories, chameleon suits, repair paste, Dyson spheres – there's something for every adventure at every tech level.

GURPS Ultra-Tech requires the *GURPS Basic Set, Fourth Edition*.
The ideas in this book can be used with any science-fiction game.

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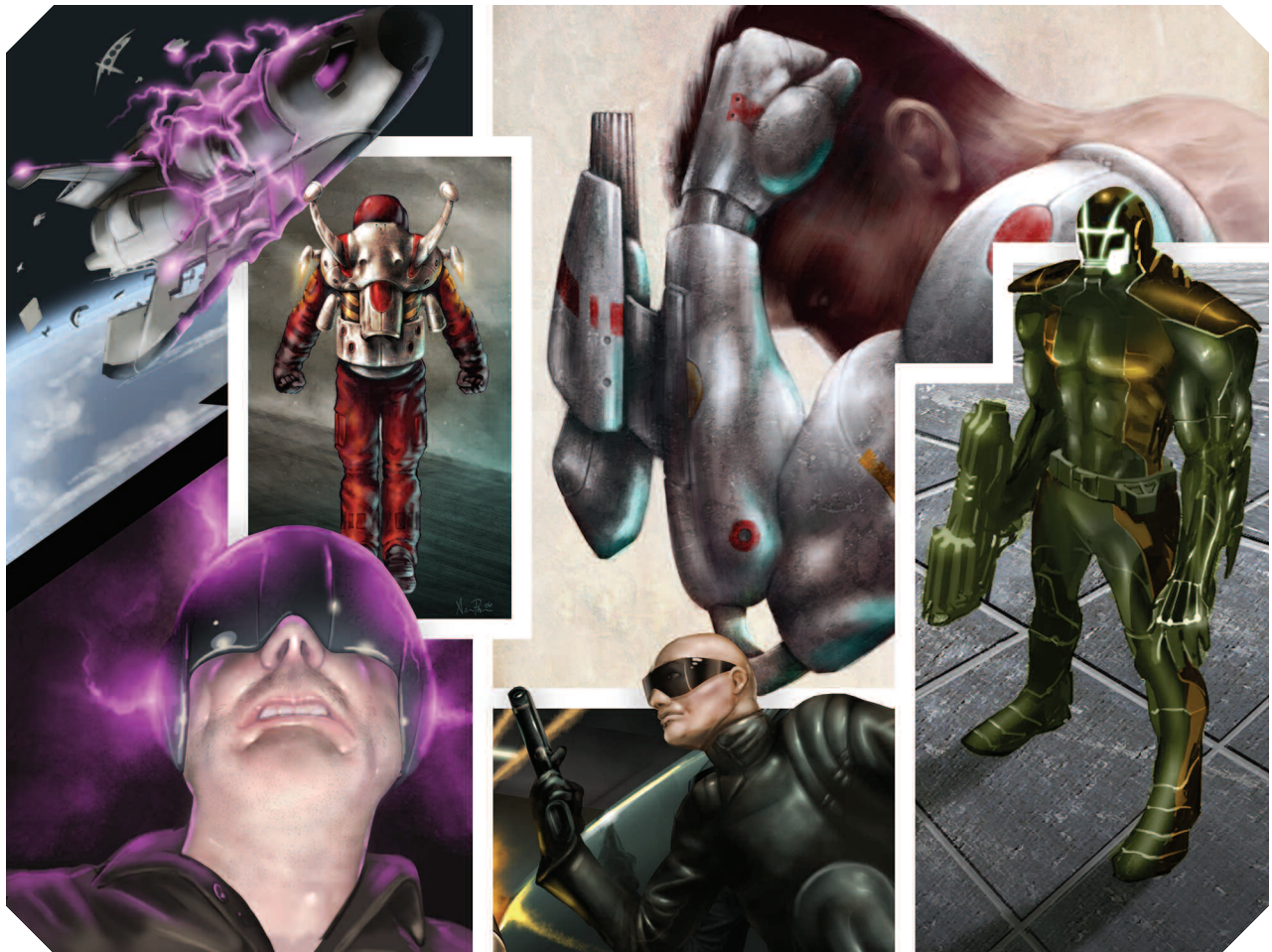
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GURPS[®]

Fourth Edition

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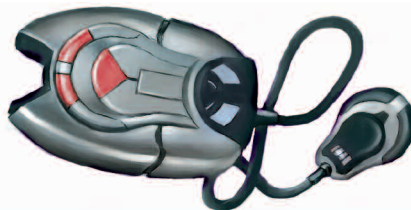
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INTRODUCTION

GURPS Ultra-Tech is a sourcebook of science-fiction gadgets and weapons. It's a resource for space, alternate future, techno-thriller, cyberpunk, or supers games – any setting that requires technology from tomorrow and beyond.

The equipment described within spans the “future” tech levels from TL9 (a few decades from now) to TL12 (the age of miracles). The emphasis is on personal gear of all sorts, from hyperspectral goggles and neutrino communicators to gamma-ray laser rifles and dreadnought battlesuits. **Ultra-Tech** also provides plenty of details on future medicine, but since **GURPS Bio-Tech** covered genetics, biomods, and drugs, this book emphasizes hard tech – cybernetics, ultra-tech medical equipment, neural interfaces, and mind uploading. As technology advances, the line between man and machine may become increasingly blurred. **Ultra-Tech** provides rules for establishing the capabilities and limitations of artificial intelligence, as well as templates for robotic or total cyborg bodies, from handy technical ‘bots to shapeshifting nanomorphs.

Ultra-Tech is a catalog for players, and a resource for the GM. Ultra-technology can propel adventures into action, add color and atmosphere to a science-fiction setting, serve as the object of a quest, or power a villain's sinister design. There's no need to make every gadget in this book available at once – that can be overwhelming! It's up to the Game Master to decide exactly what gear to use . . . but to help out, we've provided a chapter of suggestions on integrating equipment into the game and establishing alternative technology paths so that the technology fits the campaign.

PUBLICATION HISTORY

This is the third edition of **GURPS Ultra-Tech**; it has been revised to the **GURPS Fourth Edition** rules. The oldest material included here dates back to the three chapters of equipment in the first edition of **GURPS Space** (by Steve Jackson and William A. Barton). This material was incorporated into **GURPS Ultra-Tech** (by David Pulver). **GURPS Ultra-Tech 2** added more gadgets, including some adapted from **GURPS Cyberpunk** (by Loyd Blankenship). Material in the present edition was also inspired by technology in **GURPS Psionics**, **GURPS Robots**, and **Transhuman Space**.

ABOUT THE AUTHORS

David L. Pulver lives in Victoria, British Columbia. He has been a science-fiction fan and avid gamer for most of his life. He is a co-author of the **GURPS Basic Set, Fourth Edition**, and has written or co-authored over 60 other gaming books, including **GURPS Bio-Tech**, **GURPS Robots**,

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About GURPS

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Store Finder (storefinder.sjgames.com): Discover nearby places to buy **GURPS** items and other Steve Jackson Games products. Local shops are great places to play our games and meet fellow gamers!

Rules and statistics in this book are specifically for the **GURPS Basic Set, Fourth Edition**. Page references that begin with B refer to that book, not this one.

CHAPTER ONE

ULTRA-TECHNOLOGY

The trouble with commanding the Imperial Secret Service's clandestine Galactic Operations Directorate, Colonel Erasmus reflected, was that whenever you had an unexpected caller, it was always bad news.

Today's visitor was Merlin, the AI who ran the psycho-history division. It didn't waste any time.

"I have some very bad news," said the Artificial Intelligence.

Colonel Erasmus forced a smile. "Of course you do." The AI's avatar, who seemed to get younger each time they met, shimmered before his desk. "I'm a little busy."

"You'll be busier. We have an evolving singularity in the local bubble." Merlin waved a hand, and a holographic projection of the Terran Sector materialized, extending across time and space. "Observe. The Bubble client states – here. And here . . ."

"An expansionist threat from the Thearchy of Buckminster?" Erasmus shook his head in disbelief. "You've fried a circuit, Merlin. They're a safe-tech civilization, steadily regressing to retro-tech. If they invade, it'll be the Ludenburg Star Empire all over again." He smiled wistfully. "Infantry with auto-rifles and steel helmets, pouring out of hyperdrive ships . . . I even saw some horse cavalry. It was almost fun."

"This won't be. Your data is obsolete, Erasmus. The new synod's given its backing to the Accelerationist faction in the clergy – scientific progress now glorifies the Creator. I've plotted their cultural dynamism. Take a look at this."

Holographic equations appeared, hanging in the air. It had been a while since Erasmus had taken techno-sociology, but he could still decipher them. "A radical superscience culture in 40 years?"

"So I predict. They've got their own AIs now. Last month, they began experimenting with nanotechnology. Combine that with their existing FTL technology . . ."

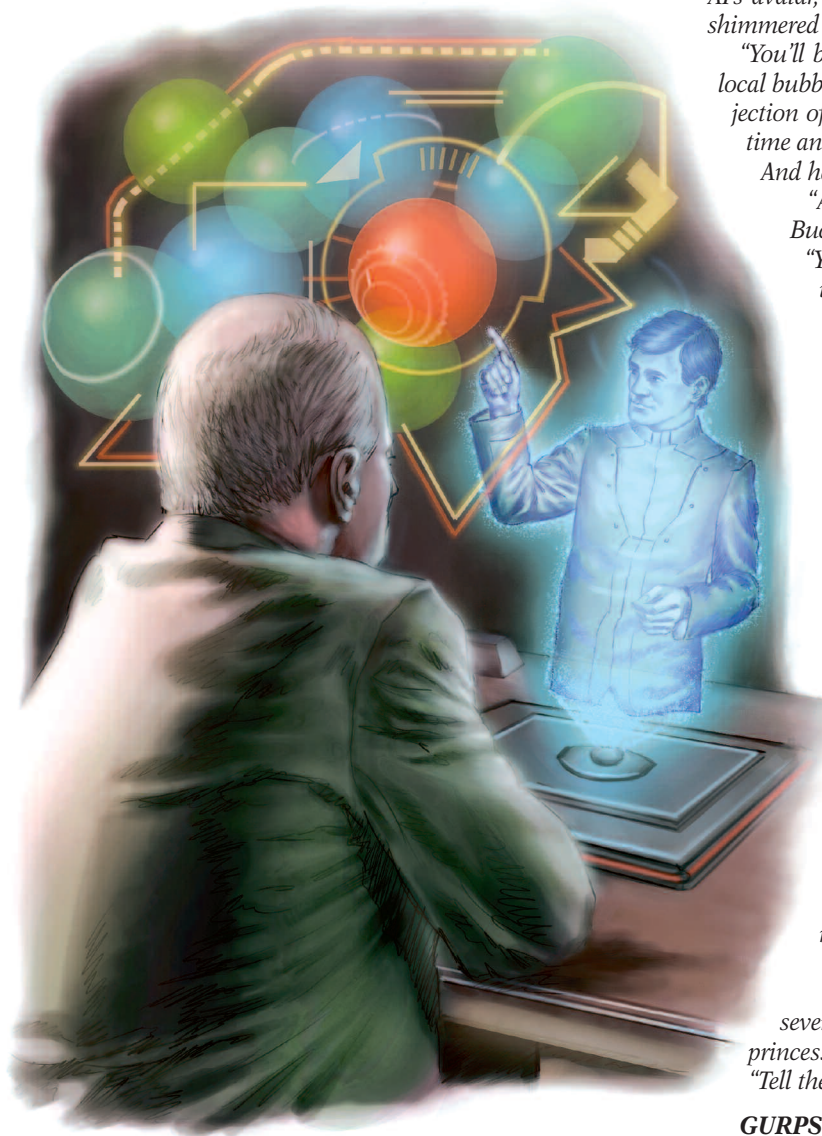
"Apocalypse now. I get it. Unfortunately, all my operatives are a little busy."

"Anything important?"

"Preventing a nuclear war. Tracking down several grams of stolen antimatter. Finding a missing princess. The daily grind. I expect results soon."

"Tell them to hurry."

GURPS Ultra-Tech is a catalog of technologies and equipment from TL9 (extrapolations of existing developments) to TL12 (devices that verge on the miraculous). This chapter provides general background and rules for ultra-technology, along with guidelines for adjusting the availability of equipment in a campaign.



Ladar (TL9)

This high-resolution sensor emits laser energy, then analyzes the returned signal to build up a picture of the user's surroundings. A ladar can discern a target's size and shape, and pick out other physical details, such as the shape of a face. It can't determine flat detail such as writing. Anyone who can sense the signal you emit can detect the ladar, out to twice its own range.

Ladars are of limited use in detecting unknown targets due to the narrowness of the beam – make an Electronics Operation (Sensors) roll at -4 to spot a previously unknown target. However, they are excellent for identifying targets that have already been spotted by other sensors (roll at +4, even to detect fine detail such as a face).

Ladar can be used to “lock onto” a target that has already been detected. This determines its precise range and speed, and gives +3 to hit that target with an aimed ranged attack. This bonus is not cumulative with that from other active sensors that have locked onto the target.

Ordinary radar detectors do not detect ladar; specialized laser sensors (pp. 62, 188) are required. Ladar cannot penetrate solid objects. It has 10-50% range in falling rain or snow, and can be tuned to use blue-green frequencies. It functions at 1% range underwater, with a maximum range of 200 yards.

Large Ladar (TL9): A powerful ladar, usually vehicle-mounted. It has a 100-mile range (200 mi. at TL10, 500 mi. at TL11, 1,000 mi. at TL12). \$200,000, 100 lbs., D/8 hr. LC4.

Medium Ladar (TL9): A portable ladar set. It can be worn as a pack, or mounted on a tripod, vehicle, or robot. It has a 30-mile range (60 mi. at TL10, 150 mi. at TL11, 300 mi. at TL12). \$20,000, 10 lbs., C/8 hr. LC4.

Small Ladar (TL9): A mini ladar with a 10-mile range (20 mi. at TL10, 50 mi. at TL11, 100 mi. at TL12). It comes in a hand-held version, or attaches to a shoulder mount (p. 151), and plugs into a HUD (p. 24). \$2,000, 1 lb., B/8 hr. LC4.

Small, Medium, or Large Tactical Ladar (TL9): A military-style target-acquisition ladar. It can track up to 10 targets at once out to the listed range, and gives +3 to hit any of them with an aimed attack. Cost is 5 times normal. LC2.

Ladar Smartskin (TL9)

This is a phased array ladar integrated into the vehicle's surface area. It functions as a tactical ladar with a range specified in the vehicle's description, and as a laser communicator (p. 44) with a range equal to its detection range.

Tactical Ladar Arrays: These have an “optical countermeasures” mode – see *Blinding Lasers* (pp. 113-114). Weight and cost are included in the vehicle statistics; the array can't be added later.

Laser Chemscanner (TL9)

Chemicals absorb laser energy at known wavelengths. This system uses a laser to detect airborne chemical compounds, as well as surface contaminants such as a slick of chemicals coating an object or the ground. It is most often used to identify chemical weapons or pollution levels in the atmosphere. It can also analyze the light scattered from swarms of microbots or nanomachines that are too small to otherwise resolve, identifying them by matching the patterns with known models.

A dedicated laser chemscanner is half as expensive as a ladar, but has twice the range. A chemscanner mode for a ladar adds 20% to its cost.

Multi-Mode Radar (TL9)

This provides a search mode for locating potential targets, and an imaging mode for identifying them as they get closer. The GM can assume that most moving targets that fit the radar's criteria are detected automatically. If a target is using radar countermeasures or being stealthy, the GM can require an

Electronic Operation (Sensors) skill roll, or a quick contest of skill between the radar operator and the target's Stealth.

Search Radar: This searches a fan-shaped, 120-degree area in front of the user, hunting for rat-sized or larger moving targets and displaying them as blips on a screen. Darkness, smoke and bad weather do not impair it, but it cannot see over the horizon or through solid obstacles. It provides a digital readout of target speed, altitude, position, and approximate size. This mode is good for tracking vehicle-sized or larger targets, or any moving targets. It can't distinguish a moving human from a moving animal or robot of similar size. Background items make spotting stationary human-sized or smaller objects on the ground virtually impossible in anything but open terrain. Non-moving targets are impossible to distinguish from ground clutter unless the user has seen that particular “blip” moving.



Castles in the Air (TL10[^])

Contragravity generators let unmodified humans live nearly anywhere in Earthlike comfort. Floating buildings, or even cities, are possible, usually with multiply-redundant power plants in case of failure. With TL11+ biotechnology, the cities might even be alive! A less extravagant dwelling is the contragrav houseboat, which can be tethered just above the trees – or above the clouds.

Contragravity lets mineral-rich high-G worlds be settled without having to worry about exoskeletons or creating variant humans. Artificial-gravity generators can supply normal gravity to asteroids and small moons, and sprawling orbital cities can be constructed without worrying about providing spin.



Phantom Places (TL10[^])

Holotech projectors can create illusionary partitions and art images; redecoration is as easy as changing programs. Any room in the home or apartment might seem to be floating in starry space, or hidden in a tropical jungle. Scented air conditioning and realistic audio effects can complete the illusion.

Star Habitats (TL10-12)

An entire star can be partially or completely enclosed. Societies might build them in systems lacking habitable planets, or to collect power for major industrial projects like large-scale antimatter construction. (A sun-like star has an output of around 4×10^{26} watts). These projects generally require self-replicating machines (p. 92) to build.

All of these structures could also enclose larger or smaller bodies – a ring or sphere around a small red dwarf star would be easier to build. Stellar structures are generally so large that the curvature of the horizon would be invisible; standing on the inside of a Dyson sphere would be like standing on a flat surface with a large bowl overhead. Common examples are:

Dyson Bubble (TL10)

A loose array of light sails and solar energy collectors which beam energy to other habitats. It would require the mass of a large asteroid to be dismantled and used to manufacture solar collectors. This type of Dyson sphere could be built as part of a project to power lightsail-equipped starships.

Classic Dyson Sphere (TL11)

A shell of energy collection platforms and habitats orbiting independently around a star. The star would be dimmed, but possibly still visible through gaps in the shell, although the whole sphere would shine very brightly on infrared. It requires dismantling a number of planets.

Rigid Dyson Sphere (TL12[^])

A solid shell around a star, with the inner side sculpted into continents, oceans, etc. with a surface area of over 600 million Earths. It would be a microgravity environment unless artificial gravity generators were used. Building it requires dismantling a solar system and using exotic materials. Multiple, layered spheres are also possible.

Ringworld (TL12[^])

This is a solid ring around a star, with the inner side sculpted into continents, oceans, etc., rotating for gravity. A typical ringworld has an area of 20,000 Earths. The rotational stresses involved require superscience building materials. It is also unstable: a space drive or tractor-beam anchoring system is needed to keep the ringworld from drifting into its sun. Variations such as giant disks or tangled tubes are also possible.

The House that Lives (TL11)

Biotech developments may make it economical (though not always fashionable!) to grow living houses with warm fleshy walls, cell-like membranes for doors, and extrudable furniture. A living house thrives on human waste products and other garbage. It may also have security features that let it *digest* intruders; a classic cinematic plot has such a house being sabotaged so that it devours the occupants.

At TL11, a typical three-bedroom home drops to \$50,000. LC3.

Under the Screen (TL11[^])

By generating a low-power barrier screen (p. 191) over a city, planners can dispense with solid domes or underground dwellings – and won't have to worry about bad weather, either. Or a homesteader can buy a smaller field generator and power plant and set up on the asteroid of his choice. Of course, if the field goes down, he's in trouble – unless he has a backup generator on.

With a powerful force screen and an antigrav generator, a research station could be built deep within a gas giant's crushing atmosphere, or hovering within a star. The engineering problems would be immense, but think of the view!

The House in the Fog (TL12)

At TL12, houses are often filled with utility fog (pp. 70-71) that replaces some or all solid interiors.

Force Field Houses (TL12[^])

Advanced houses may be made almost entirely of structural force shields (p. 192). They might be filled with utility fog, or use internal force field projections, tractor beams, and gravitic fields for furnishings, overlaid with holoprojections as necessary.

Future Crime

Technology can lead to new vices, such as pleasure robots, sensie addiction, or direct neural stimulation, any or all which may be legally regulated. It can also lead to variations on existing crimes, such as hijacking robots, illegally copying a mind, or transforming a person into a cyborg against his will. Some societies may declare certain technologies criminally dangerous – for example, volitional AI, nanofactories, uploading minds, or time travel – and prosecute anyone who employs them.

Advancing technology can also impact the way existing crimes are perceived. Future societies could have very different attitudes to the ownership of data or the protection of personal privacy, depending on the ways that different technologies are used. If ultra-tech medicine (see Chapter 7) can make injury or death into an inconvenience, assault and even murder may be taken less seriously, as long as the victim is easy to restore. Similarly, the existence of nanofacs (pp. 91-93) or replicators (pp. 93-94) may turn the theft of physical goods into a trivial misdemeanor.

SECURITY AND SURVEILLANCE

Even as technology gives thieves and spies the ability to bypass old security systems, it creates new ones to replace them. In addition, as the average criminal becomes more sophisticated, so does the cop who has to track him down. This chapter covers security systems that protect against both physical and electronic intrusion, as well as advanced law-enforcement tools that allow police and security forces to track, identify and detain criminals more effectively – or simply suppress a riot.

It might be possible to build an impregnable security system – but the more layers of security that are added, the harder it is to get anything else done. If an executive has to go through six different scans every time she enters or leaves her office for a cup of coffee, or a computer requires 20 minutes of identity verification before it will let anyone use it, personal convenience and efficiency will be sacrificed.

Most systems compromise between security and ease of use. A system that is too complex or too sensitive can easily be degraded, overloading its monitors with input. The simplest method of fooling an electronic security system is to convince the human component of the security system that the electronic element is malfunctioning. After receiving several false alarms, a human operator or self-programming computer may ignore input from a sensor or just turn it off, leaving a hole in the defenses.

BARRIERS, MINES, AND TRAPS

Many dangerous traps have low LC. Even low-CR societies frequently ban lethal traps, on the principle that property is not as important as life.

In addition to the systems described here, construction foam (p. 83), force screens (pp. 190-192), stasis webs (pp. 193-194), and wards (p. 193) make useful barriers.

Armored Doors (TL9-12)

Still the most basic way to keep somebody out. A heavy door made of an inch of composite armor will be HP 50

with DR 100 (TL9), 150 (TL10), 200 (TL11), or 300 (TL12). It is \$1,000, 200 lbs. per 10 square feet. Typical materials include ceramic composites at TL9, metal-matrix composites at TL10, diamond-carbon composites at TL11, and hyperdense alloys at TL12.

The lock is usually in the adjacent wall rather than the door.

Laser Fences (TL9-12)

These project a continuous beam between two emitters, which may be built into fence posts, doorways, or corridors. Each emitter weighs 10 pounds and may be no more than 10 yards apart.

Open: The standard “cinematic” beam fence, this produces a fixed or moving pattern that can be avoided with an Acrobatics-3 or Escape-3 roll.

Tight: A tight grid of beams, or a thick, continuous energy field. It can't be avoided; anyone passing through takes damage. (It does, however, require more power to generate.) A computer-controlled system could start with an open pattern, then switch to a tight pattern if an intruder avoids the beams.

Laser Fence (TL9): This inflicts up to 6d(2) tight-beam burn damage. \$5,000 per post for an open fence, double cost for a tight fence. LC3.

Electrolaser Fence (TL9): An electrical fence using energy beams instead of wires. It delivers a HT-6 (2) affliction attack plus linked 1d-3 burn damage; use the rules for military electrolasers (p. 119). The fence can be set to “stun” or “kill.” \$5,000 per post for an open fence, double cost for a tight fence. LC3.

Rainbow Laser Fence (TL10): This inflicts up to 6d(3) tight-beam burn damage. \$3,000 per post for an open fence, double cost for a tight fence. LC2.

X-ray Laser Fence (TL11): This inflicts up to 6d(5) tight-beam burn damage with the radiation and surge damage modifiers. \$4,000 per post for an open fence, double cost for a tight fence. LC2.

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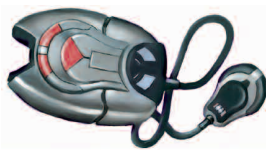
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