

PYRAMID

Issue 3/51 January '13

TECH AND TOYS III

ULTRA-TECH TOO

by Kenneth Peters

LIVE BETTER
WITH CYBERNETICS

by Demi Benson

NEAR-FUTURE
COMBAT UNIFORMS

by Dan Howard

MODULAR MECHA
by David L. Pulver

THE PSI-SWORD
by Jason "PK" Levine

STEVE JACKSON GAMES

Stock #37-2651

CONTENTS

FROM THE EDITOR 3

ULTRA-TECH TOO 4
by Kenneth Peters

LIVE BETTER WITH CYBERNETICS 12
by Demi Benson

EIDETIC MEMORY: MODULAR MECHA 23
by David L. Pulver

NEAR-FUTURE COMBAT UNIFORMS 28
by Dan Howard

RANDOM THOUGHT TABLE:
BETTER, FASTER, STRONGER 36
by Steven Marsh, Pyramid Editor

ODDS AND ENDS 38
featuring Murphy's Rules

APPENDIX Z: THE PSI-SWORD 39
by Jason "PK" Levine

ABOUT GURPS 40

We never stop investigating. We are never satisfied that we know enough to get by. Every question we answer leads on to another question. This has become the greatest survival trick of our species.

– Desmond Morris

Article Colors

Each article is color-coded to help you find your favorite sections.

Pale Blue: In This Issue

Brown: In Every Issue (letters, humor, editorial, etc.)

Dark Blue: GURPS Features

Purple: Systemless Features

COVER ART

John Zeleznik

INTERIOR ART

Greg Hyland

IN THIS ISSUE

In a boundless tomorrow of infinite possibilities, there's one rule that holds fast: You can always use more *stuff*. This month's installment of *Pyramid* returns to the mall of imagination with new marvels (mechanical or otherwise) designed to augment your fantastic futures.

Kenneth Peters, co-author of the *GURPS Fourth Edition* version of *GURPS Ultra-Tech*, brings you more future-perfect goodies in *Ultra-Tech Too*. Discover stats for additional weapons, defenses, and other gear, plus suggestions for updating select rules found in *Ultra-Tech*. This feature is tastier than a tube of nanopaste!

Expanding on the information and options in *Ultra-Tech*, your favorite dystopian anti-hero can *Live Better With Cybernetics*. Equip your shady black-market surgeons with these optional rules for creating custom cybernetic devices, including appropriate limitations and dozens of sample augmentations.

When the *GURPS Spaceships* guidelines for designing giant robots is too detailed, use your exoskeleton to grab *Modular Mecha*. The latest Eidetic Memory offering from *Ultra-Tech* co-author David L. Pulver streamlines the process to a quick five steps. Stats for three basic models and several customization features are on the showroom floor, waiting to be walked off.

GURPS Low-Tech contributor Dan Howard brings his expertise in armor systems to the future as he discusses how nanotube technology may revolutionize *Near-Future Combat Uniforms*. Marvel at the utility of nanotubes, and make your own suits (with *GURPS* stats) from an array of options, or pick one of the predesigned samples.

Cut the opposition down to size with your mind and *The Psi-Sword*. Presented by *GURPS Psionic Powers* author Jason "PK" Levine, this seemingly innocuous object allows psi users to focus their abilities for devastating effects. It includes the damage results for all of the powers in the *Basic Set* and *Psionic Powers*.

Get some ideas of how to tweak existing tech with this month's Random Thought Table, then consider some technological advances you might not have thought of in Odds and Ends. And if all else fails, this month's Murphy's Rules fully supports your efforts to blow up the universe and try again.

Whether you're adding corroded chrome to an imperfect near-tomorrow or outfitting your optimistic explorers in the latest and greatest, this month's *Pyramid* is geared to please!

Editor-in-Chief ■ STEVE JACKSON
e23 Manager ■ STEVEN MARSH
GURPS Line Editor ■ SEAN PUNCH
Assistant GURPS Line Editor ■
JASON "PK" LEVINE

Art Director ■ SAMUEL MITSCHKE
Assistant Art Director ■
BRIDGET WESTERMAN
Production Artist ■ NIKOLA VRTIS

Chief Operating Officer ■ PHILIP REED
Director of Sales ■ ROSS JEPSON
Page Design ■ PHIL REED and
JUSTIN DE WITT
Prepress Checker ■ MONICA STEPHENS

FROM THE EDITOR

THE TOYS ARE BACK IN TOWN . . .

One of my earliest comic-book memories was of the Supermobile, which was an airplane with fists that Superman flew when he was powerless. It was made of Supermanium. (Look it up online; it's even goofier than I make it sound.) As a child of single-digit age, my mind absolutely devoured that comic . . . and the reason behind it is at the core of why technology is so cool – especially for gamers.

The Supermobile took a hero I already knew and enjoyed (Superman) and gave him new abilities and context to enjoy him in (flying an airplane *with fists*). In the same way, technology allows the addition of new abilities or adventure possibilities to our heroes, without saddling them with an integral part of their being. Admittedly that gets fudged a bit with cybernetics (pp. 12-21), but the principle's the same: Letting the heroes stomp around in ready-made mecha (pp. 23-27) opens up new avenues to excitement . . . and when they tire of it, they can replace or upgrade it to discover new possibilities, without fundamentally altering the heroes inside the tin cans.

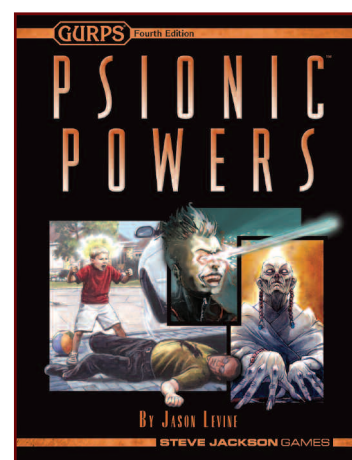
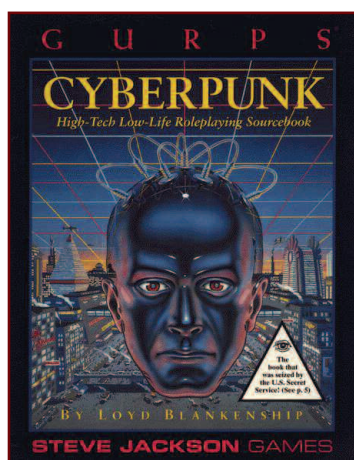
Technological marvels are like passports to adventure, heroic upgrades, and portable plot points – all rolled up into one. We hope this issue of *Pyramid* provides you with many hours of heroic helpers and scenario starters.

*What an outlandish contraption,
Kryptonian!*

– Amazo, in *Action Comics* #481

WRITE HERE, WRITE NOW

Of course, we don't know what effect the unleashing of our technological terrors has upon the world unless you tell us about it! Did our open house of inventive impossibilities rev your engines? Or did any of our ideas blow up on the launch pad? Let us know how were doing privately at pyramid@sjgames.com, or join the outspoken super-scientific community at forums.sjgames.com.



Pyramid, *GURPS*, Warehouse 23, and the all-seeing pyramid are registered trademarks of Steve Jackson Games Incorporated. e23 and the names of all products published by Steve Jackson Games Incorporated are registered trademarks or trademarks of Steve Jackson Games Incorporated, or used under license. *Pyramid* is copyright © 2013 by Steve Jackson Games Incorporated. All rights reserved. Version 1.1 (January 2013).

Submission of your photos, letters, humor, captions, and marginalia constitutes permission to Steve Jackson Games Incorporated to use them in all media. All such submissions become the property of Steve Jackson Games Incorporated and will not be returned.

The scanning, uploading, and distribution of this material via the Internet or via any other means without the permission of the publisher is illegal, and punishable by law. Please purchase only authorized electronic editions, and do not participate in or encourage the electronic piracy of copyrighted materials. Your support of the authors' rights is appreciated.

EXPLOSIVES TABLES

Standard Explosives Table

TL	Type	REF	Cost/lb.	Description	Notes
8	Demex (RDX)	1.4	\$40	Extrudable filler	
9	Plastex B	4	\$20	Polynitrocubane compound	
10	High-Energy Explosive	6	\$40	Metastable solid	
11	Plasma Explosive	10	\$100	Explosive power cells	[1]
12	Plasma Explosive	20	\$100	Explosive power cells	[1]

Notes

[1] Plasma explosive damage also has the surge damage modifier (p. B105).

Advanced Explosives Table

TL	Type	REF	Cost/lb.	Description	Notes
8	CL-20	2.3	\$40	Hexanitro hexaazaisowurtzitane	
9	VOMEX	15	\$20	Advanced thermobaric compound	[1]
10	Isomers	100	\$500	Triggered nuclear isomers	[2]
11	Super Isomer	500	\$700	Advanced nuclear isomers	[2]

Notes

[1] Produces an explosive cloud that is then detonated. Blast radius is increased (see *Explosion*, p. B104); damage is divided by $2 \times$ distance in yards from the blast instead of the usual $4 \times$ distance. Only works in atmosphere.

[2] Isomer explosive damage also has the radiation damage modifier (p. B105).

Advanced Explosives

Ultra-Tech makes rather conservative assumptions about the power of TL9+ explosives, both for demolition use and explosive filler, in order to keep warhead damage somewhat reasonable and provide a niche for nuclear and antimatter weapons. However, realistic energetic materials could be many times more powerful than the default compounds!

The explosives listed in the *Advanced Explosives Table* (above) are difficult to synthesize and have limited applications due to safety or proliferation concerns. The costs reflect late-TL improvements. Multiply cost by at least $\times 10$ for early experimental use.

Nanoscale Thermite (TL9)

Nano-energetic mixtures, broadly known as metastable intermolecular compounds (MIC), replace conventional thermite (*High-Tech*, p. 188) at TL9. However, it is more volatile than conventional thermite and can be very hazardous to handle: 3 points of burning or electrical damage will ignite it prematurely. It cannot be extinguished by any conventional means.

The burning reaction occurs very rapidly once initiated. Burning nanoscale thermite does $2d \times 10$ corrosion damage per second to whatever it is touching, along with linked $3d$ burning damage with the explosion modifier; burning splashes, sparks, and radiated heat are a significant hazard! It will burn for five seconds/pound. \$200 per pound. LC2.

MELEE WEAPONS

Future technology doesn't just lead to deadlier and more efficient ways of killing your enemies at a distance . . . it also gives

Explosive Swarms

A one-square-yard collection of swarmbots (*Ultra-Tech*, pp. 35-37) using a modified Pollinator design can carry up to a pound of explosives and a distributed detonation system. Divide the explosion damage by $(2 \times$ distance in yards from center of blast).

an edge in down-and-dirty brawls and scrums. Commandos and spies will still carry knives and the like for discrete violence, of course.

Low-Tech Hypertech

To clarify design intent, and bring the *Ultra-Tech* physical weapons (*Ultra-Tech*, pp. 163-164) into full compatibility with the later *High-Tech* and *Low-Tech* books, the following changes are suggested.

Superfine Blade: This is a weapon-quality grade (see *Melee Weapon Quality*, p. B274). Superfine blades are -3 to break when parrying (see *Parrying Heavy Weapons*, p. B376). Superfine weapons cost six times list price (this replaces other multipliers for superfine listed in *Ultra-Tech*).

Monowire Blade: This is a blade-composition option (see *Blade Composition*, p. B275). The cutting edge is completely replaced by the cutting wire; the bulk of the blade becomes a reinforced backing. All blade-quality options are available, but they *only* affect breakage chance, not weapon damage or armor divisor. Ignore the reference to p. B406 (that applies to monowire whips).

Monowire Whip: For other rules, see p. B406.

This also sustains the plasma containment field long enough to power down in the event of a catastrophic breach. A fire-suppression system puts out fires aboard the mecha on a 3d roll of 14 or less (roll each second).

The mecha is controlled by a single driver (often called a pilot). He uses Driving (Mecha) skill to maneuver it and Electronics Operation (Communications and Sensors) to operate its onboard systems. Most mecha pilots also have Artillery and/or Gunner skills for whatever weapons they're armed with.

The pilot's one-man cockpit is located in the torso. It has limited life support (see *Ultra-Tech*, p. 224) providing 50 hours of air, food, and water. The cockpit has no windows, relying on video cameras spaced about the vehicle to give an effective 360° arc of vision. Access is via a hatch in the torso. The mecha will often be parked in a kneeling position to allow entry; it also has a retractable ladder or winch. The pilot has a well-padded seat with a computerized crew station and a head-up display (see *Ultra-Tech*, p. 24; +1 to Driving (Mecha) skill). Provision is made for direct neural interface control if the pilot has an appropriate implant or a neural interface helmet (see *Ultra-Tech*, p. 48). Built into the cockpit is a personal computer (Complexity 7; Hardened; stores 100 petabytes data). Other instruments include a tactical ESM detector that detects radar and laser signals (*Ultra-Tech*, p. 62), plus GPS and inertial navigation system (+5 to Navigation skill; see *Ultra-Tech*, p. 74).

The standard sensor and targeting system is a pair of tactical sensor turrets (20× Hyperspectral Vision, +3 Acc when aiming; see *Ultra-Tech*, p. 66) mounted atop the mecha's own

turret and on its shoulder. A trio of laser rangefinders (10,000-yard range) are in the turret and each arm to paint targets, giving +3 to Acc for aimed shots when in use (though this warns a target with laser sensors). The mecha's computer runs targeting programs (+2 to all Artillery and Gunner skills) and a tac-net program (+2 to Tactics skill). Thus, usually the mecha pilot will get a +5 targeting system bonus.

The mecha's head-turret can rotate at 180° per second and is typically used as a sensor and communications mount, and sometimes a weapon mount. Built into the head is a large radio (1,000-mile range) with a medium laser communicator (500-mile range; see *Ultra-Tech*, pp. 43-44, for both), and searchlight (*Ultra-Tech*, p. 74). The head counts as an independent stabilized turret. The turret also has a pair of smoke dischargers (*High-Tech*, p. 229). These can fire up to four times to create a 50×25-yard smoke screen up to 50 yards away. Usually radiant prism smoke is used, which obscures radar, imaging laser, radar, infrared, and visible light.

Each of the two arm and legs have motors that give the mecha a transitory Striking Strength four times that of its ST/HP score. The arms end in a reasonably dextrous hand, but the mecha still counts as Ham-Fisted (p. B138). Standard mecha arms incorporate the same auto-stabilization systems as a stabilized turret, allowing weapons to be fired on the move. Each leg has large feet to reduce ground pressure; they are also capable of kicking or stomping opponents. A mecha can climb or jump the same way that a human can, but it is too heavy to swim unless equipped with the submersible design feature (p. 26).

Standard Mecha Statistics

DRIVING (MECHA)/TL10

TL	Type	ST/HP	Hnd/SR	HT	Move	LWt.	Load	SM	Occ.	DR*	Cost	Loc.
10	Light	145	+4/3	12	15/15	25	0.4	+3	1	900/600	\$3M	2A2Lt
10	Medium	170	+3/3	12	15/15	40	0.5	+4	1	1,050/750	\$5M	2A2Lt
10	Heavy	200	+2/3	12	15/15	65	0.6	+5	1	1,200/900	\$7M	2A2Lt

* The higher DR applies across a 120° front arc and top for the body and the turret. Lower DR applies to the body and turret from other angles and to arms and legs. All armor is laminate (with doubled DR vs. shaped charges and plasma bolts.)

DR values are divisible by 2, 3, or 5 to make armor divisor calculations simpler.

MECHA QUALITY

After deciding on the base features, select the quality of mecha. If PCs are buying their own mecha the quality will modify the mecha's cost. In a campaign where mecha are issued to the protagonists – for example, if they're military

pilots – the GM decides what quality of machine they will start with. He might reward victorious ace pilots with higher-quality designs.

The table below shows the various grades and modification to cost and the Total Design Points (DP) that must be used to buy design features (see pp. 25-26).

Mecha Quality Table

Description	Total DP	Cost	Example
Super Model	5	×100	A prototype super weapon
Elite Model	4	×20	A high-tech new prototype
Advanced Model	3	×4	A state-of-the-art design
Enhanced Model	2	×2	An expensive or upgraded model
General Model	1	×1	A good-quality, mass-produced design
Basic Model	0	×0.75	No-frills "grunt" mecha
Cheap Model	-1	×0.5	Mass-produced downgrade or "export" design
Piece of Junk	-2	×0.3	Inferior or obsolete design

DESIGNING A COMBAT UNIFORM

First decide which functions you want to have in the NBCU. You will need to look at the different “layers” that are available as well as any applications that you may want to install.

Power requirements need to be calculated. Some functions, such as the NanoComp and SensorWeave, are constantly draining power while others, such as NanoFilter and NanoMuscles, only use power when they are activated. The constant-drain layers should be totaled first to get an idea of the minimum amount of power that is required for the suit. This will help determine whether you need integrated power generation or storage, or whether an external power cell would suffice. Start by converting all power requirements to A cells per day. For example, a NanoComp needs a B cell per day, which is 10 A cells per day.

The discount for combining multiple gadgets together (see *Combination Gadgets, Ultra-Tech*, p. 16) has already been determined so all you need to do is add all the costs and weights together. Every 5 lbs of extra weight gives an additional -1 to Holdout. For example, 11 lbs. of gadgets gives -3 Holdout.

For variations other than the versions described below, you will need to start with a complete suit (torso, arms, legs) of NanoShield, which is 250% of the cost and weight listed in the descriptions of that layer (see *Basic Combat Uniform*, pp. 30-31). Some example NBCUs are described below.

Our suits give us better eyes, better ears, stronger backs (to carry heavier weapons and more ammo), better legs, more intelligence (in the military meaning . . .), more firepower, greater endurance, less vulnerability.

*– Robert Heinlein,
Starship Troopers*

Standard Issue NBCU

“Standard issue” consists of a simple Tactical NanoShield vest (torso only) with an integrated NanoComp to interface with the weapons and helmet systems. Simply add the NanoComp stats to the tactical NanoShield.

This combat vest has no power generation or storage capacity, so a power cell would need to be installed in an external battery pack on the soldier’s belt to keep the NanoComp functioning. A standard B cell costs \$3 and weighs 0.05 lbs and will need to be replaced or recharged once per day to keep the NanoComp functioning. A standard C cell costs \$10 and weighs 0.5 lbs, but will only need replacing or recharging once every 10 days. Assuming a C cell is used, total cost is \$1,210 and weight is 7.7 lbs.

Standard Issue NBCU: DR 20/10*; \$1,200, 7.2 lbs. Don 30 sec. Holdout -4. B/1 day (external). LC3.

Recon NBCU

This combat uniform is designed for reconnaissance missions. Its foundation is a tactical NanoShield suit (torso, arms, legs; stats: DR 20/10*, \$2,000, 15 lbs., don 75 sec., Holdout -4). Other functions are as follows.

NanoComp: \$400, 1.2 lbs. Complexity 3. 0.01 TB. B/1 day. LC4.

NanoFilter: \$1,000, 1 lb., A/1 hr. LC4.

NanoRes: \$2,000, 1 lb., A/1 day. LC4.

SensorWeave: \$3,000, 2 lbs., A/1 day. LC4.

ThermoWeave (MC): \$3,000, 2 lbs., -2A/1 day. LC4.

ThermoWeave (IR): \$3,000, 2 lbs., A/1 hr. LC3.

Installed apps include: ESM Detector (\$500, 0.02 lbs., A/12 hr.), ScentMask (\$500, 0.02 lbs., A/1 day), and Dynamic Camouflage (Deluxe) (\$5,000, 0.02 lbs., 2A/1 hr), which total \$6,000, 0.06 lbs.

If all functions were running all day, then total power requirements would be 131 A cells per day. Since the NanoFilter only activates when a threat is detected, it would be powered down most of the time. The Dynamic Camouflage and ThermoWeave (IR) also could be deactivated until needed. This reduces the daily power requirements to 12A per day, so a single layer of NanoCaps (100 A cells) could power the basic functions for over eight days. An additional layer of NanoCaps could power the NanoFilter, ThermoWeave (IR), and Dynamic Camouflage (total 96 A cells) for a little over one day. So a total of four NanoCaps (\$320, 2.4 lbs) would be needed to power all functions for three days. After that time, the basic functions would continue to operate for a further five days.

Recon NBCU: DR 20/10*, \$20,720, 26.66 lbs., Don 75 sec., Holdout -7. 4C/3 days (internal).

Assault NBCU

This is a heavy-duty combat uniform designed for high-threat environments. Its foundation is an assault NanoShield suit (torso, arms, legs; stats: DR 36/16*, \$5,000, 30 lbs., don 113 sec., Holdout -8). Other functions are as follows.

NanoComp: \$400, 1.2 lbs. Complexity 3. 0.01 TB. B/1 day. LC4.

NanoFilter: \$1,000, 1 lb. A/1 day. LC4.

NanoGen: \$5,000, 8 lbs., -A/1 hr. LC4.

NanoMuscles: \$5,000, 8 lbs., B/1 sec. (+1) or C/1 sec. (+2). LC3.

NanoRes: \$2,000, 1 lb., A/1 day. LC4.

SensorWeave: \$3,000, 2 lbs., A/1 day. LC4.

ThermoWeave (MC): \$3,000, 2 lbs., -2A/1 day. LC4

ThermoWeave (IR): \$3,000, 2 lbs., A/1 hr. LC3.

WRWRS: \$5,000, 12 lbs., B/1 day. LC4.

Installed apps include: Dynamic Camouflage (Deluxe) (\$5,000, 0.02 lbs., 2A/1 hr.), Heat Shield (\$5,000, 0.02 lbs., -1A/1 sec.), NanoMed (\$3,000, 0.02, A/1 hr.), NanoFlex (\$2,000, 0.02 lbs., B/1 attack), which total \$15,000, 0.08 lbs.

NanoMed would only be required if the soldier was wounded, but it would be safer to include this power requirement as part of the base load. If all functions including Dynamic Camouflage were running all day, then total power requirements would be 105 A cells per day, plus one-off uses such as NanoFlex (B per attack) and NanoMuscles (B or C per second).

ABOUT *GURPS*

Steve Jackson Games is committed to full support of *GURPS* players. Our address is SJ Games, P.O. Box 18957, Austin, TX 78760. Please include a self-addressed, stamped envelope (SASE) any time you write us! We can also be reached by email: info@sjgames.com. Resources include:

New supplements and adventures. *GURPS* continues to grow – see what’s new at gurps.sjgames.com, or visit www.warehouse23.com.

e23. Our e-publishing division offers *GURPS* adventures, play aids, and support in PDF form . . . digital copies of our books, plus exclusive material available only on e23! Just head over to e23.sjgames.com.

Internet. Visit us on the World Wide Web at www.sjgames.com for errata, updates, Q&A, and much

more. To discuss *GURPS* with SJ Games staff and fellow gamers, come to our forums at forums.sjgames.com. The *Pyramid* web page is pyramid.sjgames.com.

Bibliographies. Many of our books have extensive bibliographies, and we’re putting them online – with links to let you buy the resources that interest you! Go to each book’s web page and look for the “Bibliography” link.

Errata. Everyone makes mistakes, including us – but we do our best to fix our errors. Up-to-date errata pages for all *GURPS* releases are available on our website – see above.

GURPS rules and statistics in this magazine are specifically for the *GURPS Basic Set, Fourth Edition*. Page references that begin with B refer to that book.

STUCK FOR AN ADVENTURE? NO PROBLEM.

**e23 sells high-quality game adventures
and supplements in PDF format.**

- Get complete sample adventures free for *GURPS*, *In Nomine*, and *Traveller*!
- PDFs from the major players in online publishing: Ronin Arts, Ken Hite, Atlas Games, and 01 Games.
- New gems from up-and-coming publishers, like Atomic Sock Monkey Press and Expeditious Retreat Press.
- Digital editions of out-of-print classics, from Orclslayer and the complete run of ADQ to *GURPS* China and *GURPS* Ice Age.
- Fully searchable files of *GURPS Fourth Edition* supplements.
- Original material for *Transhuman Space* and *In Nomine*, with new *GURPS* supplements from Phil Masters, David Pulver, Sean Punch, and William Stoddard!
- Buy it once; have it always. Download your purchases again whenever you need to.



Download ● Print ● Play
STEVE JACKSON GAMES

e23 is part of Warehouse 23, the online store at Steve Jackson Games.
Warehouse 23 is also the official Internet retailer for Atlas Games, Ninja Burger, and many other publishers.
Visit us today at www.warehouse23.com for all your game STUFF!