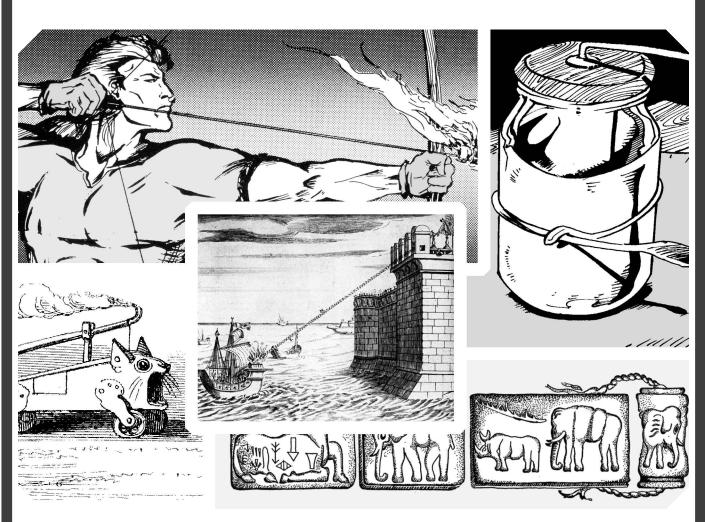
GURPS Fourth Edition

# FANTASY-TECH 1 THE EDGE OF REALITY™



Written by MATT RIGGSBY **Edited by NIKOLA VRTIS** Illustrated by KLAUS SCHERWINSKI and RUTH THOMPSON

An e23 Sourcebook for GURPS®

STEVE JACKSON GAME



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# Introduction

**GURPS** is known for highly detailed, well-researched supplements containing a wealth of up-to-date historical and scientific information. These volumes are written by well-read, enthusiastic amateurs and people with real-world experience and academic credentials in their fields, often working in consultation with a range of experts and professionals, to produce works useful not just to **GURPS** players, but to players of other games and to nongamers with an interest in the subject material.

This is not one of those supplements.

GURPS Fantasy Tech: The Edge of Reality is a compilation of failed ideas, an inaccurate history of technology from the dawn of civilization to the dawn of the industrial age. This project rummages through the dustbin of history for ideas about technology that have actually been held (and, in some out-ofdate circles, still are) but have since been discarded. It contains myths, legends, misinterpretations, real technological deadends, ideas that inventors dabbled with before their time had arrived, things that *nearly* happened but didn't, and romantic notions based on sketchy knowledge of the past and far-off civilizations. Turn to this supplement if you want a nearly historical world full of mundane wonders: Bronze Age kings flying with cape-like wings and attended by solid metal servants, Roman armies marching to war with pneumatic catapults and deadly heat rays, and respectable Renaissance astrologers taking windup cars to airports filled with elegant ornithopters. It's the way the future was, and you can make it be that way again.

## THE FANTASTIC AND THE CONCRETE

Most of the gear in this volume belongs to alternative paths of technological development, providing concerns for both players and the GM.

## Fantasy-Tech Campaigns

The primary concern for the GM is fitting exotic gear into a campaign. In conventional fantasy campaigns – with priests, wizards, chi-powered martial artists, and other characters with exceptional abilities – adding exotic but technically mundane technology simply unlocks another realm of novel capabilities. The use of Unusual Backgrounds and Craft Secret perks protects gadgeteers as an adventuring

character niche. Alternately, these technologies can be common knowledge among craftsmen: Every warrior (who can afford it, anyway) can have an azzalum sword. Every priest can carry a bottle of mundane alchemical healing elixir as a backup to healing spells. And so on.

Dropping these gadgets into a more realistic campaign poses additional problems. The items in this supplement cover a wide range of feasibility, from the entirely real – if overlooked – to the utterly impossible. Anything with a straight TL (for example, TL3) is a real, if possibly idealized, historical item, produced and used during that TL, if only experimentally in limited numbers. Items with a + in the TL – for example, TL(3+1) – aren't necessarily impossible in principle but require considerable refinement and better materials to work consistently. Items with a ^ notation are simply impossible. They may fit the technological "mood" of a TL, but they require superscience (or even superpseudoscience) to function.

Naturally, introducing fantasy tech into a realistic campaign has significant implications for the game world. For example, although a society with a number of TL(4+1) and TL(4+2) gadgets may have clockpunkish trappings, the capabilities of the technology are more Victorian or WWII than Renaissance. It may also be wise to limit availability of some items, either by cost or by enforcing craft secrecy, notably when it comes to superscience. A society with readily available TL1<sup>^</sup> automata or TL2<sup>^</sup> vimanas would have little use for marginally more realistic TL(4+2) aircraft.

Do not worry if you have built your castles in the air. They are where they should be. – Henry David Thoreau

## Fantasy Technicians

The primary concern of players is the ability to use and, to a lesser extent, make fantastic gadgets. The table below lists the skills required to produce or maintain the items in this supplement. See the index (p. 36) for locations of item descriptions.

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### Fantasy-Tech Skills Table

Fantasy-Iech Skills	
Invention	Skill
Aluminum	Smith/TL(2+3) (Aluminum)
Anti-Ship Claws	Armoury/TL2 (Heavy Weapons)
Articulated Claw	Armoury/TL2^ (Heavy Weapons)
Automated Doors	Mechanic/TL2 (Clockwork)
Automated Mannequins	Mechanic/TL3 (Clockwork)
Automated Tripods	Mechanic/TL1^ (Robotics)
Azzalum	Metallurgy/TL2^
Bird Glider	Mechanic/TL(4+2) (Glider)
Bononian Stone	Alchemy/TL3
Bronze Androids	Mechanic/TL1^ (Robotics)
Castle Clock	Mechanic/TL3 (Clockwork)
Classical Analog	Mechanic/TL(2+3) (Clockwork)
Computer	1 /mr (3.6.1 xxx ) 1
Combination Weapons	Armoury/TL (Melee Weapons) and
0	Armoury/TL (Small Arms)
Counterweight	Traps/TL4
Naval Mine	A 1: (FET 2A
Defensive Magnets	Architecture/TL2^
Dew Belt and Dew Booth	Mechanic/TL4^ (Lighter
Di Cii- Tl-	Than Air)
Di Giorgio Tank	Mechanic/TL4 (Wagons)
Electrical Batteries	Electrician/TL(3+2)
Ethnic Cool Weapons	Armoury/TL (Melee Weapons) or Armoury/TL (Missile Weapons),
	as appropriate
Flexible Glass	Professional Skill (Glassblower)
Floral Clock	Gardening Glassolower)
Gliding Cloak	Mechanic/TL3^ (Glider)
Gothic Plate	Armoury/TL4 (Body Armor)
Grappling Catapult	Armoury/TL4 (Heavy Weapons)
Horned Helmet	Armoury/TL1 (Body Armor)
Horse Cannon	Armoury/TL4 (Heavy Weapons)
Hot Air Balloon	Mechanic/TL(1+1) (Lighter
	Than Air)
Hydra Venom	Poisons/TL1
Incombustible Oil	Alchemy/TL2^
Land Sailers	Mechanic/TL (Land Sailer)
Leather Cloak	Armoury/TL0 (Body Armor)
Leonardo Battery	Armoury/TL(4+1)
	(Heavy Weapons)
Leonardo Tank	Mechanic/TL(4+1) (Crank-Driven
T T	Vehicles)
Levitating Instrument	Mechanic/TL1^ (Antigravity)
Moving Platforms Naval Sambuca	Mechanic/TL2 (Clockwork)
	Mechanic/TL2 (Naval)
Naval Siege Tower Ninja Gear	Mechanic/TL2 (Naval) Armoury/TL4^ (Ninja Gear)
Orichalcum	Metallurgy/TL1
Ornithopter	Mechanic/TL(4+2) (Ornithopter)
Ox-Driven Paddlewheel	Mechanic/TL2 (Naval)
Perpetual Motion	Mechanic/TL3^ (Perpetual
Machine	Motion)
Personal Wings	Mechanic/TL1^ (Ornithopter)
Philoctetes' Bow	Armoury/TL1^ (Missile Weapons)
Pneumatic Ballista	Armoury/TL(2+2)
	(Heavy Weapons)
Poisoned Clothing	Chemistry/TL1 or Alchemy/TL1
Porcelain	Artist (Pottery)
Pyramid Power	Architecture /TL1^

Invention	Skill
Railways	Engineer/TL2 (Civil)
Reflective Heat Ray	Armoury/TL2 (Reflectors)
Renaissance Air Rifle	Armoury/TL4 (Small Arms)
Renaissance Calculator	Mechanic/TL(4+1) (Clockwork)
Renaissance Helicopter	Mechanic/TL(4+2) (Ornithopter)
Rigid Parachute	Mechanic/TL3 (Glider)
Shirazi Battery	Armoury/TL4 (Heavy Weapons)
Simple Air Brake	Mechanic/TL3 (Glider)
Spiral Elevator	Architecture/TL4
Spring-Powered Car	Mechanic/TL(4+1) (Clockwork)
Steam Cannon	Armoury/TL(2+3)
	(Heavy Weapons)
Steam Engine	Mechanic/TL (Steam Engines)
Stone Dropper	Armoury/TL2 (Heavy Weapons)
Studded Armor	Armoury/TL1^ (Body Armor)
Submarine	Mechanic/TL4 (Submarine)
Superheavy Armor	Armoury/TL4 (Body Armor)
Treated Linen Armor	Armoury/TL2^ (Body Armor)
Vimana	Mechanic/TL2^ (Vimana)
Vimana Weapons	Armoury/TL2^
	(Vimana Weapons)

If these devices don't exist in the campaign, they may be suitable for invention by gadgeteers with appropriate Engineer skills. Even in settings where they do exist, the specifics might not be common knowledge. After all, many inventors deliberately try to keep their work a secret! The special knowledge required to make such an item may demand a new perk: Craft Secret. For every 20 points in relevant craft skills, a craftsman may buy an instance of Craft Secret that enables a specific invention covered by those skills. Artisans who hold a craft job, or who have a relevant craftsman or craft guild as an Ally or a Patron, may buy one further Craft Secret per 10 points in the skills of their job. For example, Leonardo da Vinci might have passed on the secret of making steam-powered artillery to a favored pupil in the form of Craft Secret (Steam Artillery).

#### Cost Factor

The costs of most modifications to existing gear are expressed as a "cost factor" (CF). To find final cost of an item, multiply the modified item's list cost by (1 + total CF). For example, an item that has one modification with +1 CF and another with +2 CF costs 1 + (1+2) or 4 times its list price. If total CF is below -0.8, treat it as -0.8; thus, final cost cannot be below 20% of list cost.

### **ABOUT THE AUTHOR**

Matt Riggsby was a later product of the atomic bomb program, emerging in the midst of the Vietnam War. After witnessing the earthquake that sent California into the ocean and studying paleontology (briefly interrupted by the Boston Tea Party), he married two women of the same name and had at least one child. He now works for a German telegraph company. This is his fourth video game for Steve Jackson Games.

## REFLECTIVE HEAT RAYS

The ancients were familiar with "burning glasses" – rockcrystal lenses and curved mirrors that could be used to focus sunlight and ignite tinder. They were moderately expensive and operated only in bright sunlight, but they were effective, loweffort tools for starting small fires. Inevitably, there were attempts to weaponize this technology.

In 214 B.C., during the Second Punic War, Rome set siege to the city of Syracuse on Sicily with a sizable army and some innovative weapons (see *Naval Siege Tower*, p. 20). The Syracusians had their own secret weapon: the philosopher Archimedes. Archimedes invented a number of weapons to hold off the Roman armies, the most notable of which was the earliest attempt at a light-based weapon. His "heat ray" consisted of an

array of mirrors (one scholar described them as being assembled in a hexagonal dish) that acted in concert as a parabolic mirror to focus the heat of the sun to set Roman ships on fire.

Though long dismissed as a myth and still, with good reason, regarded as questionable, this Hellenistic death ray has elements of plausibility. Experiments over the past few decades indicate that massed mirrors can be used to set wooden objects on fire at distances of 60-70 yards. The main drawbacks are a need for very clear conditions and stable targets. In Archimedes'

defense, the Mediterranean is justly famed for being sunny, though the inherent rocking motion of ships has raised considerable doubts about the weapon being able to focus on a single spot long enough to ignite fires. It also assumes that Archimedes invented the parabolic reflector centuries before it is know to exist. If any Greek could have done so, it would have been circle-obsessed Archimedes, but the GM may want to treat the reflector as TL(2+1) instead of vanilla TL2.

Because descriptions are sketchy and varied, there are several possible models of heat ray.

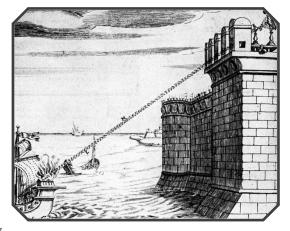
Reflective Heat Ray (TL2). This version is a very large (1,000 square feet, or a circle about 18 feet in radius) reflecting dish made from highly polished bronze mounted on a wall or tower. It is directed by a "gunner" aided by a crew of men and possibly draft animals.

Reflective Heat Ray, Small (TL2). This more compact version is about 250 square feet in area, or a nine-foot radius. It is less powerful but easier to bring to bear. A defensive position might have several mounted along the walls, combining to focus their energy on a single target.

Improved Reflective Heat Ray (TL2). A description from a Byzantine scholar suggests a more complex but versatile design involving a secondary lens or reflector. The improved heat ray has a more complex arrangement of mirrors, which gives it a broader field of fire.

A more conventional but less technically plausible explanation is that Archimedes employed soldiers with highly polished shields. The minimum manpower and equipment requirements are a group of 170 men with mirror-bright medium shields or 100 men with similarly polished large shields. They

can be at most two ranks deep, which means a line 50-85 yards long; the target cannot be past the ends of the line. They must all have both Soldier and Shield skills at 12+ and a perk, Reflective Shield, allowing them to coordinate their actions and accurately use their shields to reflect light at a specific target. Actually hitting requires a roll against their leader's Tactics skill at -6. Treat the formation's range, damage, and limitations as a regular reflective heat ray.



TL	Weapon	Damage	Acc	Range	Weight	RoF	Shots	ST	Bulk	Rcl	Cost	LC	Notes
GUNNER (MIRROR)													
2	Reflective Heat Ray	1d burn	2	50/70	1,500	1	special	60M	-16	_	\$155,000	2	[1]
2	Reflective Heat Ray, Small	1d-3 burn	2	50/70	375	1	special	35M	-12	_	\$3,900	2	[1]
2	Improved Reflective Heat Ray	1d burn	2	50/70	2,000	1	special	60M	-16	_	\$195,000	2	[2]

#### **Notes**

[1] The reflective heat ray requires no ammunition. Rather, it needs strong sunlight (so it can only operate in daylight hours), and it can only fire effectively at targets with a 60° arc between itself and the sun. This means, essentially, that an east-facing heat ray can only be used between dawn and late morning, a west-facing one can only be used between early afternoon and dusk, south-facing ones can only be used in the northern hemisphere, and north-facing ones in the

southern hemisphere. Also, subtract 1 point of damage for *each* of light fog and light cloud cover, 2 points each for moderate cloudiness and heavy fog, and 3 points for completely overcast conditions.

[2] Because it has a secondary mirror to redirect the focused beam, the collector dish can move to just about any angle while being able to hit any visible target at any time of day. However, the advanced version is still subject to penalties for clouds and mist.

## **CHAPTER FOUR**

# OTHER TECHNOLOGIES

Antiquity saw a broad assortment of odd technologies and strange sciences, ranging from the discovery of peculiar materials through exotic disciplines like astrology and alchemy.



## Unusual Materials

Historical records refer to many substances that are lost or may never have existed.

### **AZZALUM**

History alludes to a number of special metals. One of the most useful, mentioned as far back as Pliny the Elder (23-79 A.D.), is azzalum, also called Indian iron since it was believed to originate in India, though some later ascribed its origin to China. Perhaps inspired by samples of wootz (crucible steel, which would have been available just in time for a few specimens to make it to imperial Rome), this was alleged to be a remarkably strong type of iron. It was hard enough that tools made of azzalum could be used to cut other pieces of iron.

Items made from azzalum have +1 HT and +25% HP (round up). Armor made from azzalum gets +1 DR. Cutting and impaling weapons made from azzalum get +1 to damage and -1 to their chance of breaking if parrying a heavier weapon (see p. B376). These effects are *cumulative* with the item's quality where applicable. For example, a fine-quality azzalum sword gets +2 to damage and -2 to its breakage roll when parrying a heavy weapon. Azzalum items are TL2^ and have +5 CF.

#### Orichalcum

There are several differing historical accounts of a metal called orichalcum. *GURPS Fantasy* presents one interpretation of it as an unbreakable fantasy metal. Another interpretation is a strong but attractive alloy of copper, tin, and gold. It has the strength of bronze, but the color and shine of gold. Treat orichalcum versions of bronze items as decorated equipment with +3 CF. They may also be considered as being made from gold if golden items have any particular supernatural effects.

### **BONONIAN STONE**

By at least the Renaissance, scholars were aware of a mineral (called by a variety of names including the *lapis phosphorus* or bononian stone) that glowed in the dark after exposure to light. This led some scholars to conclude that light was a substance that the stone soaked up like a sponge to emit later. The main controversy about the stone was whether it was natural or could be manufactured.

A thumb-sized stone will glow with the brightness of a candle flame for 10 minutes if exposed to bright light for an hour or more. It fades thereafter, with the glow disappearing after an hour. It can be used as a heatless, flameless, and even concealable source of light, but only briefly. Naturally occurring bononian stones are TL0^. If they can be created alchemically, synthetic stones are TL3^. A small lump the size of an ice cube is \$400, negligible weight.

### FLEXIBLE GLASS

Transparent aluminum, one of the more famous fake inventions of the far future, comes with a surprising historical pedi-

gree. Through history, craftsmen have claimed to invent flexible, or at least malleable, glass. The earliest account is of a Roman inventor who approached the emperor Tiberius with vessels made from what appeared to be glass. When struck, however, the material dented instead of shattering, and the inventor pounded it back into shape. The emperor was duly impressed. However, he had the inventor put to death because his invention could potentially render precious metals worthless and put any number of other craftsmen out of work, causing unrest and economic disaster.

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