GURPS®

STEAMPUNK

By William H. Stoddard

STEVE JACKSON GAMES

An Age of Discovery

The 19th century's heroes were adventurers, pioneers, and scientists, from explorers in the African jungles to inventors in basement workshops. They transformed the world. Enter an age of high adventure – the Age of Steam.

GURPS Steampunk offers you everything you need to build a Steam Age character or campaign:

- Rules for steam age technologies, including power plants, vehicles, and analytical engines
- "Weird sciences" from etheric physics to psychical research, translated into ***GURPS*** rules
- A guide to 19th-century history and geography, politics, and customs
- The evolution of weapons and warfare in the real 19th century and in alternate TL5+ settings
- New advantages, disadvantages, and skills, including TL5+ versions of scientific skills
- New character templates to get your players started: the clergyman, the demimondaine, the detective, the inventor, the navy officer, the sportsman, and many others
- Campaign seeds for several alternate steampunk worlds

If you love the science fiction of Verne or Wells; if you want a campaign filled with airships, analytical engines, etheric cannon, and other wonders; if you want to dam the Straits of Gibraltar, journey to Percival Lowell's Mars, or struggle to free the future from Morlock tyranny . . . then ***GURPS Steampunk*** is the book you've been waiting for.

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GURPS Basic Set, *Third Edition Revised* and ***GURPS Compendium I: Character Creation*** are required to use this supplement in a ***GURPS*** campaign. ***GURPS Psionics, Robots,*** and ***Vehicles*** will be useful in many campaigns. The historical and technological material and the campaign seeds can be used with any rules system. ***GURPS Steampunk*** can be used as campaign support for ***GURPS Castle Falkenstein.***

THE GEARHEADS:

Written by
William H. Stoddard

Edited by
Alain H. Dawson

Cover by
Alan Gutierrez

Illustrated by
Paul Daly,
David Day,
and Zach Howard

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Written by William H. Stoddard
Edited by Alain H. Dawson

Additional material by Alain H. Dawson, Steve Jackson, M.A. Lloyd, David Morgan-Mar, and Sean Punch

Additional editing by Sean Punch and Gene Seabolt

Cover art by Alan Gutierrez

Cover design by Alex Fernandez

Design, typography, and layout by Alex Fernandez

Illustrated by Paul Daly, David Day, and Zach Howard

Additional illustrations by Tom Biondolillo, Storn Cook, C. Brent Ferguson, Andrew Kilian, David Lynch, Sean Murray, Philip Reed, and Kieren Yanner

***GURPS* System Design by Steve Jackson**

Managing Editor ⚙ Alain H. Dawson

Line Editor ⚙ Sean Punch

Production Manager ⚙ Russell Godwin

Art Director ⚙ Philip Reed

Print Buyer ⚙ Shawn Havranek

***GURPS* Errata Coordinator ⚙ Andy Vetromile**

Lead Playtester ⚙ Peter Dell'Orto

Sales Manager ⚙ Ross Jepson

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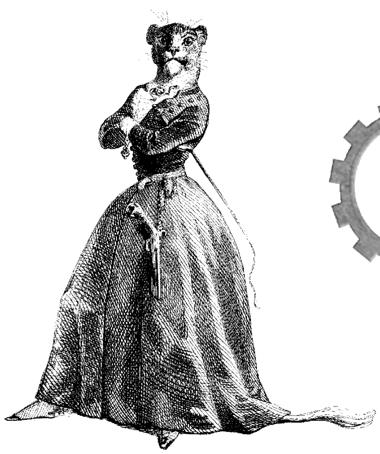

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Pyramid (**www.sjgames.com/pyramid**). Our online magazine includes new rules and articles for ***GURPS***. It also covers the hobby's top games – ***Dungeons & Dragons, Traveller, World of Darkness, Call of Cthulhu, Shadowrun,*** and many more – and other Steve Jackson Games releases like ***In Nomine, INWO, Car Wars, Toon, Ogre,*** and more. And *Pyramid* subscribers also have access to playtest files online, to see (and comment on) new books before they're released.

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The ***GURPS Steampunk*** Web page is at **www.sjgames.com/gurps/books/steampunk**.

Page References

See ***GURPS Compendium I***, p. 181, or **http://www.sjgames.com/gurps/abbrevs.html** for a full list of abbreviations for ***GURPS*** titles. Any page reference that starts with B refers to ***GURPS Basic Set***, *Third Edition, Revised*; e.g., p. B144 refers to page 144 of ***Basic Set***. AE refers to ***Alternate Earths***, AET refers to ***Alternate Earths 2***, BIO refers to ***Bio-Tech***, CI refers to ***Compendium I***, CII refers to ***Compendium II***, D refers to ***Dinosaurs***, H refers to ***Horror***, HT refers to ***High Tech***, M refers to ***Magic***, ME refers to ***Mecha***, P refers to ***Psionics***, SW refers to ***Swashbucklers***, T refers to ***Technomancer***, TT refers to ***Time Travel***, UN refers to ***Undead***, VE refers to ***Vehicles***, WWi refers to ***Who's Who 1***, and WWii refers to ***Who's Who 2.***

INTRODUCTION

Behold the power of Steam!

GURPS Steampunk is your guide to the 19th-century imagination. The real 19th century was an age of amazing inventions and discoveries – but these accomplishments inspired visions of even greater achievements. Jules Verne's fictional odysseys and H.G. Wells' scientific romances took contemporary readers on a journey into the realms of possibility. At the same time, inventors such as Charles Babbage and Nikola Tesla proposed new technologies as radical as those in fiction, from steam-powered mechanical computers to wireless electric power. All of these men looked ahead to a future transformed by science and engineering.

At the end of the 20th century, their visions have a renewed fascination. In some ways, the Age of Steam is very familiar. In our time, as in theirs, technology is making radical leaps forward and forcing society to change along with it. But the political and cultural differences make it exotic. Steampunk's vitality as a genre comes from this mix of familiarity and strangeness, and from our sense of wonder at the past that might have been.

GURPS Steampunk is a genre book, a collection of tools for running steampunk campaigns. Within its pages you'll find the history, geography, and culture of both the real 19th century and alternative Ages of Steam. There are templates for character archetypes from the clergyman to the demimondaine, from the native leader to the scientist. For those interested in machinery, there is a collection of wonderful devices based on 19th-century science and engineering, plus a chapter devoted to weird science. The final chapter outlines campaign worlds that can provide settings for your steampunk campaign – or inspiration for you to create your own settings.

And so, ladies and gentlemen, welcome to the future past . . .

About the Author

William H. Stoddard is a developmental editor for a large scientific publisher, where his job responsibilities include researching obscure questions. This is also one of his favorite recreations and helped out a lot in his work on ***GURPS Steampunk***, as well as his previous work for Steve Jackson Games: contributions to ***GURPS Vehicles Companion***, ***GURPS Villains***, and both volumes of ***GURPS Who's Who***. He has been playing roleplaying games since 1975, when he discovered *Dungeons and Dragons* at his first science fiction convention. He shares an apartment in San Diego with his cohabitant, Carol Kalescky, two cats, two computers, and a large number of books. In his spare time he edits the Libertarian Futurist Society's quarterly newsletter, *Prometheus*. For relaxation he cooks, reads, rents movies, or roleplays.

TL(5+1), OR "WHAT THE HECK *IS* THE TECH LEVEL?"

At first glance, steampunk campaign settings appear to be the normal TL5 of the Age of Steam. But the steampunk genre allows marvelous inventions that use steam age technology to achieve results not historically achieved until TL6 or even TL7. Charles Babbage's design for the Analytical Engine is a good example: a completely workable programmable digital computer, built with entirely mechanical technology. In some campaigns, the GM may allow much greater leaps forward – anti-gravity devices, space travel, genetic engineering, beam weapons, and many other technologies not yet mastered by current scientific methods.

The advanced technology in ***GURPS Steampunk*** is effectively TL6, but a divergent TL6, one that started at TL5 and went in different directions. As a shorthand notation, it can be called "TL(5+1)." In formulas and tables (such as those for medical care and first aid, p. B128), use the total of the two numbers; that is, this is effectively TL6. But it's a *different* TL6; engineers and scientists from the standard TL6 receive unfamiliarity penalties (-2; see p. B43) in working with it, and vice versa. (This is in addition to the standard penalties for TL differences, p. B185, if applicable.) The "5" indicates that it branched off at TL5 and that it lacks several of the crucial innovations of the historical TL6.

This doesn't define a specific divergent technology; in fact, many different divergent technologies are possible, whose users would be as unfamiliar with each other's methods as with those of historical TL6 (see *Other Variant TLs*, p. 13). ***GURPS Steampunk*** uses "TL(5+1)" to make it clear that certain skills and devices are not from the historical Age of Steam, but from an alternate, technologically accelerated Victorian age. Except in a paratemporal campaign, where such distinctions may be important, a GM can just call these skills and devices TL6.

OTHER EMINENT VICTORIANS (Continued)

EDWARD DRINKER COPE (1840-1897) AND OTHNIEL CHARLES MARSH (1831-1899)

The leading American paleontologists of the century, and bitter rivals in their search for new dinosaurs. Cope was a child prodigy who became a Harvard professor at the age of 24.

Marsh was a scion of wealth, whose family bought him a chair at Yale to support his interest in fossils. Originally friendly, they gradually became rivals and then (when Marsh pointed out that Cope had restored a skeleton with the head on the wrong end) bitter foes. At the peak of their careers, they tried to bribe each others' workers, steal each others' fossils, and wreck each others' reputations. The stories of violence between their collecting parties seem only to have been rumors, but in an alternate history, the West could have witnessed a Dinosaur War.

CHARLES DARWIN (1809-1882)

Arguably the greatest biologist in history and a major cultural figure. Anyone working in biology or geology may interact with him, at least by letter. See pp. WWi100-101.

THOMAS EDISON (1847-1931)

Perhaps the best-remembered inventor of his century; he combined his own ingenuity and self-taught technical skills with the ability to manage a large and underpaid technical staff – and a conscious cultivation of his own public image. A particularly notable episode in his life was the controversy over direct vs. alternating current, in which he backed direct current and invented the electric chair to demonstrate the dangers of alternating current.

JOHN ERICSSON (1803-1889)

A Swedish engineer who emigrated to the United States, where he revolutionized naval warfare by building the *Monitor* during the American Civil War.

MICHAEL FARADAY (1791-1867)

Originally trained as a chemist, he turned in 1831 to the investigation of electricity and magnetism. He developed the concept of fields of force (the basis for James Maxwell's theoretical work), demonstrated electromagnetic induction (the production of an electric current by a changing magnetic field), and invented the electric motor and generator.

Continued on next page . . .

What is the essence of steampunk? What makes a world, a story, or a campaign part of the steampunk genre? Retrotech and gadgets are the most obvious ingredients, but there is more to it than steam-powered flying machines and difference engines. Steampunk imagines new inventions and discoveries in a historical setting, the Age of Steam, and it is this setting that lends the gadgets their context. It is changes in history, as much as changes in technology, that make steampunk so fascinating. A steampunk campaign can be set in the real 19th century, with the addition of one or two marvelous inventions, or in an alternative 19th century created by a different technology, or even in an entirely different Age of Steam set on a faraway world. But in order to experiment with alternate history, it's useful to know something about the real flow of history.

This chapter explores major trends in 19th-century history and considers how they might have been changed, or how they might appear in a different setting. The sidebars provide a timeline of real historical events, including not just political and military history but inventions, discoveries, and theories.

Science, Invention, and Industry

During the 19th century, science and technology advanced with unprecedented speed. At the start of the century, technological innovation was mostly based on craft skills rather than theoretical science. Often, technology was invented first and the theory to explain it was developed afterward, as when Sadi Carnot developed the theory of heat engines to explain steam power. By the century's end, the trend had reversed, and many laboratory curiosities had become commercially valuable: radio from Maxwell's electromagnetic equations, dyes from organic chemistry, and pasteurized foods from Louis Pasteur's work in microbiology.

In 1815 Newtonian mechanics was solidly established, providing explanations for planetary orbits, the trajectories of cannonballs, and the operation of machines. The wave theory of light had been proposed but not proven or fully worked out. By 1914, the wave theory of light had been absorbed into electromagnetic theory, and the problem of reconciling electromagnetism with mechanics had given rise to Albert Einstein's theory of relativity (best treated as early TL6). Other major new theories in the physical sciences included thermodynamics and statistical mechanics, while Darwinian evolution and Mendelian genetics radically altered the biological sciences. In addition, science offered a new vision of the history of the world, going back hundreds of millions of years to the still unexplained formation of the solar system and forward to the eventual "heat death" of the cosmos.

The concept of energy was central both to theoretical science and to engineering. The law of conservation of energy was proposed and its implications were worked out, including the impossibility of perpetual motion machines. Physicists envisioned natural processes in terms of conversion of energy from one form to another. Engineers tried to make those conversions more efficient in steam engines and other devices. Concerns for fuel economy gave rise to energy measurement techniques and the science of thermodynamics.

Timeline, 1815-1914

1815

The Congress of Vienna establishes new European boundaries; Napoleon briefly returns from Elba, is defeated at Waterloo, and is banished to St. Helena; the British government abolishes income tax.

The Analytical Society is founded at Cambridge, with the goal of introducing Continental mathematics into Britain.

Robert Fulton builds the U.S.S. *Fulton*, the first steam warship, for the U.S. Navy.

1817-1825

Construction of the Erie Canal in New York.

1817

Simon Bolivar establishes an independent government in Venezuela; in subsequent years most of the rest of Spanish America gains independence.

John Kidd extracts naphthalene from coal tar.

David Ricardo publishes *The Principles of Political Economy and Taxation*.

1818

The *Savannah* is the first steamship to cross the Atlantic, taking 26 days.

1819

The British East India Company establishes a settlement in Singapore.

1820

The Prince Regent succeeds his father George III as George IV.

The Missouri Compromise brings Maine into the Union as a free state and Missouri as a slave state.

1821

The Catholic Church lifts its ban on teaching the Copernican system.

1822-1829

The Greeks declare independence from the Ottoman Empire and gain autonomy with European aid.

1822

Britain repeals the death penalty for over 100 crimes.

Jean-Francois Champollion translates the Rosetta Stone.

The Royal Asiatic Society is founded.

Charles Babbage begins plans for the Difference Engine.

1823

Proclamation of the Monroe Doctrine.

Mechanics' Institutes are founded in London and Glasgow.

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The Scandalous Victorians (Continued)

Soft Drinks

Carbonated water was invented by Joseph Priestly in the late 18th century, but the temperance movement created the soft drink industry in the 19th, as an alternative to beer and wine. Ginger beer, sarsaparilla, and similar formulations, made by small manufacturers for mainly local distribution, came into wide use in the English-speaking countries, though not on the continent, where temperance never really caught on. Many households acquired a *gazogene*, a device for carbonating water or other liquids.

Prostitution

The 19th century demanded that women protect their chastity at almost any cost; phrases such as “a ruined woman” and “a fate worse than death” were meant seriously. But at the same time, prostitution was a thriving industry. In fact, there were several different strata of prostitution, from demimondaines or adventuresses whose informal liaisons with prosperous men might be as stable and as exclusive as a marriage, through house girls, down to the streetwalkers among whom Jack the Ripper found his victims.

Many people thought prostitution gave men an outlet for impulses that otherwise would endanger every woman they encountered. Many, possibly most men were at least occasional customers of prostitutes; it was fairly common for them to have their first sexual experiences this way. In an era when there was no safe treatment for sexually transmitted diseases, this was a significant public health problem.

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The emergence of the scientific worldview gave Christianity a rival system of beliefs. Educated people learned about heliocentric astronomy and debated the age of the earth and Darwin’s theory of evolution; scientists such as Galileo became heroic martyrs. And for the general public, technological advances and demonstrations of scientific discoveries offered wonders as amazing as the feats of saints or prophets. Some historians began to suggest that the Bible was simply another mythology, no better or worse than the fables of Greece and Rome or the folktales of primitive tribes. The many supporters of Christianity now had to preach not just against sin, but against doubt and secularization.

The idea of sin also lost some of its power, as some unbelievers took the next logical step: questioning Christian morality. A few rejected morality entirely in favor of the freedom to be a beast of prey or the personal vision of the artist – and sometimes behaved scandalously and, even worse, talked openly about doing so, rather than keeping up the appearance of respectability. Others looked for a nonreligious basis for morality, such as the utilitarians’ principle of “the greatest good of the greatest number.”

Such ideas inspired a variety of new political movements, which no longer accepted the divine right of kings or the need for a religious basis for political authority. Secular political theories included utopian socialism, several forms of revolutionary socialism (Karl Marx and Mikhail Bakunin fought bitterly for control of the First International), laissez-faire capitalism, imperialism, racialism, and more narrowly focused movements such as Henry George’s Single Tax and William Jennings Bryan’s support for Free Silver. Once radical ideas such as the abolition of slavery and a widespread right to vote gained general acceptance – though even in 1914 few women were able to vote.

Literature and the arts also saw new movements. The romantics had popularized the idea of unique individual genius in the arts; artists in later movements pursued their personal visions with increasing disregard for older ideas of proper style and decorum. They found inspiration in a variety of sources. The Pre-Raphaelites, led by William Morris, advocated a return to the Middle Ages (including a revival of the guild system). Many artists, including Vincent Van Gogh, were influenced by *japonaiserie*, an artistic fad for Japanese imports, and toward the end of the era, artists such as Pablo Picasso began looking to African and other “primitive” art for inspiration. At the same time, such figures as Charles Baudelaire, Algernon Charles Swinburne, and Oscar Wilde glorified the artist’s freedom from bourgeois morality.

What If?

One of these movements suggests an intriguingly different image for an Age of Steam: What if Morris’s medievalism had been more successful, establishing a popular style in design? Imagine an early 20th century with locomotives shaped like dragons and skyscrapers in the form of medieval towers!

For a different variant, suppose the Christian revival movements of the later 19th century had been even more successful than they were. Might they have slowed the development of new scientific theories and the spread of consumer capitalism, while encouraging hard work and private charity, and thus prolonged both the technology and the cultural idiom of the Age of Steam? A Christian peace movement might even avert the catastrophe of the Great War.

As the price of urban land rose, buildings were erected on the smallest possible lots, their walls close together or even touching. Cast iron frames and the hydraulic elevator led to multistory buildings in which many tenants occupied the same lot. The first skyscraper was the Equitable Life Assurance Society Building, erected 1868-1870 in New York and standing 130 feet tall. By the century's end, buildings were hundreds of feet tall, creating the high skylines of the modern urban landscape. Architects such as Louis Sullivan struggled to find designs and ornamentation for structures taller than the ancient world had ever envisioned.

In terms of the ***GURPS Vehides*** rules for collisions (pp. VE166-167), skyscrapers are 10-60 stories high, with breach capacity equal to length in yards, multiplied by width in yards, multiplied by the number of stories, divided by 4. Typical wall materials are concrete (DR 4, 60 HP), light brick (DR 6, 40 HP), heavy brick (DR 6, 60 HP), light stone (DR 8, 90 HP), and heavy stone (DR 8, 180 HP). An attack that causes damage equal to the building's HP, after its DR is subtracted, creates one breach. The creation of a number of breaches equal to the breach capacity causes the building to collapse, inflicting damage equal to (HP + DR)/4 dice per story of building height on everyone in it. A DX roll avoids damage, with a +4 modifier for anyone in the basement.

Prime Movers

The Industrial Revolution began with wind and water power. Most of New England's textile factories, for example, were built alongside rivers that supplied water power. But as industry developed, factories relied more and more on a new power source: the steam engine. Steam developed first in Britain, where wood was in short supply – factories turned to Britain's vast reserves of coal, resulting in the first fossil fuel economy. Factory managers faced with the choice of running their factories with human laborers, draft animals, water, wind, or steam began measuring energy efficiency and choosing cost-effective technologies.

Water Power

The water mill remained an important source of power throughout the 19th century. In 1750 Europe had 1 mill per 29 people, and nearly all remained in use for the next hundred years. Water power also played a large role in the industrialization of North America.

Water mills have three main forms: *undershot*, in which the water hits the wheel low down, turning it in the direction of stream flow; *overshot*, in which the water hits at the top of the wheel and propels it forward, forcing the bottom of the wheel to turn against the stream; and *vertical*, in which the water hits one side of a horizontal wheel and turns it on a vertical shaft. The cost and the power output of any wheel depend on its diameter. The maximum diameter for a wheel in normal practice is 16'.

Water Wheel

Type	Cost	Power Output
Overshot	$7.50	0.225
Undershot	$7.50	0.045
Vertical	$10	0.075

Cost is dollars per foot of wheel diameter; power output is kW per foot of wheel diameter. An overshot wheel needs a fall of water through the full height of the wheel, either naturally occurring or produced by a watercourse. A typical watercourse is at least 100' long per 1' of wheel diameter. Constructing a watercourse doubles the cost of a wheel.

Water turbines (see p. 72) come into use during TL5; they can be supplied from a free-flowing stream, as long as there is a height difference to provide potential energy.

Wind Power

Windmills also remained in use during the 19th century. Many farms, for example, irrigated their fields with water pumped by windmills.

A windmill's basic attribute is the diameter of its blades, equal to twice the length of a single blade. To find the cost in dollars, square the diameter in feet and divide the result by 2. Windmills are normally built in locations with reasonably steady winds; daily average power for a windmill, in kW, can be estimated as the square of the diameter in feet, divided by 1,000.

Clockwork

Springs and other forms of clockwork were the first energy banks. They were still in use throughout TL5. Realistic clockwork weighs 0.25 lbs. per kWs, occupies 1 cf per 50 lbs., and costs $1 per lbs. In a cinematic campaign, advanced clockwork with highly efficient springs can store much more energy: weight 0.025 lbs. per kWs, volume 1 cf per 50 lbs., cost $2.50 per lbs.

Steam Engines

The basic stages in the development of steam technology are as described on pp. VE82-83:

Early *low-pressure* steam engines such as Watt's original model were in use before 1815.

Forced-draft steam engines, operating at higher pressures, were first experimented with in 1840 and came into regular use in 1850.

Compound engines, such as the triple-expansion engine, could have a varying number of stages of expansion. Two-cylinder engines were experimented with in 1854 and generally adopted in 1874. Triple-expansion engines followed in 1885, and German shipbuilders produced quadruple-expansion engines from 1897 through 1906. Such engines were mainly used on ships or in factories.

Steam turbines, burning coal or oil, came into use at the same time as quadruple-expansion engines and replaced them after a decade. Oil had clear advantages over coal: it gave more energy for the same weight and it did not require human stokers. No one actually built a sextuple-expansion steam engine, but someone might have tried had the turbine not been developed.

Etheric Shock Beam Weapons

To design an etheric shock beam weapon, select a beam output in kilojoules (kJ), a number of seconds between shots, and a range, which may be close, normal, long, very long, or extreme. The minimum output is 1,000 kJ. The weapon malfunctions on a 16 or higher. Damage is computed as 1.6 × (square root of *O*), where *O* is beam output in kJ; damage type is Imp. Half damage range is (cube root of *O*) × *R* × 15, where *O* is beam output in kJ and *R* is 8 for an extreme range weapon, 4 for a very long range weapon, 2 for a long range weapon, 1 for a standard weapon, and 0.25 for a close range weapon; maximum range is 1.25 × half damage range. Accuracy depends on half damage range:

Etheric Weapon Range

Range	Acc
Below 150	11
150-199	12
200-299	13
300-449	14
450-699	15
700-999	16
1,000-1,499	17
1,500-1,999	18
2,000-2,999	19
3,000-4,499	20
4,599-6,999	21
7,000-9,999	22
10,000-14,999	23
15,000-19,999	24

Power requirement in kW is 2 × beam output in kJ, divided by the number of seconds per shot; power is normally supplied from a generator, but a small weapon may be powered by batteries. Weight is computed as (*O*/72) × *S* × *R*, in pounds, where *S* is 0.5 if output is 6400 kJ or less and 1 otherwise, and *R* is 4 for extreme range, 2 for very long range, 1.5 for long range, 1 for standard range, and 0.666 for close range. Cost is $50 + $10 per pound for weight under 10 lbs., $15 per pound for weight 10-100 lbs., $1,000 + $5 per pound for weight over 100 lbs. Snap shot depends on weight:

Under 2.5 lbs.	SS 11
2.5-10 lbs.	SS 12
10-14 lbs.	SS 14
15-25 lbs.	SS 17
26-400 lbs.	SS 20
401-2,000 lbs.	SS 25
2,000+ lbs.	SS 30

Etheric Shock Bombs

An etheric shock device generating a simple spherical wavefront, equivalent to an explosion, also has a minimum output of 1,000 kJ. It causes 2.4 × (square root of *O*) dice of damage at 2 yards; divide rolled damage by 4 for each further 2-yard interval. Weight of the apparatus is 1.75 lbs. per 1000 kJ. This does not count the weight of batteries; each kJ of output requires batteries storing 2 kWs.

Èlan Vital

What makes living things live? The dominant view in the 20th century is mechanism: life is a complex organization of matter and energy that acts according to the ordinary laws of physics. In the 19th century, mechanists were less common; many biologists were vitalists, believing that living matter was animated by a special force, the *élan vital*.

Before 1828, it was thought that certain compounds could only by formed by the unique forces within living tissues; these compounds were called "organic." Inorganic compounds such as minerals changed form when heated but returned to the original form when cooled; organic compounds did not change back, seeming to show that it took more than physical forces to create them. This was disproved when Friedrich Wöhler synthesized urea, and organic chemistry was redefined as the chemistry of carbon compounds. This success inspired some chemists to dream of synthesizing life (see *Making Men from Chemicals*, p. 103). Perhaps one special molecule could animate dead matter. As a variant, after he discovered that certain organic molecules occurred in left-handed and right-handed forms and that life only used one form of each molecule, Pasteur speculated that asymmetry might be the secret of life and spent considerable time exposing carbon compounds to magnetic fields; the lack of results convinced him that life could not originate spontaneously from unliving matter.

Other speculations emphasized electricity, inspired by Luigi Galvani's discovery that electric current made dead muscle tissue twitch. Nearly every film version of *Frankenstein* has shared this assumption – though obviously simple electricity can't be the secret of animation; some special way of applying it would be necessary.

A different line of thought derived from Anton Mesmer's discovery of hypnosis in the 18th century. The hypnotist's influence over the subject was often thought of as a physical force, "animal magnetism," that could override the normal mental and even physiological functions of the subject. Experimenters hypnotized subjects at a distance or through an opaque screen to show that animal magnetism's properties paralleled those of ordinary magnetism. Charismatic people were described as "magnetic" (see p. 104). Maxwell's concept of the ether and Hertz's demonstration of radio waves suggested further ideas along these lines.

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