GURPS® Fourth Edition

VEHICLES

STEAMPUNK CONVEYANCES™

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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.

Introduction

Steampunk is a genre defined by technology, including vehicles, whether in the sense of detailed and logical explorations of possible alternative historical development paths, or of *really cool* visual design providing a strong period flavor. Hence, the appearance of the new ***Steampunk*** series for ***GURPS*** *Fourth Edition* is the cue for a lot of treatment of steampunk technology in ***GURPS*** terms.

So, this book of vehicles, both historical and fantastical is linked to the previously published ***GURPS Steampunk 1: Settings and Style,*** although it does not require that volume for use; vehicles from here could appear in all manner of games. The realistic vehicles are from TL5 or TL6; the more fantastical creations come from a range of divergent and alternate tech paths. For more divergent-technology vehicles, some of them suitable for use in wilder clockpunk games, see Chapter 2 of ***GURPS Fantasy-Tech 1: The Edge of Reality.***

Terminology and Concepts

This supplement uses some specialized terms and concepts, many of which are discussed in more detail in ***Steampunk 1.***

Aeronef: A heavier-than-air aircraft.

Aerostat: A lighter-than-air craft such as a balloon or airship.

Cinematic Technology: Technology which makes for dramatic stories and is given more or less plausible explanations, but which would be totally impossible according to modern scientific understanding. One example is the incredibly powerful batteries which power Robur's *Albatross* (p. 16). Steampunk cinematic technology may have period superscience explanations embedded in the description, or may just involve vehicles or gadgets with wildly optimistic performance.

Dime Novels: A type of low-cost, mass-produced popular fiction published in the United States in the late 19th century, sometimes featuring amazing inventions.

Dirigible: Any lighter-than-air craft that can be steered.

Effective TL: Steampunk games and settings often make use of the idea of divergent tech levels (p. B513). In such cases, the *effective TL* is a TL value equal to the sum of the two parts of the prevailing TL. For example, a TL(5+2) world has an effective TL of 7.

Period Superscience: Many steampunk game devices use the superscience designator ^. However, rather than representing some branch of science or technology that *might* be real or feasible but which hasn't been discovered yet, *period superscience* involves ideas that were once seriously proposed and perhaps accepted, but which have now been disproved or superseded. Some whole historic fields of study, such as alchemy, now rate as period superscience.

Raygun Gothic: The style of design and imaginary technology associated with "pulp" science fiction, from the period 1918-1939. This is, strictly speaking, later than the steampunk period as usually defined – but the style, characterized by flying helmets, goggles, and ornate devices including rayguns, is popular with steampunk artists and costume designers.

Scientific Romances: Science fiction from the late Steam Age, before the term "science fiction" was invented, especially relating to British works.

The Steam Age: The period from 1789 to 1914, also sometimes known as the "Long 19th Century."

Zeppelin: A rigid-bodied airship.

Reading Vehicle Stats

The vehicle details tables in this supplement follow the format defined on p. B463. "Crush" is crush depth, in yards, for a submarine; few submariners will venture deeper than half that depth, and diving beyond crush depth will soon lead to hull failure and death, at the GM's whim. Variations and complications are discussed in the table notes; in particular, many vehicles have different DR on different components. Weapons are detailed in Chapter 2 (pp. 18-19).

Publication History

This is the first edition of ***GURPS Vehicles: Steampunk Conveyances.*** Some of the vehicle concepts here previously appeared in the original ***GURPS Steampunk*** or ***GURPS Steam-Tech,*** but the details have been revised to fit with the new edition of ***GURPS.*** Likewise, some weapon details are borrowed from the current edition of ***GURPS High-Tech.***

About the Author

Phil Masters is the author of ***GURPS Steampunk 1: Settings and Style,*** as well as several other ***GURPS*** books and an roleplaying game of his own creation, ***The Small Folk.*** He mostly has the computational engines which share his study under some manner of control, and his personal automobile performs much as its engineers – fine craftsmen from the German States – intended.

A hardworking engineer hasn't an opportunity every day to exercise his talents in this fantastic way, and add an animal of this description to the creations of the "Arabian Nights."

– Jules Verne, ***The Steam House***

Chapter One
The Means of Transportation

With a squeal of drum brakes, the steam car came to a halt mere inches from the end of the jetty. But that was a futile gesture; the yacht was already half a mile out to sea.

"Dash it all, Noakes," the driver sighed, "there's no way to warn them now!"

"Worse'n that, sir," his companion replied. He raised a pair of binoculars to his eyes, grunted, and handed them to the driver with a gesture to the skies to the north. The driver took them, followed the gesture, and issued a harsh oath. A silver teardrop shape was approaching, trailing black pennants.

"The airship pirates, already!" he said. "Those scoundrels have nerve. And we have no way to stop them!"

"I wouldn't be so sure of that, sir," Noakes observed with a dour smile. His gaze had shifted to the cliffs above the town. "Looks like the lieutenant and Miss Singleton have done as they said."

The driver looked around and gasped. A winged shape, seeming terribly flimsy but bigger than any bird, had taken to the air and was drifting through the heavens toward the yacht and the airship. "But that is just a one-man craft," he said. "He has no chance against a crew of desperate rogues!"

"Don't think so little o' the lieutenant," the loyal Noakes replied. "He's a man o' resource, as they say. An' I believe that Miss Singleton has loaned him one o' her clever new guns . . ."

The vehicles detailed here are divided into land, sea, and air/space types. The weapons installed in some of them are detailed on pp. 18-19.

Land Vehicles

While Steam Age fantasies describe amazing vehicles on water and in the air, most of the time, most people – including adventurers – are concerned with simple land transport. And the era sees a radical change in this area, from muscle power to mechanism, although even at the end, animal-powered transportation is still significant.

Historical Land Vehicles

The ***Basic Set,*** p. B464, has details for a coach and a generic TL5 steam locomotive, the basic modes of mass transportation at the start and the end of the Steam Age. History offers a wide range of variants on such things, and some other options.

Railway Engines

Steam trains are *very* steampunk, but are more likely to serve as plot devices than as personal toys in most games; they are, after all, strictly limited as to where they can go. Still, the odd rail chase scene is possible, and very wealthy Steam Age folk did sometimes own their own railway coaches and even engines, renting use of the rail network as necessary. Note that an engine on its own usually moves *much* faster than a working train; chase scenes where participants endeavor to shed as many carriages or freight cars as possible, for the sake of speed, are entirely logical. However, many steam engines have a separate tender for fuel and water, which they can't discard.

Passenger coaches in the period usually have wooden bodies over metal frames, giving DR 4-7; they would often rate as combustible. When passenger trains first appear, the poorest passengers ride in open cars, buffeted by the elements and coughing on smoke blowing back from the engine. Wealthy travelers in later periods ride in enclosed carriages loaded with ostentatious luxuries. Freight cars are essentially simple wooden boxes on wheels.

The locomotive on p. B464 represents a TL5 European or American workhorse engine. The following show some of the range of possibilities.

Stephenson's *Rocket*

The design chosen to operate the pioneering Liverpool and Manchester Railway in 1830 introduced a number of technical innovations, setting a pattern that lasted for decades, although it was soon superseded by more refined designs. The *Rocket* is a completely open four-wheeled locomotive with a cylindrical boiler, towing an open fuel tender with space for 560 lbs. of coke ($15 for a full load).

Colonial Locomotive

A fairly lightweight but rugged small-gauge engine, shipped overseas to haul freight through some colonial power's territories. It has a crew of two (the usual driver and stoker), and a pair of seats for either resting crew or a couple of guards.

Running light, it can reach around 60 mph, but a train of a dozen laden freight cars can reduce it to a third of that speed. It tows an eight-ton tender which can carry up to 10 tons of coal (giving the listed Range for $400) or wood (giving Range 350 for $135), but hauling a heavy train reduces Range as well as speed to a fraction of those values.

The *Mallard*

A post-Steam Age (late TL6) British design that took the world speed record for steam locomotives (125.88 mph, on a slight down-slope, towing seven coaches) in 1938, although it never hit such speeds in routine service. Its streamlined design is *quite* raygun Gothic. It draws a fuel tender that weighs 70 tons fully laden, with a corridor leading through to the train, allowing crew change-overs on non-stop runs such as the 393 miles from London to Edinburgh. A full load of fuel costs $360.

Personal Transportation

The Steam Age saw a *lot* of development in the realm of personal vehicles.

Hansom Cab

This design of one-horse carriage was patented in 1834, and it became the standard form of hired transport in London and many other cities until the start of the next century. It carries two passengers (three squeezing together) in the semi-enclosed body; later models enclose them further with glazed windows. (Larger parties will have to hire a four-wheeled, two-horse "Clarence" or "growler.") The driver rides outside at the back, exposed to the elements. A hatch in the roof lets the driver communicate with the passengers. He can lock or release the cab doors with a lever.

The chances of getting a hansom up to its top speed in busy city streets are limited. Even so, a *runaway* cab, caused by the horse bolting, is a good opportunity for a passerby (preferably with Animal Handling skill) to become a hero by restraining the animal – or to be trampled.

The listed cost is for the vehicle alone, and is based on historical sources; the GM may choose to reduce this for consistency with other ***GURPS*** vehicle listings, or to reflect the variety of qualities of cab on the market. A *good* cab horse adds about $3,000, but then declines in value through its working life of a few years. A typical cab fare is about $3-$6 a mile (round up to the nearest whole mile).

Trevithick Steam Carriage

In 1803, British engineer Richard Trevithick built a self-propelled carriage to demonstrate the potential of his new high-pressure steam engine. On its first outing, the carriage carried seven or eight invited passengers for about 10 miles around London – the first true self-powered passenger vehicle journey in history. However, it is said that some of those guests swore never to travel in the thing again; road quality and suspension technology were simply not up to making it at all comfortable. After a minor crash on a subsequent outing, the carriage was dismantled.

This is a best guess as to the Trevithick carriage's capabilities, based on a modern reconstruction; a TL(5+1) evolution of the design might have a better Hnd value and considerably improved Move, probably with extra weight and cost. The passengers travel in a carriage-style body, mounted high above the engine and wheels, while the driver sits in an open position at the front, steering the single front wheel by means of a tiller. A stoker stands on a platform at the rear, tending the engine. The engine and other mechanisms are completely exposed. The driven rear wheels are 8' in diameter, being made this large in an attempt to smooth out the worst of the bumps from the road surface, which would otherwise put out the fire as well as discomfiting the passengers. A full load of 15 lbs. of coal costs $0.30.

Prices

Costs given for vehicles in this supplement are mostly, to put it mildly, suggestions and best guesses. Even many of the historical vehicles were experimental designs, built from scratch by their owners, while any historical prices that *are* known have to be converted to ***GURPS*** dollars (below). Anything using superscience could by definition cost whatever the GM thinks is appropriate; apart from anything else, the amazing vehicles in scientific romances and dime novels were often unique plot devices, owned by fabulously wealthy or lucky individuals. In ***GURPS*** terms, the likes of Captain Nemo or Robur would have several levels of Multimillionaire, and treat the vehicle as their home base. Hence, some such large superscience vehicles are given a price of "???". In the unlikely event of anyone trying to buy one of those, the GM should set the price to however many millions will make the game interesting.

All costs are given in "***GURPS*** $," an arbitrary unit of value. To convert these values for the years 1850-1915, divide the ***GURPS*** $ price by 22 to get historical dollar prices, or multiply dollar prices from historical sources by 22 to get ***GURPS*** $ values. For historical U.K. pound sterling values, divide or multiply by 110 instead. So, for example, something listed here as costing $500 would probably have cost *about* $22.50, or £4 10s.

L'Obéissante

Although some experiments with steam-powered coaches occurred in Britain and elsewhere in the mid-19th century, a combination of undeveloped technology, hostile legislation, and poor road surfaces prevented the idea from taking off. With improved roads, TL6 mechanical engineering, and eventually rubber tires and liquid fuels, however, steam-powered cars became a real possibility. *L'Obéissante* ("The Obedient") was built by French engineer Amédée-Ernest Bollée in 1875. It was essentially a small open-sided coach, powered by twin steam motors fed from a large rear-mounted boiler, with sophisticated suspension and steering mechanisms. The driver sat at the front, but the stoker at the back controlled the throttle. Had steam-car development grown from those earlier experiments or followed this pattern, it might have become less a matter of personal automobiles and more about mass transport – but even Bollée soon switched to building smaller vehicles. The details given here are a best guess as to *L'Obéissante*'s capabilities; a TL(6+1) evolution of this design might have somewhat better Hnd, SR, Move, and Range. A full load of 60 lbs. of coal costs $1.20.

Steam Tricycle

Late in the 19th century, the French De Dion-Bouton company produced a range of steam vehicles. Their steam tricycles were a modest commercial success in the 1880s, and they make good models for handy, cheap individual transportation for steampunks. (The company also built slightly larger two- and four-seat, four-wheeled vehicles, with broadly similar performance.) They were completely open, with the boiler mounted between the two front wheels. A full load of 30 lbs. of coal costs $0.60.

A TL(6+1) evolution of the design might have better Hnd, SR, HT, and Move; however, De Dion-Bouton switched to internal combustion engines in the 1890s.

Starting Steam

One of the lesser drawbacks with steam engines, when compared with internal combustion, is that it takes a while to start from cold. In early designs, a whole tank of water has to be heated to near boiling point, which takes a while even with efficient burners and good fuel; startup times could be 20-30 minutes. The TL6 development of the "flash boiler," which heats smaller quantities of water as it is pumped through narrow tubes, made domestic steam cars more practical, although parts of the engine still have to be heated up; the most advanced models could supposedly start in 40 seconds flat. However, once internal combustion engines were fitted with electric starter motors, they had steam completely beaten.

This is a relatively minor concern for most drivers – at worst, they just have to remember to start the car warming a few minutes before their journey – but for action heroes, it could be a serious embarrassment. It's not a problem if you stopped the car within the last few minutes; the engine will still be warm. Chasing the villains in a car that's been sitting overnight, however, is trickier.

The GM who doesn't want to just ignore this problem can add fictional "fast start technology" to their game steam engines. For example, a pushbutton mechanism might dump a cartridge of reactive chemicals into the boiler, while a brief blast of intense flame heats the engine structure. Anything along these lines would surely be quite dangerous, though, involving scary chemicals, intense heat, and surges of high pressure. Mechanic (Steam Engine) skill rolls may be needed to work the mechanism, and don't roll a critical failure!

Stanley Steamer

The various models built by the American Stanley twins between 1897 and 1924 represent the pinnacle of commercial TL6 steam-car production, reliable and relatively quick to start (always an issue with steam engines, which have to build pressure from cold; see *Starting Steam,* above). They were also very safe, never suffering boiler explosions; they were considered superior to early internal combustion engines with starting handles, which could "kick" dangerously. They competed on equal terms with internal combustion cars for some years, until the invention of the electric starter motor. A Stanley vehicle even set the world land speed record in 1906.

This is the successful Stanley Model 735 of 1918 to 1922 – technically just post-Steam Age, but something similar might be common in a steampunk world with slightly faster steam-technology development. It has aluminum bodywork over a steel frame, and runs on kerosene (a full 20-gallon tank costs $30). The quoted Range, however, is often limited by water load and is actually 150 to 250 miles, depending on circumstances. It can carry seven people, though that would probably make it a little cramped; a four-seat version (the Model 736) – with, presumably, better luggage capacity or performance – was also advertised.

Steam Wagon

Steam wagons (trucks) were widespread commercial (and occasionally military) workhorses in the early 20th century, especially in Britain, where coal was less heavily taxed than oil. Something similar might well appear a little earlier in a steampunk world. They varied widely in design, capacity, and performance; this is a mid-size 1920s design. Its Range is limited by the 200-300 gallons of water it carries; it will consume around 200-400 lbs. of coal in that distance (at a cost of $4-$8), depending on load, and can hold more if necessary in its cargo space. It usually carries up to six tons of cargo in a low-sided open bed, but it could be fitted with an enclosed compartment with space for around four tons of cargo, specialized liquid-carrying tanks, or a passenger compartment with seats for a dozen or so people – say, an infantry squad. It can also tow substantial loads. Cinematic adventurers might have one with accommodation for themselves, storage space for their gear, and miraculously improved Range.

Fantastical Land Vehicles

These non-historical vehicles are examples of the kind of thing that might appear in steampunk settings.

The Steam Man of the Prairies

This invention appears in the 1868 dime novel of the same title by Edward S. Ellis. It is, in effect, a humanoid steam-powered tractor, made to look like a 10' tall man with a stovepipe hat (actually the funnel), a near-spherical body (the firebox and boiler), and a "knapsack" where the pressure valves are mounted. The "arms" are simply connections to the shafts of the cart which it tows. The feet have metal spikes on the underside, ensuring good traction on rough ground. The vehicle is quite robust, surviving collisions with walls and a buffalo, and can achieve 30 mph on roads or level ground. Its inventor calculates that it could actually manage twice that speed if it was drawing its cart on railway tracks. The controls are simple: two straps, which are pulled to make the "man" turn left or right, a pull cord connected to the pressure release valve, and another cord which operates a steam whistle mounted where the nose should be.

The four-wheeled cart carries supplies of water (fed through a pipe which runs along one of the shafts) and fuel; the fire has to be periodically fed through a panel in the "man's" belly. The cart can carry nearly a day's worth of water and a day's worth of wood or two days' worth of coal.

The nominal Range is based on a day of travel at normal operating speeds, using around $5 worth of fuel, but in practice, in that time, the driver must often pause to tend the fire, and may well scavenge up some more wood for fuel during rest stops. The cart also has adequate suspension and room for at least four passengers and their belongings.

The price for this vehicle is nominal. Only one steam man is known to have been built, and that was used by its inventor, who turned down an offer of $22,000, mostly because he didn't want to sell but also because he thought it was worth much more. However, if the design went into mass production, the price would doubtless fall very significantly, which is what is assumed here.

The Steam House

The novel of this title by Jules Verne has its heroes touring northern India with a kind of road train, drawn by a steam engine that is built to look like a gigantic elephant, 20' high and 30' long. The stoker rides inside, moving between the tender section at the rear of the machine and the engine near the front. The driver occupies an ornate, enclosed howdah with tall glazed windows, which is large enough to hold at least 10 people in a pinch, and serves as a refuge if the vehicle is attacked. (The elephant doesn't normally carry passengers, though; it's a hot, loud engine, while the trailers are luxurious and spacious.) The elephant's flexible raised trunk acts as the engine's funnel, while its eyes are electric lights. The legs, which are linked to the wheels and move in a walking motion, are mostly just decoration. Despite its steel construction, the elephant can float on water, at which point the motion of its feet is enough to move it, giving it a water Move of 0.5/3. For that matter, it functions perfectly well on colonial roads, thanks to its sophisticated suspension system, although it is probably not up to actual cross-country travel.

This engine draws a road train of two trailers – essentially giant bungalows on four wheels each, ornately decorated to resemble Asian pagodas. Both are 18' wide; the first, 45' long, has luxury quarters for four passengers, while the second, 36' long, has a kitchen, storerooms, and quarters for the crew and four other servants. The trailers too can float, and the engine can thus cross bodies of water with them in tow. The "steam house," which was originally constructed on the orders of an insanely wealthy Indian prince, can run on either coal or wood; using the latter would reduce its estimated Range considerably. A day's travel burns about $100 worth of coal.

Iron Horse

The creation of an alternate technological history which has joined functional legged propulsion systems to small steam engines, this vehicle was built by military engineers who still thought in terms of traditional cavalry. Hence, the driver rides on a saddle and steers mostly with his legs while operating a heavy rifle (p. 18) from behind a gun shield. The gun mount gives only a 45° arc of fire, but the "horse" is quite agile and maneuverable. However, its Move falls to 3/7 off paved roads.

Much of the time, the rider is expected to refuel the horse by scavenging wood, but a full load of 75 lbs. of fuel would cost $0.50 if bought for cash.

Land Ironclad

H.G. Wells' story "The Land Ironclads," published in 1903, is widely regarded as the first fictional depiction of what is now known as the tank. The vehicles it depicts – able to cross defensive trenches with ease, sweep aside infantry and cavalry, and evade fire from enemy artillery – certainly solve many of the problems that the tank was designed to handle. However, land ironclads also have some significant differences. They are large (100' long, whereas even big modern tanks are only around 30'), they use pedrails (see below) rather than tracks, and they are armed with batteries of semiautomatic rifles for antipersonnel work, rather than the big guns fitted to real-world tanks; use the heavy rifle (p. 18) with an extended magazine giving Shots 12(3). Each rifle is manned by two gunners with an advanced optical-mechanical sight that adds +3 Acc and permits aimed fire while the vehicle is on the move; this game treatment assumes that there is room for 10 gun positions on either side. The rest of the crew consists of a captain (who can survey the battlefield from a pop-up conning tower when necessary) and six engineers.

Because the gun ports are recognized to be the vehicle's main weak point, there are two dummy ports for each real gun. A port can be targeted (SM -3, no DR), but unless the opponent first watches the ironclad firing for at least 10 seconds, and then makes an Observation roll at +2 but with range modifiers applied, there is only a 1 in 3 chance of hitting a real port. In any case, the guns are aimed through a periscope system; small arms hits on the ports can only damage the guns, not crew.

Pedrail Wheels

"Pedrail" wheels are a proposed TL6 technology, invented in 1903, that never came to much. Pedrails are large ground wheels, each of which has a set of "feet" mounted around the rim on flexible joints, each possibly even having its own suspension system. This system adjusts automatically to rough terrain, giving good traction on uneven surfaces without excessive ground pressure. H.G. Wells saw early discussions of pedrails and was impressed enough to use them on his fictional "land ironclads" (above).

When British engineers began the development of the tank during World War I, pedrail wheels were considered as an option. However, they hit production problems and proved weak; continuous tracks were simply superior. Pedrails *are* mechanically complex and probably prone to jamming and other malfunctions; modern off-road vehicles instead employ either rugged conventional wheels with good suspension systems and specialized tires, or caterpillar tracks.

In game terms, fully developed pedrails might be treated much like other wheels but with almost the off-road capability associated with tracks. They'd make Tracking as easy as tracks (+2 to skill) and have *even worse* noise levels (+3 to Hearing rolls). Their visible mechanical complexity and unfamiliar appearance does make them very steampunk, though.

The land ironclad is diesel powered; filling the 48-gallon tank costs $60. The wheels are protected by a flexible armored "skirt." The story talks about 12" armor plate, but that would be ridiculously heavy. The vehicles are definitely threatened by light field artillery, so the DR value has been set at something more plausible.

Vehicles of this type would have very limited ability to engage other armored vehicles; their tactic against artillery is to rush to rifle range and then systematically kill the enemy gunners. That said, the story admits that they are a first attempt at the technology; next-generation designs might have better Move and other abilities, and carry heavier guns to engage enemy fighting vehicles or mobile artillery.

O-Daisuchiimu

The "honorable big steam" is a war machine for an anime-flavored steampunk game with advanced mechanical engineering but no electronics or internal combustion. This vehicle is nothing less than a humanoid, steam-powered mecha, using advanced mechanical computers to control its limbs and guide its gun. It has seats for a gunner, engineer, and driver, plus standing room for a unit commander or passenger. Off-road, its Move values are halved. Its bunkers hold half a ton of coal, costing $20.

The *O-Daisuchiimu* has a 1-pounder cannon (p. 18) mounted in its head-turret; advanced mechanical computers enable this to perform indirect fire, using Artillery (Cannon) skill. See ***GURPS High-Tech,*** p. 139, for rules for this; the *O-Daisuchiimu* typically performs predicted indirect fire attacks on areas known to hold significant enemy forces. Hence, the mecha's primary mission is getting the gun into an optimum position and then blazing away with surprise, from cover; terrifying enemy troops with its mere appearance is a frequent bonus. Its arms have ST 50 and are useful for clearing away obstructions and carrying away captured or damaged equipment. Skilled generals can use a mecha or two to create a temporary weak point in enemy lines, ripe for a quick assault by other troops.

Land Vehicle Table

Terms and notation are as defined in *Vehicle Statistics,* pp. B462-463.

TL	*Vehicle*	*ST/HP*	*Hnd/SR*	*HT*	*Move*	*LWt.*	*Load*	*SM*	*Occ.*	*DR*	*Range*	*Cost*	*Loc.*	*Notes*
TEAMSTER (EQUINES) (IQ-5, Animal Handling (Equines)-4, Riding (Equines)-2)														
5	Hansom Cab	37†	0/2	12c	4/9*	0.7	0.3	+2	1+2	2	F	$10K	DEO2W	
DRIVING/TL (LOCOMOTIVE) (DX-5, IQ-5, other Driving-5)														
5	Stephenson's *Rocket*	85	-3/4	10	1/15‡	5	0.2	+3	2	5	40	$8K	2E4W	
5	Colonial Locomotive	133	-2/5	11	1/30‡	18.5	0.4	+4	2+2	10	850	$29K	O8W	
6	The *Mallard*	245	-2/5	11	1/65‡	115	0.2	+7	2	15	450	$350K	12W	
DRIVING/TL (AUTOMOBILE) (DX-5, IQ-5, Driving (Heavy Wheeled)-2, other Driving-4)														
5	Trevithick Steam Carriage	63	-4/3	11f	0.5/4*	2.9	1	+3	2+8	3/5	12	$2,900	2EGS3W	[1]
6	*L'Obéissante*	83	-3/3	11f	1/13*	5.7	1.2	+4	2+10	4	30	$5,500	O4W	
6	Steam Tricycle	46	0/2	9f	2/18*	0.87	0.12	+1	1	3	15	$1,000	E3W	
6	Stanley Steamer	63	-1/3	12f	2/38*	2.6	0.7	+3	1+6	4	200	$40K	O4W	
DRIVING/TL (HEAVY WHEELED) (DX-5, IQ-5, Driving (Automobile)-2, other Driving-4)														
6	Steam Wagon	82	-2/4	11	0.5/9	11	6.5	+5	1+2	6	60	$13K	O4W	
6+1	Steam House (Engine)	235	-3/4	12	1/13*	100	0.2	+5	2	8	300	???	gS4W	
6+1	Land Ironclad	244	-4/5	11	0.5/7	120	6	+7	47	100/150	100	$450K	rs16W	[2]
DRIVING/TL (MECHA) (DX-5, IQ-5, Battlesuit-3, other Driving-5)														
6+1	Steam Man of the Prairies	50	-1/2	11	3/15	1	N/A	+2	N/A	14	400	$10K	2L	[3]
6+1	Iron Horse	58	+2/2	12	3/8	1.7	0.18	+1	1	10	65	$32K	E4LX	
6+1	*O-Daisuchiimu*	131	+1/1	12	5/9	18.8	1.2	+4	3+1	40/80	80	$742K	2A2LT	[4]

Notes

[1] The exposed chassis, engine, and wheels are DR 5 and flammable; the passenger compartment is DR 3 and combustible.

[2] Body is DR 150 at the front, sides, and back, 100 on top and underneath; retractable conning tower and wheel skirt are DR 50.

[3] The driver, passenger, fuel, and supplies are pulled in a cart; see description on pp. 6-7.

[4] The head (turret) is DR 80 at the front and DR 60 at the sides and back; all other locations are DR 40.

An even more cinematic version might have higher speed, slightly better armor, and full Move when off-road, and maybe mount a larger gun in the turret and a couple of secondary weapons in shoulder or arm mounts – or even carry a giant sword. Note that two of these machines fighting each other would need armor-piercing ammunition or bigger guns.

Close inshore was a multitude of fishing smacks – English, Scotch, French, Dutch, and Swedish; steam launches from the Thames, yachts, electric boats . . .
– H.G. Wells, ***The War of the Worlds***

Ships, Boats, and Submersibles

While the Steam Age saw steam and steel spread across the land, and produced experiments and fantasies in the air and even space, the largest real vehicles of the era floated on water. Although sailing craft survived in commercial use, steam power rendered most large vessels independent of the wind.

The pattern of progress was most notable in warships, where the period saw a continuous arms race. The Napoleonic "wooden walls" grew into larger vessels with iron frames and perhaps auxiliary steam engines, which were followed by "ironclads" which resembled bigger versions of those Napoleonic warships but with steam engines as well as sails, metal armor, and larger guns. After that came mastless iron steamships with big guns in turrets. These evolved into the steel "dreadnoughts" which fought in WWI. The evolutionary jumps every couple of decades had a bad habit of rendering the previous generation obsolete overnight, forcing the rival major powers into a series of huge fleet rebuilding programs. Meanwhile, sailing ships were gradually replaced by steam in commercial service; see p. B464 for a TL6 tramp steamer.

Surface Watercraft

Submarine travel only developed late in the Steam Age, but surface vessels were common and have plenty of game possibilities.

Small Steam Launch

Small steam-powered boats became quite widespread in the late 19th century. A launch like this one is a handy personal transport on lakes or rivers, but lacks the stability for safe operation at sea. This sophisticated example has a metal hull over a wooden frame and triple-expansion steam engine. Although it is completely open to the elements, it may be fitted with a lightweight canvas canopy to provide shelter from sun and rain. It normally runs on coal, carrying 130 lbs. at a cost of $2.60. If it has to use cheaper, probably scavenged, wood, divide Range by 4.

Armed Launch

This is a workhorse Steam Age naval/customs craft, typically carried aboard a warship or attached to a harbormaster's station to run errands, intercept smugglers, and carry boarding parties and messages. It can operate under steam (use the Move and Range on the table), put out a set of oars (a crew of 12 oarsmen gives Move 0.05/3), or employ a mast and sail (Move 0.3/6 in a favorable wind) – switch between Boating (Motorboat), Boating (Unpowered), and Boating (Sailboat) skills to operate it as appropriate. Leaving those oarsmen behind would give space for the same number of extra passengers. The steam engine is located on a conveniently accessible mounting, which gives +1 to targeted attacks on the craft's "vitals."

The launch is armed with a 1-pounder cannon (p. 18) on an open mount at the bow. A full load of coal weighs three tons and costs $120.

Steam Yacht

This kind of personal seagoing craft would have appealed to wealthy enthusiasts in the Victorian era. However, this design includes a few steampunk features, notably a sextuple-expansion steam engine. It would be suitable as a mobile base for a wealthy hero or villain, having a workshop for engineering work on the high seas and a small laboratory. It is entirely seaworthy, while being compact enough to slip some way up larger rivers. A party of PCs with a wealthy member or Patron could use it for adventures, or it could serve as a tender for more experimental sea or air vehicles. It has a crane with a four-ton lifting capacity and some storage space.

The vessel has a wooden hull (DR 8) overlaid with iron plates (DR 10). The performance values on the table are when using the engine alone; the ship also has a working set of sails, capable of giving it Move 0.05/5 in the right conditions; steam and sail combined can give Move 0.15/7. If it relies on sail, its Range is limited only by supplies and maintenance concerns; it is quite able to cross the Atlantic. Its crew consists of a captain, a navigator, a mechanic, two sailors, and a steward; if they share cabins, the yacht also can carry up to five passengers in comfort. A full bunker of coal (11.25 tons) costs $450.

Torpedo Ram

In H.G. Wells' *The War of the Worlds,* the fictional Royal Navy vessel *Thunder Child* sacrifices itself heroically, destroying two Martian war machines even as the aliens sink it with their heat rays, thereby covering the escape of a fleet of refugee ships. The *Thunder Child* is a torpedo ram, the product of a brief period of confused experimentation in naval history – an outsize torpedo boat with a reinforced ramming bow. Early torpedoes were slow and short-ranged, so torpedo rams were designed as low-built, fast, maneuverable vessels which could get into enemy harbors at night, smashing their way through any defensive booms, then wreak havoc with torpedoes or even by more ramming before using speed to escape. However, this tactic rapidly proved infeasible, and few were ever built.

These details are based on HMS *Polyphemus,* the only torpedo ram in British service when Wells wrote his story.

Polyphemus was 240' long and was armed with five 14" torpedo tubes (one of them behind a hinged bow cap/ram) and 18 torpedoes (p. 18) to load in them. It also had six 1" Nordenfelt machine guns (p. 18) on the raised bridge deck (which could float off as a pair of life rafts if the ship ever sank), and a ramming prow (see below). It could carry up to 300 tons of coal ($12,000), although 200 tons ($8,000) was more typical.

The ship had the shape of a cigar and sat low in the water. Its armor plating gave it DR 560 on the conning tower; its hull had lighter protection, amounting only to DR 70 below the waterline and DR 210 above *against square-on hits*. However, the shape of the hull ensured that direct-fire gunnery hits from other ships or many surface installations would strike at a very oblique angle, increasing the effective protection by a factor of two to three times – so it could simply be given DR 560 against any such attack. Indirect fire, descending from a high arc (or heat rays from long-legged tripods), would only have to penetrate DR 210, though. At top speed, the vessel could ram for 7d×10+70 cr damage; for simplicity, treat that DR 560 as also being effective against impact damage when ramming. In any case, it would rarely have rammed targets that it could not destroy or push aside.

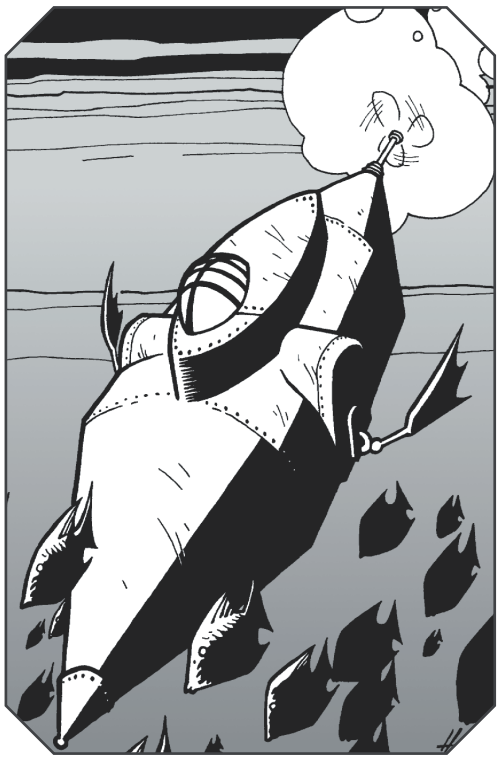
Rams

Some vehicles – mostly in practice watercraft – are fitted with *rams* or other similar frontal reinforcement. A ram increases the damage *inflicted* by the vehicle in a frontal collision by +1 per die. It also reduces damage suffered by the vehicle in any frontal collision by 1 point per die.

Pre-Dreadnought Battleship

This is a battleship of the 1890s or 1900s, after designers began putting all of a ship's biggest guns in armored turrets but before the great turbine-powered dreadnoughts transformed naval warfare into its 20th-century form. Pre-dreadnoughts typically had a variety of sizes of gun, intended to ensure a combination of range, hitting power, and rate of fire, which also gave ships an intricate, very steampunk appearance; dreadnought designers settled on one, large size of gun instead, as simplicity proved to be a virtue.

These details are based on the British Royal Navy's *Majestic* class, which represents the maturity of pre-dreadnought technology. It carries four 12" guns in twin turrets fore and aft which can rotate to either side; twelve 6" guns divided between port and starboard casemate mounts; sixteen 12-pounder and twelve 3-pounder guns in a quite bizarre assortment of mounts (all treated here as small turrets); and five 18" torpedo tubes with Mark IV torpedoes (see pp. 18-19 for all these). The top speed requires running the engines with a forced draft, which is only done for limited periods; reduce Move to 0.05/9 in routine operations. Its bunkers usually hold up to 1,200 tons of coal ($48,000), although 2,100 tons ($84,000) is possible for very long-range missions.



Submersibles

Venturing beneath the waves appeals to the steampunk imagination – although in truth, early real-world submarines were more like surface-based attack boats that could dip beneath the waves briefly for sneak attacks.

Fulton's *Nautilus*

This is the submarine built by American inventor Robert Fulton and offered to the Emperor Napoleon for mercenary service against the British in 1801. It uses a sail (on a collapsible mast) on the surface, and a hand-cranked propeller when submerged; it is thus controlled using Boating (Sailboat) and Submarine (Mini-Sub) in the two different modes. The performance details in the table are for sailing on the surface; underwater, it has Move 0.02/1. The *Nautilus'* only weapon is a naval mine on a spike, which is attached when the submarine has sneaked up on an enemy ship, and then detonated from a safe distance by a pull cord. The proposed mines contained from 10 to 200 lbs. of gunpowder; a 100-lb. mine would do 6d×20 cr ex damage.

In practice, the *Nautilus* was probably too slow and leaky to accomplish its mission, and the French (and later the British) lost interest and withdrew funding. In an alternate history, though, Fulton might score a couple of lucky successes, parley his ensuing reputation into funding for his dream of larger submarines, maybe even with steam power, and then live longer than in our history, becoming the father of TL5 submarine operations. His work on early steamboats *did* lay the foundations for the development of riverboats in the American West; a timeline in which Fulton died in an accident or failed mission on the *Nautilus* might see markedly slower U.S. expansion westward.

Verne's *Nautilus*

This is the vessel which is the real star of Jules Verne's *Twenty Thousand Leagues Under the Sea* – a period superscience submarine, built and commanded by the brooding Captain Nemo. (See ***GURPS Adaptations*** for more on converting the novel to ***GURPS,*** including a slightly different take on the ship.)

The *Nautilus* is powered by the marvel of electricity – specifically, batteries with amazing capacity, requiring only occasional chemical recharging using power from coal from underwater mines.

Torpedo Rules

The naval "automotive" torpedo (in contrast to earlier uses of the word for unpowered weapons that would today be called mines) was a late Steam Age invention that allowed small craft to threaten the largest warships. The torpedoes in turn inspired navies to start mounting light, long-range guns on their warships to eliminate attacking torpedo boats, and to build "torpedo-boat destroyer" escort vessels.

Early torpedoes were unguided, slow, and unreliable. Some moved no faster than the vessels from which they were launched, but the technology evolved rapidly. Use the following rules if an early model torpedo is used in play, with the statistics on pp. 18-19.

A torpedo has a Move (in yards per second), a Range in yards (which is how far it travels before the motor gives out and it sinks), a damage rating for the warhead, and a Malf. number (p. B407). A malfunction means either that its motor fails at some point, or the warhead fails to detonate even if the torpedo does hit. (There's a 50% chance of either, if it matters; a good motor and bad warhead can at least force a frightened target into desperate dodges.)

Most Steam Age vehicles that are armed with torpedoes have fixed tubes firing ahead (or occasionally astern), and so have to be pointed at the target for a turn. When a torpedo is fired, the person in charge of the launcher makes an Artillery (Torpedoes) roll to hit, with the usual penalties for target speed and range and bonuses for size.

Success just means that the torpedo is heading for where the target will be when it arrives, other things being equal. If a target vessel's operator or bridge crew know that the torpedo is underway, either because they saw it being launched or because a very sharp-eyed lookout realized that a sneak attack was coming, they should try to *spot* it, requiring a Vision roll at +3 minus range modifiers from the operator or a crew member on the bridge who is doing nothing else, with one attempt permitted per turn. Once he knows where it is, the operator can attempt a Vehicular Dodge (p. B375), at +1 for every second that the torpedo has to run between when it is spotted and when it arrives. Alternatively, if the vessel is facing the right way or has time to turn, it may simply try to outrun the torpedo. If the target's crew never do spot its exact location, the operator can still attempt a Dodge, but at -3.

When a torpedo hits, apply its damage to the ship's armor. Many early warships have significantly less DR below the waterline, although the invention of the torpedo causes that to change.

Note also that a steampunk inventor who comes up with a *guided* torpedo will be blessed and cursed by every navy in the world . . .

Its design is a simple streamlined cylinder, 230' long, with windows in the luxurious saloon section, and a retractable glazed compartment to grant a crewman a good view while maneuvering the vessel; a powerful searchlight mounted behind that steering compartment allows safe operation on dark nights or in deep water. Its exact number of crew is unclear, as is its effective cargo capacity; the table shows best guesses. It certainly carries a small rowing/sailing boat which can be sealed against water with a few people on board and released to float to the surface for minor expeditions; this has a telegraph wire connecting it to the *Nautilus* to allow it to request recovery.

This *Nautilus* lacks ranged weaponry (apart from some powerful superscience sidearms for the crew), but Nemo is no pacifist; to start with, it has a sharp, reinforced ramming prow (see p. 10). Given the damage it is described as doing to some killer whales which Nemo dislikes, the *Nautilus*' ramming damage – 6d×24+144 cr at full speed, under the usual rules for vehicle collisions – might actually be defined as *cutting* instead, but without the +1 per die for a normal ram (thus, 6d×24 cut at top speed). The vessel seems able to ram even warships at high speeds without taking any damage, so assume that it is reinforced to give it DR 600 against damage from its own ramming attacks. Also, the hull can be electrified to repel would-be boarders; anyone touching it must roll against HT-3 (each second of contact) or be stunned.

The *Nautilus'* crush depth appears to be almost unlimited. It is described as diving more than 50,000' down (much deeper than the deepest part of the ocean known to modern science, in fact), although Nemo does not choose to linger that deep, so a practical limit of 20,000 yards seems reasonable.

Nemo mentions a price for it that converts to $38 million, including his fabulous collection of artworks, but given its unique capabilities and superscience batteries, anyone who controlled it could probably demand any price from the governments of the world.

B-Class Submarine

The possibilities of submarine warfare became a topic of interest and some nervousness for navies and armchair strategists at the start of the 20th century; for example, the eponymous documents in the Sherlock Holmes story "The Adventure of the Bruce-Partington Plans" describe a submarine that renders naval warfare "impossible within the radius of its operations." In reality, though, early submarines were slow and painfully unreliable, and had to spend most of their time on the surface.

Still, Britain's Royal Navy took an interest in the subject, starting with the experimental Holland class and the unreliable A-class boats. The first *genuine* Steam Age combat submarines were the B class; these effective weapons were built between 1904 and 1906, yet saw some service in WWI despite being outdated by then. The listed Move was achieved on the surface, using the petrol engine; underwater, electric motors gave Move 0.1/4 with Range approximately 50 miles. Filling the 5,800-gallon fuel tank costs $8,700.

B-class boats were armed with a pair of torpedo tubes loaded with 18" Mark VIII torpedoes (p. 18); they could carry reloads, but only by sacrificing an equal weight of fuel and hence reducing Range to around 570 miles. They lacked long-term facilities for the crew; patrols lasted no more than three to four days.

Surface Watercraft Table

Terms and notation are as defined in *Vehicle Statistics,* pp. B462-463.

TL	Vehicle	ST/HP	Hnd/SR	HT	Move	LWt.	Load	SM	Occ.	DR	Range	Cost	Loc.	Draft	Notes
BOATING/TL (MOTORBOAT) (DX-5, IQ-5, Boating (Large Powerboat)-2, other Boating-3)															
6	Small Steam Launch	58	-1/4	10c	0.3/4	2.15	0.6	+3	1+5	0/4	24	$6.3K	O	1.2	[1]
BOATING/TL (MOTORBOAT) (DX-5, IQ-5, Boating (Large Powerboat)-2, other Boating-3), BOATING/TL (SAILBOAT) (DX-5, IQ-5, Boating (Large Powerboat)-4, other Boating-3), or BOATING/TL (UNPOWERED) (DX-5, IQ-5, Boating (Large Powerboat)-4, other Boating-3)															
6	Armed Launch	94	-2/3	9f	0.2/6	12.2	5.7	+5	16+2	4/2	180	$19K	MOX	2.3	[2]
SHIPHANDLING/TL (SHIP) (IQ-6, Seamanship-5, Boating (Large Powerboat)-5)															
6+1	Steam Yacht	216	-3/5	12c	0.1/6	101	22	+7	6+5	18/10	950	$200K	g2MS	4.7	[3]
6	Torpedo Ram	700	0/3	11c	0.1/10	2,900	230	+10	80	560/210	1,600	$19M	S6X	20.5	[4]
6	Pre-Dreadnought Battleship	1275	-3/6	11c	0.05/10	17.7K	1.5K	+11	672A	740/290	8,100	$100M	2MS 2T40t	27	[5]

Notes

[1] DR 0 from above, 4 from all other directions.

[2] DR 0 from above, 2 from underneath, 4 from other directions.

[3] Hull is DR 18, superstructure is DR 10.

[4] DR 560 against most direct fire, 210 against most indirect fire, 70 below the waterline; see p. 10.

[5] DR 740 at the waterline (vs. torpedoes, low-angled gunfire, etc.); decks are DR 290; secondary gun casemates are 490; main turrets and conning tower are 1,150. The Locations do not include the many tertiary gun mounts.

Submersible Table

Terms and notation are as defined in *Vehicle Statistics,* pp. B462-463. See *Reading Vehicle Stats,* p. 3, for details on Crush.

TL	Vehicle	ST/HP	Hnd/SR	HT	Move	LWt.	Load	SM	Occ.	DR	Range	Cost	Loc.	Draft	Crush
BOATING/TL (SAILBOAT) (DX-5, IQ-5, Boating (Large Powerboat)-4, other Boating-3) or SUBMARINE/TL (MINI-SUB) (IQ-6, other Submarine-4)															
5	Fulton's *Nautilus*	100	-3/2	12	0.1/3	8	0.35	+4	3S	10	F	$42K	rMX	4	60
SHIPHANDLING/TL (SUBMARINE) (IQ-6, Submariner-5, Submarine (Large Sub)-5)															
5+1^	Verne's *Nautilus*	576	0/4	12	0.2/25	1,500	33	+10	20+4AS	180	50,000	???	grs	21	20,000
6	B-Class Submarine	335	-2/3	10	0.1/7	316	22	+8	15	40	740	$5M	S	11	100

Aircraft and Spacecraft

Humanity has long dreamed of flight; the Steam Age saw that dream come true, while science even began to hint at ways of venturing into space. However, steampunk aviation is always a weird and eccentric affair.

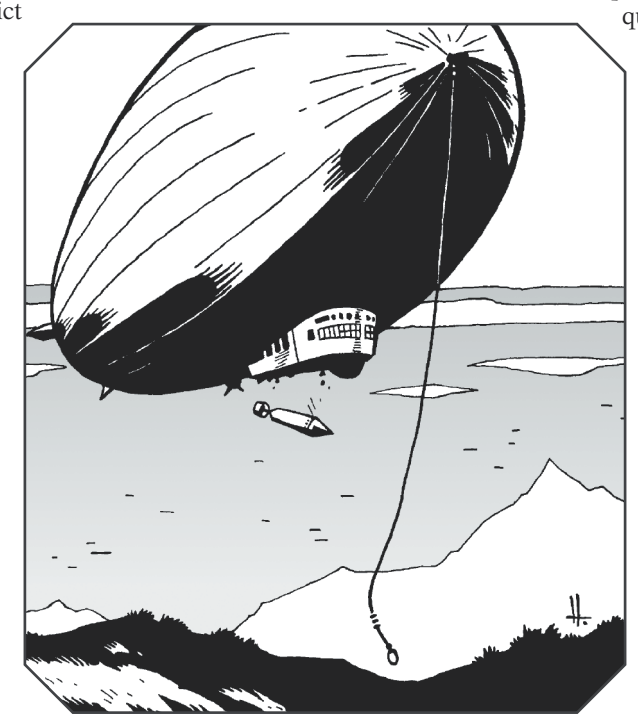
Aerostats

A balloon or airship consists of a large gasbag or gas-filled hull supporting a much smaller basket or cabin, along perhaps with some engine pods and such. Wind resistance puts hard limits on the speed attainable even by dirigibles with powerful engines, and bad weather can be deadly for them; sensible pilots keep an eye on forecasts and avoid storms at any cost.

Hydrogen was the best available Steam Age lift gas, although many balloonists used the coal gas which was then widely and cheaply available as a domestic utility. Coal gas has about half the lifting power of hydrogen, so gasbags had to have twice the volume for the same load. (Coal gas also contains carbon monoxide, among other gases, making it actively toxic and slow to disperse as well as flammable.) Hot air has perhaps a quarter of the lifting power of hydrogen, and requires that the balloon carries a supply of fuel, although it is a cheap, safe option for modern balloon hobbyists and joyriders.

It is quite easy to hit an aerostat *somewhere* with a missile weapon, but somewhat harder to target crew or vital systems.

Early WWI fighter pilots found it surprisingly, frustratingly hard to set fire to big bags of hydrogen, though not impossible once the right weapons and tactics were identified. But even when an aerostat starts burning, it doesn't automatically explode; that needs enough damage to create substantial gas/air mixing, followed by a spark. In ***GURPS*** terms, aerostats can best be treated as flammable but not combustible, usually with reasonable HT. If the GM rules that a specific attack is unlikely to create a spark, even a major wound may not be enough to set one burning. Incendiary bullets with just a dash of phosphorus on them were rarely enough to bring down zeppelins, but flaming rockets could be effective. Artillery-sized guns on the ground could inflict crippling amounts of damage, shredding gasbags, unless aerostats flew high, which reduced their military usefulness; *incendiary* shrapnel from big guns (actually invented in Japan in the 1930s) would utterly slaughter airships. Gasbags are largely immune to crushing damage.



Unpowered Balloons

Lighter-than-air flight was invented at the start of the Steam Age, and balloons were considered a promising technology for a few decades. However, the fact that a balloon cannot be steered, but moves at the speed of the prevailing wind, limited their usefulness. By the end of the period they had become mostly a hobbyist interest. Piloting (Lighter-Than-Air) skill is still important for balloonists, though, as the operator needs to manage gas (or hot air) and ballast, decide when to land, and try to aim for the safest spot by adjusting the descent rate. At the GM's option, prevailing conditions may feature winds in different directions at different altitudes (Meteorology skill can identify this, with careful observation), enabling a skilled pilot to maneuver by adjusting the balloon's altitude, but this isn't always possible. TL5-6 balloons can usually stay up for a few hours – rarely more than a day or so – before loss of gas, shortage of ballast, or lack of crew supplies forces a landing.

Observation Balloon

This is a typical military balloon, able to lift one or two pilot-observers in an SM +1 basket. A small civilian balloon, or one of those used to transport mail out of the besieged city of Paris in 1870-1871, would be similar, though probably bigger (SM +8) if it used coal gas. Many military balloons were tethered and might have telegraph links to the ground; they were fixed observation platforms, not roving military vehicles – and very useful as such, before the invention of warplanes. Some observation balloons used in the American Civil War were smaller, carrying just one observer in an unnervingly tiny (SM 0) basket, and possibly were just SM +6. Multi-person or long-range designs were larger.

Le Géant

"The Giant" was constructed by French photographer and balloon enthusiast Gaspard-Félix Tournachon (alias "Nadar") in 1863. The double-layered balloon towered nearly 200' high when inflated, with a secondary smaller balloon beneath it acting as a gas reserve, and below that, a passenger cabin, 8' × 13' × 10' (SM +4), which was divided into several compartments and which had an open observation deck on its roof.

Le Géant could carry at least 15 people on joyrides of several hours, or six people (including a couple of pilots) in some comfort for a slightly longer journey; the claimed lifting capacity of 4.5 tons would have been quite enough for the nominal maximum of 20 passengers to enjoy some creature comforts on a brief trip. In practice, though, it only carried smaller numbers – and crash-landed, injuring everyone on board, at the end of its longest flight (17 hours). The long-range balloon journeys imagined by the likes of Jules Verne involved similar balloons with small crews, and hence with room for plentiful supplies, and used imaginary technologies to extend flight durations.

Dirigibles

Soon after balloons were invented, inventors tried to give them motors and steering. Such attempts finally came to something in France in 1852, when Henri Giffard built a working steam-powered craft. However, the dirigible is really a TL6 development, with compact internal combustion engines generating enough power to provide control and to fly against the wind; working designs were developed through the 1880s and 1890s. The Brazilian Alberto Santos Dumont (***GURPS Who's Who 1,*** pp. 114-115) pioneered small dirigibles in France, while Ferdinand von Zeppelin developed rigid-bodied designs in Germany. German airships were used for bombing missions during WWI, and intercontinental flights began after the war.

The TL6 "blimp" listed on p. B465 represents a big, late TL6 design, with powerful engines and long-term accommodations, using helium to reduce fire risks; the following are Steam Age models.

Santos Dumont No. 9

Santos Dumont began his work on manned flight by developing some ingenious dirigibles, for research, prize competitions, and personal transportation around Paris. No. 9, the *Baladeuse* ("Runabout"), was his smallest design – a minimal one-person craft that he famously used to visit friends and his favorite cafes. The pilot's seat and the tiny gasoline engine were mounted in a skeletal, underslung open-frame structure running much of the length of the gasbag; the fuel tank would cost $0.33 to refill.

Adventurers' Dirigible

Although civilian airships actually reached their peak of popularity after WWI, the idea of dirigibles as *personal* transport, beloved of Santos Dumont, faded in the face of practical difficulties and the invention of heavier-than-air flight. Hence, this design, for a medium-range craft capable of transporting a half-dozen steampunk heroes on their adventures, is fictional, although it would probably be within the capabilities of early TL6 engineering, apart from the use of a sextuple-expansion steam engine. It isn't fast, but it can take its passengers almost anywhere, with their luggage and in some comfort; a cinematic version might be faster, with greater Range and much higher HT. A better *realistic* design probably needs an internal combustion engine.

The gondola (SM +4 if targeted specially) has a metal hull over a wooden frame, with no particular fire risk. It is enclosed, with seats for a pilot and a navigator. The latter, or one of the four passengers, occasionally has to tend to the engine, topping up the firebox, but it can be operated by just one person for short runs. The gasbag needs periodic checking, but that is usually handled by the pilot during short stops along the way; there is no provision for a full-time rigger. Coal costs just $36 for a day's operation; a bigger expense is hydrogen and ballast, which can run as high as $1,500 a week in heavy use.

P-Class Zeppelin

This is a historic WWI design, used by Germany in attacks on enemy cities, and hence it is just post-Steam Age – but its general style fits the steampunk genre, despite the use of internal combustion rather than steam engines. Over 500' long and 60' in diameter, it has two underslung gondolas. The front one houses the bridge, radio compartment, officers' rest area, and one engine, while the aft gondola holds three more engines. Its service ceiling is 11,600.' Its 3,800-gallon fuel tanks cost $5,700 to fill.

It typically carries around 2.9 tons of bombs on external racks, although it might sometimes carry more at the cost of reduced performance, or less to increase its Range. The bombs are usually a mixture of 110-lb. HE and 6.5-lb. incendiaries (p. 18). The zeppelin also has seven or eight 7.9mm LMGs (use the 7.62mm LMG details on p. B281) for defense against fighters, one on each side of each gondola, one in a mount at the stern, and two or three on top of the hull.

Aerial Battleship

This imaginary titan is the sort of thing that appears in steampunk stories in which lighter-than-air warfare survives and finds a major place in 20th-century conflicts. (The realistic wisdom of fighting battles using artillery and giant bags of flammable gas is a separate question.) It is over 1,300' long, powered by a steam turbine, and has long-term accommodations including medical facilities and workshops. It also has two gun turrets under the gondola, each mounting three 1-pounder cannons (p. 18). It carries 800 110-lb. HE bombs (p. 18) for attacks on surface targets – or, given *very* skilled combat handling, on lower-flying airships. It is fitted with state-of-the-art bombsights and a fire direction center that gives +3 to attacks on one specified target to either or both turrets on any given turn.

Treated somewhat realistically, this craft would require large quantities of hydrogen and ballast, as well as perhaps $87,500 worth of fuel oil, every few days, and would have the listed Range; a more cinematic version might have greater Range, carry enough supplies to let it operate for weeks at a time, and mount, say, 3-pounder guns (p. 18).

Gliders

Work in the 19th century on heavier-than-air flight often began with gliders, developed from kites or from imitations of birds. These experiments took a while to bear fruit, and killed some experimenters along the way, but ultimately did lead the likes of the Wright brothers to powered flight. Purely experimental gliders would be of limited interest to adventurers, but a few very small improvements could accomplish a lot in an alternate history.

Gliders can only accelerate by using external launch systems, diving, or exploiting fortuitous winds.

Bombing Rules

The following basic rules for aerial bombing should be sufficient for use in most steampunk games. The bombardier rolls against Artillery (Bombs) to hit, or Dropping skill if releasing hand-held explosives. Calculate Range as *half* of the aircraft's altitude, plus its current Move (in yards/second), and then apply the following modifiers to the attack.

Modifiers: A base +4 for attacking an area; any quality bonus from the bombsight or fire center *or* -2 without a proper bombsight; -2 if also piloting the aircraft; -4 if the aircraft is dodging attacks. A bombsight allows aiming: +1 per turn to a maximum of +3 or +(aircraft's SR), whichever is *lower.*

Roll even if the modified roll is less than 3 or even negative; treat critical failures as normal failures. If the roll fails (which is likely), the bomb misses by yards equal to the margin of failure *squared* (per *Scatter,* p. B414). Thus, the intended target may still be caught in the blast . . . and if not, well, *something* will be!

Bomb reliability depends on TL, per *Malfunctions* (p. B407). Bombs at TL5 are fairly reliable, only failing to explode if the attack roll is a 16-18; at higher TLs (including TL5+1), they only fail on a 17-18.

Cinematic Bomb Accuracy: Many writers and technological dreamers assumed that aerial bombardment would be more accurate, and hence more *overwhelmingly* deadly, than it actually proved. To represent this in settings where they were right, provide bombsights that grant between +1 and +10 to hit, halve the range penalty, or both. To make bombs more reliable as well, ignore malfunctions.

Clockpunk Hang-Glider

The Renaissance genius Leonardo da Vinci (***GURPS Who's Who 1,*** pp. 60-61) doodled a one-person glider among his many sketches; stories claim that some brave dabblers of the period did more than think about the idea. Modern experiments have established that a functional hang-glider can be built using TL4 materials, but it would be *horribly* unstable. This design assumes that a period-practical genius pushed past initial problems and avoided too many test pilot casualties, building something to launch from high hills for purposes of military reconnaissance or to terrify the peasantry. Realistically, it would probably have a very poor "glide ratio," dropping perhaps 1' for every 40' traveled forwards in still air.

Victorian Glider

Historically, the likes of Sir George Cayley at TL5 and Otto Lilienthal at TL6 constructed some working gliders, contributing to the development of manned flight, but their designs had stability problems, which indeed killed Lilienthal. If anyone had come up with a few improvements, they might have produced something like this unpowered biplane, which could be classed as "optimistic late TL5" as much as it is TL(5+1). Like the quasi-Renaissance design above, though, it has a glide ratio to consider, descending 1' for every 60' traveled forward.

Early Powered Aircraft

Historically, powered heavier-than-air flight appeared at the end of the Steam Age, reaching a degree of maturity just in time for use in WWI, which triggered a burst of development in the form of an arms race. The aircraft detailed here are still essentially experiments; they are so small and slow that they technically rate as "ultralights" in ***GURPS*** terms, though one of them functioned and looked more like a modern ultralight than the other. The "barnstormer" biplane on p. B465 shows where this evolution was headed.

Santos Dumont *Demoiselle*

Alberto Santos Dumont (see p. 13) progressed from dirigibles to experimental aircraft, of which this was the most famous design; a few were sold commercially, while other people built copies. The No. 20 *Demoiselle* ("Damselfly") of 1909 has been described as the first ultralight; it was a simple single-seat high-wing design, with a bamboo open-frame fuselage.

The Load rating may be generous; Santos Dumont was a lightly built man, and modern replicas have difficulty getting airborne with heavier pilots. A full load of fuel might cost around $3. A more powerful engine could increase Move to 2/40.

Blériot XI

The first heavier-than-air aircraft to cross the English Channel, in 1909, was a simple but functional single-engine monoplane built and flown by Frenchman Louis Blériot. The type was produced and sold commercially, in single and two-seat versions (increase LWt. to 0.45, Load to 0.2, and Cost to $45K for the latter), sometimes with upgraded engines of varying types. The design was used in several other pioneering flights and competitions, and many early pilots learned to fly on it. It was also the first aircraft to be used in war, for observation duties in 1911, and saw service early in WWI; a few were used to drop 55-lb. bombs (p. 18). A tank of fuel costs $21.

Antigravity and Reactionless Thrust

Some steampunk stories and period scientific romances have flying machines that work on rather vague, underexplained principles; some kind of period superscience just provides levitation or thrust with minimal inconvenience and high reliability.

This can be explained in various ways; the original ***GURPS Steampunk,*** pp. 99-100, has a technical discussion of steampunk antigravity. "Gravity screens" appear in some modern steampunk settings, because they are simple to imagine (if one ignores the fundamental problems with conservation of energy) and can represent a natural resource or a superscience industrial product, and because many people have read Wells' *The First Men in the Moon*. However, an alternative with *slightly* fewer weird logical implications is some kind of thruster system, probably reactionless, which lifts vehicles into the air by main force. Add in Verne-style batteries of seemingly limitless capacity, and flight becomes almost trivial. See ***GURPS Steampunk,*** pp. 96-97, for a brief period superscience justification for such a technology based on the idea of the luminiferous ether.

Fantastical Flyers

Powered flight was a dream of the 19th century, appearing in scientific romances and dime novels. These designs are totally fantastical but very steampunk.

Steampunk Ornithopter

Some early experimenters suggested that, if people wanted to fly, they should emulate birds, and use flapping wings. In practice, "ornithopter" flight is extremely difficult at the human scale, but this design assumes that someone on a divergent technological path found a way to achieve it, albeit with a triplane configuration to maximize wing area. The visual effect would be *striking*.

This craft uses a sextuple-expansion steam engine (early TL6-style technology taken to complicated excess); it carries 50 lbs. of coal ($1). The GM can improve the statistics a little to represent continuing technological development, add a gun or two, and conduct WWI-style dogfights (but with more flapping and smoke) in an alternate Steam Age. A cynical treatment would give the ornithopter worse Hnd, SR, and HT values.

Ornithopters require their own specialty of Piloting skill; controlling something like this is very different to any other type of aircraft, but the GM may allow a default to Autogyro, Glider, Helicopter, Light Airplane, Low-G Wings, Ultralight, or Vertol, all at -5.

The *Albatross*

In Jules Verne's *Robur the Conqueror* (also known as *The Clipper of the Clouds*), the egocentric inventor Robur kidnaps the protagonists and takes them on a flight around the world in his amazing aeronef, the *Albatross.* This has a hull resembling that of a seagoing ship, 100' long and 12' wide, built of a compound material based on compressed paper but as strong as steel, with windows and portholes of armored glass that is almost as strong. (Robur is little concerned by the occasional threat of small arms fire from the ground.) The concept is rendered wildly cinematic, however, by the use of electrical power from batteries, which hold enough energy to keep the Albatross in the air for *weeks* at a time while covering tens of thousands of miles; for practical purposes, its Range can be considered to be unlimited. The modern GM might be tempted to assume that Robur was simply lying when he claimed to have invented such batteries, and that he really had use of a salvaged alien cold-fusion power plant.

The *Albatross* has a forest of 37 vertical masts arranged along its deck, each topped with a double rotor for lift, while propellers at bow and stern drive it forwards; a sprung framework under the hull absorbs the shock of landings. The hull mostly holds stores and batteries; the motors and crew quarters are in three large deckhouses. The craft has a 12-pounder cannon (p. 18) mounted as a deck gun, and an armory from which the crew sometimes draw standard (early TL6) repeating rifles and some small hand-thrown dynamite bombs (treat these as TL6 concussion grenades, p. B277), which they use against ground targets with impressive accuracy.

Electric Aeronef

This period superscience experimental flyer looks like a pre-WWI monoplane, but with exotic technological systems in the rear fuselage and no propeller; it uses electrical thrusters which interact with the luminiferous ether. Its limited endurance – around half an hour in the air – results from the use of realistic primary batteries as a power source. The ship requires a fairly major refit after each flight. If Jules Verne-style superscience batteries are available, it gains whatever Range the GM likes.

The technology likely would evolve into something akin to later TL6 aircraft, but without propellers. The lack of an air-breathing engine could ultimately permit flights right up into space; see *Electric Astronef,* below.

Steampunk aviation is always a weird and eccentric affair.

Steampunk Spacecraft

The following craft are examples of the kind of vehicles that could feature in steampunk space travel campaigns.

Electric Astronef

This is where the technologies pioneered by the electric aeronef (above) might lead: a streamlined raygun Gothic spaceplane, 230' long, with a polished silver-metallic skin and broad, high-mounted wings to support the weight of all the batteries it needs to fly to and from low Earth orbit. It seems oversized for its payload, but it actually consists almost entirely of those bulky batteries, which need to be extensively refurbished or recharged after every flight. An even more cinematic version (using *very* superscience batteries or an Amazing Atomic Powerplant!) might need less space for power supplies, and hence would have options for some combination of passengers, more cargo, more DR, or exotic beam weapons – or a somewhat smaller hull and wings, reducing the Size Modifier and improving the craft's Hnd value. It can only attain the listed top speed when operating in the upper atmosphere; the denser air near ground level reduces its Move to 0.6/118. The Range assumes a high-altitude in-atmosphere journey.

Solar Steamer

A vessel well-suited to steampunk tales of interplanetary adventure, this 160' long ship of space exploits the same key technology as the electric astronef above – which may well serve it as an orbit-to-ground tender, as it cannot enter atmosphere itself. It has both masts (carrying an intricate, adjustable array of mirrors which focus sunlight on boilers) and a steam engine (attached to those boilers, and generating electricity for the reactionless thrusters that actually propel the ship). It also has an onboard greenhouse that maintains the atmosphere and provides half the food needed by the maximum complement of 36; more food and drink must be carried in the 7,500 cubic feet of cargo space, setting the effective limit on the steamer's operations. It also has good medical and workshop facilities. A more cinematic version would doubtless have better HT and DR (to survive violent adventures) and some kind of armaments.

The *GURPS Spaceships* Series

GURPS Spaceships 7: Divergent and Paranormal Tech extends the design system given in the core ***GURPS Spaceships*** book to a variety of weird and fantastical sorts of craft, including steampunk spaceships. With a little bit of fudging, those two books (perhaps with more from the series) could be used to generate game details for other steampunk vehicles. For example, something like the *solar steamer* (above) would have systems including reactionless engines, a solar boiler, and a solar mirror, and it might involve some redefining of the "total life support" rules to represent the fact that the ship can recycle its air indefinitely but has limits on food supplies. Vehicles such as *Verne's* ***Nautilus*** (pp. 10-11), the *Albatross* (above), and the *electric astronef* (above) would need to assign some space to super-cinematic "primary batteries" which store huge quantities of electrical energy.

For more options for vehicles in general, see the article "Alternate Spaceships" in *Pyramid #3/34: Alternate* ***GURPS.*** For options for airships in particular, see "Sailing the Open Skies" in *Pyramid #3/64: Pirates and Swashbucklers.*

Aircraft and Spacecraft Table

Terms and notation are as defined in *Vehicle Statistics,* pp. B462-463.

TL	*Vehicle*	*ST/HP*	*Hnd/SR*	*HT*	*Move*	*LWt.*	*Load*	*SM*	*Occ.*	*DR*	*Range*	*Cost*	*Loc.*	*Stall*	*Notes*
PILOTING/TL (LIGHTER-THAN-AIR) (IQ-6, other Piloting-5)															
5	Observation Balloon	31†	0/3	7f	0	0.43	0.2	+7	1+1	1/2	–	$2,300	S	0	[1]
5	*Le Géant*	68†	-2/4	9f	0	5.5	3	+11	2+13	1/2	–	$23K	S	0	[1]
6	Santos Dumont No. 9	30	-3/2	7f	0.2/7	0.3	0.1	+6	1	1/2	3	$1,800	Es	0	[2]
5+1	Adventurers' Dirigible	96	-4/4	7f	1/6	9	0.9	+9	2+4	1/4	100	$14K	GS	0	[3]
SHIPHANDLING/TL (AIRSHIP) (IQ-6, Airshipman-5, Piloting (Lighter-Than-Air)-5)															
6	P-Class Zeppelin	133	-4/4	12f	0.3/29	36	17.5	+12	18	1/2	2,800	$500K	2S5X	0	[4]
6+1	Aerial Battleship	440	-4/4	12f	0.1/15	1,000	328	+14	360A	2/10	2,300	$31M	S2T	0	[5]
PILOTING/TL (GLIDER) (IQ-6, Piloting (Light Airplane or Ultralight)-2, other Piloting-4)															
4+1	Clockpunk Hang-Glider	17	-3/1	11c	0/15	0.14	0.1	+4	1	3	–	$620	EWi	6	
5+1	Victorian Glider	20	-1/1	12c	0/20	0.16	0.1	+3	1	1	–	$320	O2Wi	8	
PILOTING/TL (ULTRALIGHT) (IQ-6, Piloting (Glider or Light Airplane)-2, Piloting (other Airplanes)-4, other Piloting-5)															
6	Santos Dumont *Demoiselle*	25	0/2	9c	2/30	0.22	0.1	+3	1	1	11	$33K	O3W Wi	12	
6	Blériot XI	32	0/3	9c	2/24	0.35	0.1	+4	1	2	30	$44K	O3W Wi	16	
5+1^	Electric Aeronef	36	+2/1	9c	0.5/43	0.46	0.1	+2	1	1	34	$6,800	O3W Wi	22	
PILOTING/TL (ORNITHOPTER) (IQ-6, some other Piloting specialties-5)															
5+1	Steampunk Ornithopter	62	0/2	8	0.3/28	2.2	0.26	+4	1+1	2	50	$42K	O3W 3Wi	12	
PILOTING/TL (HELICOPTER) (IQ-6, Piloting (Autogyro)-2, Piloting (Vertol)-4, other Piloting-5)															
6+1^	The *Albatross*	234	+2/3	12	2/60	120	20	+8	8+4A	15	–	???	G37H R3SX	0	
PILOTING/TL (AEROSPACE) (IQ-6, Piloting (High-Performance Airplane)-2, or other Piloting-4)															
5+2^	Electric Astronef	161	0/3	7	0.6/433 (0.06G)	34	1.3	+10	2SV	2	3,500	$1.22M	g3Wr Wi	48	
SHIPHANDLING/TL (SPACESHIP) (IQ-6, Spacer-5, or any Spaceship Piloting-5)															
5+2^	Solar Steamer	314	-3/4	6	0.125/c (0.0125G)	320	79	+9	28+8ASV	5	–	$704K	G6M	–	

Notes

[1] Balloon DR 1, basket/cabin DR 2. Baskets and cabins are combustible; the actual balloon is flammable. The observation balloon has an open basket (no DR from above); *Le Géant*'s cabin has a flat roof which can be used as an observation platform.

[2] Gasbag DR 1, fuselage DR 2 open-frame. Fuselage is non-flammable.

[3] Gasbag DR 1, gondola DR 4. Gondola holds engines and most of the crew accommodation, and is SM +4 if specifically targeted; it is not flammable.

[4] Body is DR 1; gondolas are DR 2.

[5] Body is DR 2; gondola is DR 10; turrets are DR 60 on the front face, DR 45 on the sides and back, DR 30 underneath. Gondola and turrets are not flammable.

Chapter Two
Vehicular Weapons

The following weapons are installed on some of the vehicles in this book; many other period warcraft would use essentially similar armaments. Those mounted on the decks of large craft will usually be fitted with gun shields, protecting the gunners with DR 15-20. Some statistics have been omitted from artillery-sized weapons for simplicity.

Readers can find more appropriate guns (and more detail on some of *these* guns) in ***GURPS High-Tech*** and ***GURPS High-Tech: Adventure Guns.***

Guns

Heavy Rifle: A fictional outsize rifle with a semi-automatic action, appropriate for steampunk settings of big clanking machinery, usually installed on vehicles as an anti-personnel weapon; it is too heavy for personal use unless given a bipod or tripod. Being imaginary, the design is rated as TL(5+1), but would probably have been technically quite feasible at TL6 in the real world.

> *She was a Model 3 Terror, long and canine, a steel greyhound powered by a hundred-horsepower Bucephalus engine.*
>
> *– Michael Chabon, "The Martian Agent, A Planetary Romance"*

Gatling Gun: The symbol of mechanized Victorian death-dealing – a multi-barreled mechanical machine gun, operated by a hand crank. This is the 10-barreled M1874, first deployed in 1874.

Nordenfelt 1" Mk I: A four-barreled mechanical machine gun mounted on Royal Navy ships from 1878 on, firing armor-piercing rounds.

Maxim Gun: The first truly automatic firearm, a water-cooled, belt-fed machine gun, adopted by the British Army in 1889. The Maxim ensured technological dominance for western forces on late Victorian colonial battlefields; refined versions of the same design performed much of the slaughter in WWI.

1-Pounder Cannon: An early mechanical heavy machine gun of a type often mounted on naval craft from 1875 on. The details are for a rotary multi-barreled Hotchkiss 1-pounder, firing LE shells from a gravity-feed hopper; a loader can top that up while it is firing. Other ammunition may be available, including (from 1892 on) armor-piercing explosive rounds (damage 4d×2(2) pi++ with 1d+2 [2d-1] cr ex follow-up).

3-Pounder Cannon: A scaled-up version of the Hotchkiss 1-pounder (above).

6-Pounder Cannon: Another Hotchkiss design, a "quick-firing" light artillery piece, as mounted on many naval craft and early British tanks. Its normal crew is six, but it can be fired by a single gunner in a pinch (at much-reduced RoF, of course).

12-Pounder Cannon: A high-velocity 3" caliber weapon, used on Steam Age British and Japanese warships and in fixed shore batteries; a few were adapted for mobile land use during the Boer War, despite the problem of heavy recoil.

Heavy Naval Cannons: The kind of guns mounted on late Steam Age warships, including the *Majestic* class (p. 10). The 6" type is secondary armament for a battleship or main weaponry for mid-size vessels; the 12" is battleship main armament.

Bombs

The sort of bombs carried by WWI aircraft and zeppelins are also appropriate for many steampunk aircraft. See *Bombing Rules,* p. 14, for how to use them. A 55-lb. HE bomb does 6d×14 [6d] cr ex, while a 110-lb. HE bomb does 6d×20 [5d×2] cr ex.

A 6.5-lb. incendiary bomb does 4d cr ex, and throws fragments of white phosphorus around; treat the bomb as doing fragmentation damage (pp. B414-415) with a burst radius of 40 yards, but instead of cutting, each fragment that hits does 1d(0.2) burn damage to the victim once every 10 seconds for one minute. A burning fragment can be brushed off with a DX roll, but is not extinguished by water. Each time damage is rolled on flammable materials, there is a chance of igniting them (see p. B433; ignore DR for this purpose). An incendiary bomb that lands near a dry wooden structure has an excellent chance of setting it alight from multiple hits.

Torpedoes

The following are some historical designs; see *Torpedo Rules,* p. 11, for how to use them.

14" Mark II: Move 10; Range 600; damage 6d×12; Malf 13. Weight 575 lbs.

18" Mark IV: Move 16; Range 750; damage 6d×32; Malf 14. Weight 1,156 lbs.

18" Mark VIII: This has an option of two settings; Move 20, Range 2,500, *or* Move 16, Range 4,000. Damage 6d×36, Malf 15. Weight 3,828 lbs.

Vehicular Weapon Table

Terms and notation are as defined on pp. B268-B271. Some weapons use Gunner *or* Artillery skills; the former for direct fire, the latter for indirect. See ***GURPS High-Tech,*** p. 139, for detailed rules for indirect fire.

GUNS (RIFLE) (DX-4 or most other Guns at -2)

TL	*Weapon*	*Damage*	*Acc*	*Range*	*Weight*	*RoF*	*Shots*	*ST*	*Bulk*	*Rcl*	*Cost*	*LC*
5+1	Heavy Rifle	7d-1 pi+	6	490/3,100	20/1.4	1	6(3)	13†	-7	6	$1,650	3

GUNNER (MACHINE GUN) (DX-4 or other Gunner at -4)

TL	*Weapon*	*Damage*	*Acc*	*Range*	*Weight*	*RoF*	*Shots*	*ST*	*Bulk*	*Rcl*	*Cost*	*LC*
5	Gatling Gun	4d+2 pi+	4	470/3,000	200/8	15	40(5)	26M	-10	2	$16,000	2
5	Nordenfelt 1" Mk I	6d×2(2) pi++	4	600/2,800	425/48	4!	40(25)	32M	-10	2	$25,000	2
5	1-Pounder Cannon	5d×2(0.5) pi++	4	570/3,600	495/18	2	10(5)	33M	-12	2	$20,000	1
	follow-up	2d [2d] cr ex										
5	3-Pounder Cannon	8d×2(0.5) pi++	4	750/3,200	1,265/24	1	5(5)	42M	-13	2	$25,000	1
	follow-up	3d-1 [2d+1] cr ex										
6	Maxim Gun	4d+2 pi+	4	550/3,500	40/32	10	250(5)	12M	-7	2	$7,000	1

ARTILLERY (CANNON) (IQ-5) for indirect fire; GUNNER (CANNON) (DX-4 or other Gunner at -4) for direct fire

TL	*Weapon*	*Damage*	*Acc*	*Range*	*Weight*	*RoF*
6	6-Pounder Cannon	5d×7(0.5) pi++	4	1,800/7,500	849/10.4	1/4
	follow-up	3d+2 [3d-1] cr ex				
6	12-Pounder Cannon	6d×12 pi++	7	3,900/17,500	1,200/12.5	1/4
6	6" Naval Cannon	6d×29 pi++	8	8,900/19,500	6.6 tons/100	1/10
6	12" Naval Cannon	6d×77 pi++	8	21,000/50,000	46 tons/850	1/15

Adventure Suggestions

Vehicles can be used in all kinds of game scenarios, especially in a technology-oriented genre like steampunk.

Giant-Slayers

The war had been brewing for years, but nobody knew that the enemy had been preparing by secretly acquiring a squadron of *O-Daisuchiimu* (pp. 8-9). So when it started, border defenses were swept aside by unexpected tactics. However, the PCs – a ragtag band of soldiers, part-time militia, and resourceful civilians trapped behind enemy lines by the lightning advance – have lucked into a hidden cache of military equipment. They now have one steam wagon (p. 6) fitted out as a troop transport, and a second loaded with a couple of 6-pounder cannons (p. 18). They can run for home, or they can try to rig an ambush and bring down one of the enemy giants.

Mirrors of Sunlit Truth

The trip to the Martian outposts by solar steamer (p. 16) isn't for everyone. It takes weeks, and the lack of gravity is undignified as well as nausea-inducing for some. The investigators have some fairly eccentric fellow crewmen and eight unusual passengers (many with dark secrets) to interrogate when the murder mystery begins, five days out from Earth.

The Curse of Polyphemus

An ambitious Asian nation was taken by the idea of the torpedo ram (pp. 9-10), despite its problems, and ordered three. However, just as they were being delivered, the nation suffered a revolution. By the time that was put down, one of the revolution's leaders had stolen the rams and crewed them with loyal followers. He also still has control of secret port facilities on some outlying islands.

Now, he has become a pirate captain (while claiming that he is continuing the revolution). He uses the rams to devastate civilian freighters and ports, then sends in armed launches (p. 9) to pick up select plunder. The nation's government is not only still weak, it's too proud to accept help from foreign powers. But rich merchants are prepared to pay a band of adventurers well to solve the problem.

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