

# MARTIAN RAILS™

## SPECIFIC RULES



Welcome aboard! *Martian Rails* is the game of red-planetary railroad construction and operation. Set on a fictional planet Mars, the game simultaneously depicts a world of canals and noble savages, a high-altitude desert globe, a nearly airless planet, terraforming, nanotech cyperpunk, and everything in between from 100+ years of Martian tales. The game commemorates many of the classic science fiction stories set on Mars. The game further captures the mood of those stories and the feel of the planet.

Build your railroad and haul freight across the surface of Mars, the Red Planet. You decide where to lay your tracks. Your only obstacles are rival tracks and Mars' great mountains, canals, and rifts. Capture the colonial spirit of Mars and learn to build an empire.

The core rules that govern the basic elements of play in *Empire Builder* series games can be found in the other rules booklet included in this game. This booklet contains rules that are specific to *Martian Rails*.

*"On Mars itself, wheeled vehicles can presumably operate, and eventually—if several bases are set up—there is no reason why a sort of railway system should not be constructed (no doubt to work efficiently until some Martian Government is ill-advised enough to nationalize it)."*

—Patrick Moore, *Guide to Mars*, © 1977

## GAME PARTS

*Martian Rails* contains:

- ❖ 1 puzzle-cut board (map)
- ❖ 100 load chips
- ❖ 2 decks of cards—including:
  - ◆ 138 demand cards
  - ◆ 24 event cards
  - ◆ 18 loco (locomotive) cards
- ❖ 1 pack of crayons
- ❖ 6 pawns
- ❖ 1 pack of money
- ❖ 1 *Empire Builder* Series rules booklet
- ❖ 1 *Martian Rails* Specific rules booklet (*Now in your hands!*)

### EPIC RAILROAD BUILDING ON THE RED PLANET OF SCIENCE FICTION

Mars has been the subject of science and story for hundreds of years. The results are wondrous tales of noble savages, strange beasts, exotic alien cities, lost cultures, a dying world, and two hurtling moons. As our knowledge of the Red Planet grew, Barsoom changed into a cold, high-altitude desert, then an airless craterland. Concurrently, the stories about Mars changed too. Fortunately, the fiction can mutate beyond the facts. Terraforming could modify Mars. Humans could live there. Furthermore, the currently known terrain is pretty exciting. Mars sports an 80,000 foot volcano and a 2,500-mile long, 4-mile deep canyon. Two ice caps wax and wane with the seasons.

*Martian Rails* combines these story elements. What if eight-legged Thoats, warring natives, Solar CDs, Blue Beer, and Rayguns existed? They would need a cheap, efficient means to be transported from one place to another. What better way is there than a railroad?

*Martian Rails* allows you to build a rail network linking the fictional settlements, towns, cities and spaceports of a thousand stories. It allows you to pick up and deliver the commodities found in those stories and make money doing so. Can you build the best rail network and be the first to amass a fortune?

The game depicts the terrain that was believed to be correct at different times during the study of the planet. Maybe certain features were figments of an astronomer's imagination. Maybe some of the civilizations were merely plot elements for a science fiction writer. Wouldn't it be wonderful if they could exist simultaneously? They can, in this tribute to the classic science fiction stories! Playing *Martian Rails* is a great way to learn about planetary astronomy, literature, shipping, and transportation while having loads of fun with friends and family.

If any of these parts are missing from your new game, please write (identifying the missing part) to:

*Empire Builder* Parts, Mayfair Games  
8060 St. Louis Ave. Skokie, IL 60076.

or send a message to: [CustServ@mayfairgames.com](mailto:CustServ@mayfairgames.com)

If you have any questions about these rules, or any Mayfair Games product, please send a message to our rules guru at: [RulesGuru@mayfairgames.com](mailto:RulesGuru@mayfairgames.com)

## BOARD / MAP

The central feature of the board is a map of Mars. The map has a grid of round, triangular, and star-shaped dots, called mileposts. The mileposts regulate rail building and train movement. In scale, they are approximately 300 kilometers apart.

The map shows 47 cities, including 6 major cities. Near each city are symbols representing the goods available for pickup in that city.

## WRAP-LETTERS

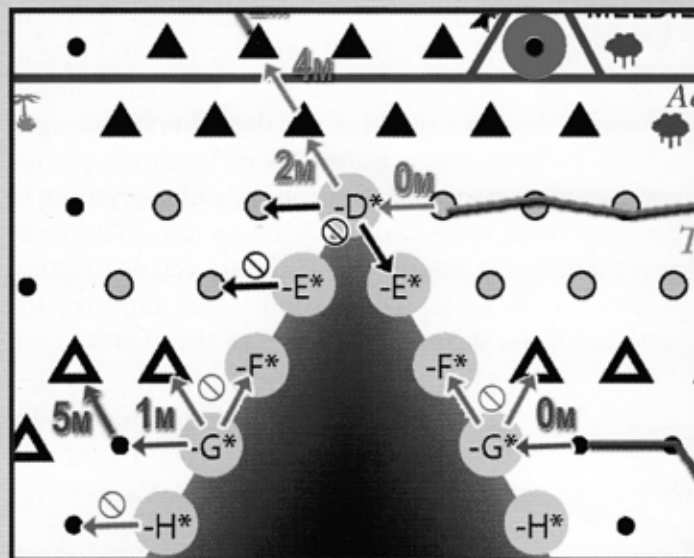
The “wrap-letters” along the edge of the Mars map allow representation of the planet’s spherical shape. A wrap-letter consists of a letter and additional symbols: plus (+), minus (-), prime ('), starred (\*), or no symbol. The color of the circle around the wrap-letter also serves as a designation for differentiation purposes.

A player may build to any wrap-letter at zero cost. This route automatically links to the identical wrap-letter along the edge of the other section. This track segment has a zero cost also. Then the player must build from that wrap-letter back onto the map at normal cost.

- ❖ Each wrap route may only link with an identical wrap-letter (letter, symbol, and color).
- ❖ Routes wrap around Mars east and west, not north and south.
- ❖ Players may not build from one wrap-letter to a different wrap-letter.
- ❖ Players may not build from opposite directions to connect at a wrap-letter (thereby minimizing the construction costs).
- ❖ Only one track segment may link to, from, or between any one wrap-letter set and the adjacent map mileposts.



**Example:** As shown by the purple arrows, the purple player builds from existing track to a “-G\*” wrap-letter (0M), then to a clear milepost adjacent to the matching “-G\*” (1M), and finally to an Alpine milepost (5M). The red arrows show track builds that are not allowed. A similar track build is shown for orange—with black arrows showing track builds that are not allowed.



- ❖ Three (or more) track segments may not link at a wrap-letter. (Wrap-letters may not be used as track junctions.)
- ❖ The wrap-letters fit the normal hexagonal pattern with the usual restrictions regarding which mileposts are adjacent.
- ❖ The  $\pm D'$  and  $\pm D^*$  wrap-letters are singular but track may be built through them as if each were a paired wrap letter.
- ❖ The  $\pm B$  and  $\ominus$  (Equator) wrap-letters are shown connected to a half-milepost terrain symbol. Each of these mileposts is the same milepost as its corresponding twin on the opposite edge of the map. The wrap-letters merely note that the half-mileposts are one. So, the total cost for both halves combined is 1M.

Level	Name	Load Capacity	Max. Speed
I	Tweel	2	10
II	Dejah Thoris	2	12
II	John Carter	3	10
III	Spirit	2	14
III	Opportunity	3	12
IV	Sojourner	2	16
IV	Pathfinder	3	14
V	Viking	3	16



Milepost Type / Terrain Between Mileposts	Cost
Desert (○) .....	1M
Forest (☙) .....	2M
Jungle (☛) .....	3M
Marshland (☞) .....	3M
Volcano (△) .....	5M
Major City: Adjacent Spoke Tips (✱) .....	5M
Wrap-Letter (Ⓢ) .....	0M
Half Milepost & Wrap-Letter (Ⓢ•Ⓢ) .....	0.5M
Canals:	
Underground (☞) .....	+0M
Dry (☞) .....	+1M
Wet (☞) .....	+2M
Lake (☞) .....	+3M

## LOCOMOTIVE CARDS

Each player has one loco card, showing the player's type of train, its maximum speed, and its load capacity. In *Martian Rails*, there are five different levels of trains. This level determines which trains are available for upgrades.

Each player starts with the level I train (the Tweel) that may carry up to 2 loads and may travel up to 10 mileposts per turn. When upgrading, he may choose any available train of the next higher level. There are two types of trains at each of levels II, III, IV; but only one each at levels I and V. If there are no trains of the type desired at the next level, you can either upgrade to the other type or wait until the type you desire becomes available.

It only costs 10 million to upgrade a train one level. Upgrades count against the 20 million limit for construction per turn. Therefore if no track construction is performed, two train upgrades may be done in one turn. Trains may also be upgraded during the initial building turns.



## PREPARATION

Before beginning, each player should have:

- ❖ 3 demand cards (face up)
- ❖ 1 Tweel locomotive card
- ❖ 60 million in cash
- ❖ 1 pawn and 1 crayon of the same color

**Note:** To help locate the cities and sources of goods, reference sheets are included on the middle four pages. You should remove these pages and cut (or tear) them into four separate half-page sheets.

## SPECIFIC RULES

There are a number of *Martian Rails* specific rules.

### BUILDING COSTS

There are a number of non-standard milepost types and special terrain features in *Martian Rails*. The costs are summarized in the chart on this page, on the back of this booklet, and on the map's terrain key.

### TERRAIN MILEPOSTS

There are 5 types of non-standard terrain mileposts: desert (1M), forest (2M), jungle (3M), marshland (3M), and volcano (5M).

### CANALS & LAKES

The rules for building across canals and lakes is similar to the standard rules for building across rivers. You pay an additional +1 million for dry canals, +2 million for wet canals, and +3 million for lakes. Building across underground canals cost nothing extra.

### MAJOR CITIES

Major cities have 6 spokes in *Martian Rails*. All standard major city rules apply, except that it costs 5 million to build from one spoke tip to an adjacent spoke tip and it counts as building out of a major city one time.

### EVENTS

*Martian Rails* has a number of special rules that apply to one or more event cards:

### ECONOMIC EVENT CARDS

Four of the event cards create bonus demands to specified cities. One event cards call for a bonus demand to a non-city destination. The event card names the commodities. Each player, in turn, may attempt to deliver the commodity to the destination. The commodities delivered may not also fulfill other demand cards. Only one player is paid for the delivery. Discard the card after delivering the listed commodity.





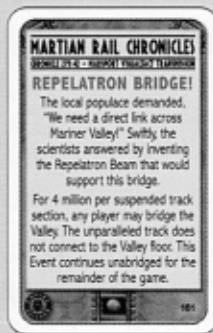
## TAMOIOZ RESERVOIRS

This event calls for a bonus demand of Fish to be delivered to any one of the five weather-control reservoirs. The blue triangular reservoirs are located on the hexagonal pattern and three payout mileposts are clearly closer than any other mileposts. This event card uses the common Economic Event rules. The difference is that the payout occurs at a non-city location. Nevertheless, a train may turn around without restrictions after delivering a load to this location.



## TRACK COST EVENT CARDS

Two event cards change the cost to construct track to certain terrain. Such a change continues for the remainder of the game. It is suggested that the new costs be noted in the terrain key on the map. The *Secret of Sinharat* event card reduces the cost to build to forest mileposts. The *Repelatron Railway Bridge* event card allows players to build track across the impassable borders of the Mariner Valley. It does **not** connect to the mileposts within the valley. The cost is 4M per track segment, ignoring the cost of all intervening mileposts except the final bridge milepost on the opposite side of the valley.



## SPACE ELEVATOR SABOTAGE

This event permanently eliminates Skyhook's commodities. Tourists, Colonists, and Imports are not available for pickup at Skyhook for the remainder of the game. It is suggested that those symbols on the map be crossed out with a neutral colored crayon. Skyhook will still request commodities as shown on the demand cards. The falling elevator cable destroys all track immediately north of the Equator. It takes time for the debris to be removed. The track can be rebuilt after the drawing player's next turn.



## HOW TO WIN

The EB Series rules apply, except that the winner must have a continuous line of track connecting **five** out of the **six** major cities (instead of "6 of 7").

## VARIATIONS

Here are some optional rules.. All players must agree to any optional rules that are used before the game begins.

### FOUR CARD START

Each player begins the game with four demand cards. Each player must discard one card before the first player begins the track building phase. This increases the chances that everyone will have a good start.

### ARES RAILROAD PASSENGER CORPORATION ("ARTRAK")

The Martian government has offered a 15 million prize to the first company to connect all six Major Cities. The prize is awarded immediately upon completion of the route.

### RED-GREEN ENMITY

The two major races of ancient Mars—Red Martians and Green Martians—have been at war for millennia. Each fights whenever they are in the presence of the other. No train may carry both Red and Green Martians unless a UN Peacekeeper is also present. If Red and Green Martians are on the same train without a Peacekeeper, both Martians eliminate the other. No train may carry Red or Green Martians through the opposing home city. No player may connect track to both U-Gor and Helium.

### INSURANCE

A player may purchase insurance for 1 million per turn, beginning at the start of the game (pay before moving each turn). If he does so, any event that causes the loss of track will have the minimum rebuild cost reimbursed. Any event that causes the loss of a commodity load will be reimbursed at 5 million per load. Insurance payouts will occur the turn following the loss. If a premium payment is missed, insurance permanently lapses and may not be reinstated. Note: The insurance payment does not count against the 20 million per turn build limit.

### THE INTER-PLANETARY ROAD SHOWS

Two road shows are making the annual Grand Tour of the Solar System traveling Sunward from Pluto. This year the two featured attractions are the Holywelkin Orchestra and a venerable Broadway musical. The Orchestra is a machine that reproduces the sounds of all known musical instruments. The musical is Brooks' ageless masterpiece—his long-running adaptation of *My Favorite Martian*. The current producer is Roger Torraway.



At the start of the game, put the Orchestra in Olympus and the musical's road company at Ares University. A road show remains in a city until it is picked up by a train. Any train in a city with a road show can pick up that road show load, but only if it has a demand card for the road show.

Each demand card with a number divisible by 10 (e.g., 20, 30, . . . , 110, 120, 130) is modified by changing the lowest-payoff demand(s); that demand becomes 20 million to deliver a road show to that city.

The demand card then works normally, but when a road show is delivered to a city, it remains there until picked up and delivered again. If a road show is already in the city calling for the demand, there is no payout. A player may not pick up a road show unless he has a demand card for a road show; however it may be dropped without payoff at any city, and if it is lost from a Derailment event card, it is placed at the nearest city.


# APPENDIX


This section contains the source and descriptive material on the world of *Martian Rails*.


## CANALS


When early astronomers viewed Mars through a telescope, some saw straight markings crossing the surface. In 1877, Giovanni Schiaparelli observed Mars night after night. He saw dark lanes on the planet which he called channels. The Italian word for channel is canali. Within a few more observation cycles, Schiaparelli was naming these channels. Camille Flammarion, a French astronomer and author, with Eugène Michel Antoniadi, a Greek astronomer, prepared a general map of Mars in 1901 showing many canals. The American astronomer, Percival Lowell established a private observatory to perform his own observations of Mars. By 1905, Lowell had mapped even more canals than Schiaparelli claimed. He asserted that with increasing telescopic power, more and more canals could be observed until most of the surface was crisscrossed by them. He had named almost 200 of the largest canals. The human names given to the canals are a pastiche from all these sources. (The Martian names were typically ignored by the men from Earth.) *Martian Rails* depicts only the largest canals. As Lowell predicted, smaller canals lie almost everywhere. Most have fallen into disrepair. The constant wind has drifted dust and sand into many canals until they are hardly noticeable. Only the depicted ones are significant to rail building. Of course, many of these flood when the Spring melts overflow them.


## COMMODITIES


 **Airweed** – A native plant of Mars that converts oxygen from the soil and thin atmosphere. The plant then stores the oxygen in pods. The plant was discovered near the Equator but is being introduced to areas away from the Equator.


 **Alien Artifacts** – Over the millennia, Mars has been visited by and temporarily housed beings from beyond our Solar System. The Face is a huge artificial construct marking their presence. Excavations occasionally discover objects from these ancient visitors.


 **Arms** – Mars was named after the Roman god of war. Blood red in color, it has lived up to its name. The various inhabitants of Mars have been in a state of war throughout its history. Certain tribes excel at weapon production and make a living by selling weapons of death to others.


 **Bachelor Chow** – A tasty, nutritious, all-in-one food for the man who doesn't have time for traditional meals. From the makers of Dog Chow, Monkey Chow, Alien Chow, Throat Chow, Banth Chow...


 **Blue Beer** – Made from native Martian Blue Grain and stomach juices. This Russian / Martian hybrid beer is indistinguishable from the finest Pilsner.


 **Bricks** – Made from the desert regolith of Mars. Certain geographical areas have the material to make superior bricks.


 **Colonists** – To escape the pressures of overpopulation, depleted minerals, crime, pollution, ecological disasters, constant wars, and ennui on Old Earth, and to fill the vast emptiness of Mars, workers and sometimes their families flock to the frontiers of Mars.


 **Eco-Biotiques** – Bioengineered plants utilized to terraform and change the ecology of Mars. Technicians began with modified algae and lichen. As the atmosphere thickened, they progressed to flowering plants. The earliest and henceforth hardiest flora, came from isolated settlements deep in the Mariner Valley.


 **Fish** – Crossbred Martian and Earth water creatures that live in the canals. They are food sources for humans. The native Martian fish were rare and not particularly nutritious but they could survive the harsh climate.


 **Green Martians** – Members of the most uncivilized tribes of native Martians. They are fifteen feet tall, four-armed, and equipped with tusks. Their largest city is U-Gor. Historically, they have been at war with the Red Martians for eons. **Note:** *The Green Martians of U-Gor should not be confused with the Greens, a human political party that believes in the complete terraforming of Mars.*


 **Hydroponics** – The growing of plants in nutrient solutions under an artificial environment. A way to grow fresh fruits and vegetables on Mars before the soil and atmosphere has been sufficiently terraformed to support them.


 **Imports** – The human colonies on Mars are unable to produce or manufacture all the specialized items that they need. Many critical parts are imported from Old Earth or the Moon. Tools, chemicals, and high-value materials are typical imports.


 **Iron** – This is the Red Planet. The red color comes from rust—iron oxide, in other words—chemically bonded iron and oxygen. It lies everywhere under and on the surface of the planet. However, certain areas, particularly the desert regions, have higher concentrations of iron ore.


 **Iron Rations** – All intrepid explorers, frontiersmen, and military men have depended on these concentrated, emergency food items to sustain themselves. This is the standard adventurer survival food. Isn't it curious how Iron Rations are produced in cities that also have Iron Ore?


 **Machinery** – The tools and equipment needed to build a society in a harsh land—everything needed to grow and process food, mine minerals, build settlements, move about the land, etc.

 **Memnonia Gum** – A carbon-based fuel first discovered in the Memnonia region. Similar to Earth's oil, it is formed from deposits of ancient Martian plant life.

 **Nanotech Bots** – Microscopic, engineered robots designed for a multitude of repair or construction purposes. They are capable of working at the cellular level in biological subjects.

 **Neural Jacks** – Implantable devices that allow a human / computer interface. This is a direct mental link to the cyberspace, auxiliary memory, peripheral devices, or remote-control Waldos.

 **Pulcho** – This is a mildly intoxicating coffee-like beverage. It is pink, slightly bitter and acidic. Humans may take a while to get used to the taste but most then consume it regularly.

 **Quintitriticale** – Genetically engineered grain developed on Earth from a five-lobed hybrid of wheat and rye. It is of northern Canadian or, possibly, Russian origin. The high-yield grain will grow well on Mars in protected locations—in the domed cities, Hellas and Argyre Basins, and near the Equator.



**Radio-Meds** – Created by harvesting and concentrating the naturally radioactive compounds found on Mars for medical tracers (nuclear medicine) and gene therapy medications.



**Rayguns** – Generic name for various beam weapons. Over the years, technology has produced the following type of rayguns: paralo-ray pistols and rifles / paralysis ray gun, heat rays / heat-beam ray-guns, death rays, tickle rays, green disintegrator-ray projectors, baridium pistols, Nihilist Disintegrating Ray, phasers, and atomic blasters.



**Red Martians** – This is the dominant race of native Martians. They physically resemble humans except for their skin color. **Note:** *The Red Martians of Helium should not be confused with the Reds, a human political party that believes in leaving Mars in its natural condition.*



**Replicants** – A bioengineered android, similar to a human, but with superior strength or agility, and variable intelligence depending on the model. They are illegal on Earth but are manufactured on Mars to work in dangerous environments.



**Roddenberries** – The edible fruit of a bush-like plant (genus *Eugenium*). They appear to grow readily on all M-type planets in the Alpha Quadrant.



**Solar CDs** – Substrate material used for collecting solar energy. They store digitized energy from the Sun onto a CD for playback later. The “leftovers” can be used to heat a Mars habitat. On Mars, the most economical place to manufacture Solar CDs is on top of Mons Olympus since it is above most of the atmosphere.



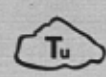
**Soylent Red** – Originally, a manufactured food made from soybeans and lentils. Later, improved soylent products were made from high-energy vegetable concentrates or protein extracts. Soyilent Red is the latest “color” or flavor of soylent. Some agitators in the largest and oldest Martian cities—Marsport and Burroughs Landing—propagandize that “It’s people. Soyilent is made out of people.” The government assures us that allegation is false, and that a green version is only an urban legend. Of course, the rumors have it that “the Green” was made in the most populated cities—where the food demand is greatest.



**Thoats** – An eight-legged Martian creature used for transportation. They can move quite swiftly. They are generally a dark gray color and have a long row of sharp teeth. Martians can control Thoats telepathically but humans require reins.



**Tourists** – Once interplanetary travel became inexpensive and safe, Mars was a quintessential destination for tourism. Mars has the Solar System’s highest volcano, deepest impact basin, longest canyon system, and the most extensive canal network. In addition it boasts of vast deserts, two frozen ice caps, exotic creatures, heroic noble natives, undiscovered ancient ruins, two hurtling moons to light a romantic night, and a hint of danger to spice the adventure.



**Turbinium** – A metallic ore that is used as a building or structural material. It is reported that the entire economy of one Earth corpor-national is dependent on Turbinium.



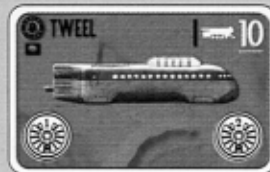
**UN Peacekeepers** – The Earth controlled military and political force used to keep the peace between warring Martian tribes, to limit access to Mars, to prevent the importation of illegal Earth technologies to Mars, and to restrict the exportation of Martian artifacts.



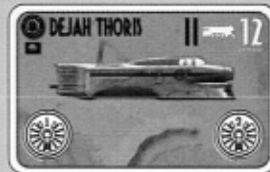
**Zorinta** – A lightweight, strong metal used in structures and vehicles. It combines the best properties of aluminum and steel.

## TRAINS – LEVEL # (SPEED-LOADS)

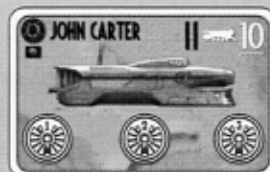
**Tweel** – Level I (2-10): Named for the truly alien extraterrestrial encountered on Mars by the first human expedition. Tweel was not from Mars but indicated he/she/it was from another star system.



**Dejah Thoris** – Level II (2-12): Named for the Princess of Helium that loved and was loved by John Carter.



**John Carter** – Level II (3-10): Named for the Confederate military officer who traveled to Barsoom and experienced many exotic adventures.



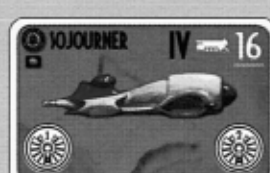
**Spirit** – Level III (2-14): Named for the U. S. (NASA) Martian rover, launched in 2003 on Mars Exploration Rover-A. It first showed humans the terrain around Meridiani Planum.



**Opportunity** – Level III (3-12): The name of the U. S. (NASA) Martian rover, launched in 2003 on Mars Exploration Rover-B. It first showed humans the terrain in Gusev Crater.



**Sojourner** – Level IV (2-16): Named for the U. S. (NASA) Martian rover, launched in 1996 on the Mars Pathfinder spacecraft. It was named for the American slave, abolitionist, and activist, Sojourner Truth. This rover was the first man-made vehicle to navigate successfully on the Red Planet for an extended period.



**Pathfinder** – Level IV (3-14): Named for the U. S. (NASA) Martian lander, launched in 1996 that carried Sojourner. This vehicle bounced to a landing in Ares Vallis. It took over 16,500 photographs and beamed them back to Earth.



**Viking** – Level V (3-16): Named for the twin U. S. (NASA) Martian orbiters and landers, launched in 1975. Viking 1 landed on July 20, 1976, in Chryse Planitia. Viking 2 landed in September in Utopia Planitia. The landers successfully transmitted data for an extended period from the Martian surface to the Earth. They sent thousands of photographs and daily weather data until contact was lost in 1982 and 1980, respectively. The orbiters transmitted thousands of photographs before their batteries failed.



## CITIES

Many of the fictional Mars city names were based on actual areological features on Mars. The albedo features are based on the light and dark regions. Those names date from the maps prepared by Giovanni Virginio Schiaparelli in 1877-88. The most spectacular geographical features were discovered only after the fly-by of the United States' Mariner 4, 6, and 7 probes in 1964, 1969, and 1969 respectively. The photographs from orbit by Mariner 9 in 1971 were better yet. The Viking 1 and 2 orbiters and landers in 1976 returned more detailed photographs and allowed naming smaller features. The names used in the science fiction stories were often based on the most recently discovered and most sensational features.

**Ares University** – A small university settlement at the intersection of the Equator and the Prime Meridian. There is no “center” on a planet's surface. However, the intersection of the two principal great circles seems fitting, for this is the center of learning on Mars. “Ares” is the Greek name for the planet Mars.

**Argyre City** – A medium town in the south central section. The town is located in and named for the Argyre Basin, a large impact basin in the southern deserts.

**Arsia** – A small settlement on the caldera of the Arsia Mons volcano in the southwest section.

**Atmosphere Plant** – A small settlement near the South Pole in the south central section. The facility dissociates water ice and frozen carbon dioxide to maintain the breathable air.

**Barrakesh** – A small, low canal-side settlement in the southeast section. All sorts of crime, sins, and evil can be found here. Earthmen aren't welcome.

**Barsoom** – A small settlement in the north central section. Edgar Rice Burroughs determined that it was the name for Mars in the Martian language.

**Bitter Waters** – A medium sized desert town in the northeast section.

**Boreale Base** – A small settlement within Boreale Chasma adjacent to the permanent North Polar Cap. Originally, this was a research station to explore on and under the polar ice fields.

**Botany Bay** – A medium sized town in the northwest section. It was originally “settled” by prisoners from Russia (Botany Bay Gulag). It has grown into a mining and manufacturing center but it still retains its rough and tumble characteristics.

**Bottomos** – A small settlement in the southeast section. Jerome Bixby named it as a pun for the third moon of Mars. When a settlement was founded in the deepest part of the deepest impact basin, Bottomos seemed the natural name.

**Bradbury Point** – A small settlement on the escarpments of the northeast section. It was named for Ray Bradbury, one of the prominent science fiction authors of the 20th century, Earth. A seminal collection of his stories was titled *The Martian Chronicles*. His name was commemorated in numerous other science fiction works set on Mars.

**Burroughs Landing** – A large city in the southwest section. One of the original cities and spaceports. It was, of course, named for Edgar Rice Burroughs. Carl Sagan, the noted 20th century space scientist and science populist, claimed that Burroughs's stories inspired many scientists that worked on the Viking spacecraft program.

**Charax** – A medium town in the southeast section. The name was first used by Percival Lowell on his maps and was adopted by human colonists. In the early days, the climate here was too harsh for permanent settlement. The early colonists only lived here during the southern hemisphere's summer.

**Clarketown** – A small settlement on the cliffs above the easternmost portion of the Mariner Valley (north central section). It is named for the noted author, Arthur C. Clarke. His classic Martian tale from the Golden Age of SF, *The Sands of Mars*, introduced terraforming.

**Crater 47** – A small settlement south of the vast Hellas Basin (south central section). The name of this settlement originates from the early maps produced after the Mariner 9 space probe orbited Mars in 1971. Many of the craters were identified only by number until the International Astronomical Union could assign names. This was one of the few numbers that persisted. Because of its size, Crater 47 was the first crater to be tented over when Silverstuff was invented.

**Drywater** – A small settlement in the Noachis Desert (south central section). It is a crossroads town that developed as an overnight stop after water was found in a deep underground aquifer.

**Ether Relay** – A small settlement near the Northern Icecap (northeast section). This settlement was initially started to support the wireless station that beamed signals to the outer worlds. It is ideally situated to transmit signals “upstairs”.

**Fort Arcadia** – A small settlement in the Arcadia Desert (northwest section). This was one of a string of UN forts established across the planet to subdue the Martian natives. It still exists due to its proximity to the UN prison at Botany Bay.

**Helium** – A medium sized town in the Noachis Desert (south central section). This is the capital and prime city of the ancient Red Martians. It includes Greater and Lesser Helium. With the coming of the Terrans, the population of Red Martians has markedly decreased until they are only found in significant numbers in or near Helium.

**Hellasport** – A large city in the southeast section. One of the original cities and spaceports. It is named for the albedo feature noted by Schiaparelli. Once terraforming began to show results, Hellasport developed a temperate climate. The air here was the first to reach livable pressure.

**Hinkston Creek** – A medium sized town along a dry canal in the southwest section. This was one of many areas where the rockets from Earth landed. Many rocket crews named the new towns after themselves or places on Earth that they remembered. The old Martian names for these places were forgotten.

**Inner Nest** – A small settlement in the ancient lava tubes of the Ascræus Mons volcano. Its Martian name translates as The Inner Nest of Kkkahgral the Younger. He was the legendary Martian who, after arriving late for a very important ceremony, insisted on dying as punishment. It became the most holy site for the Human/Martian religion founded by Valentine Michael Smith. Naturally, humans shortened the location's name.

**Isher** – A small settlement in the badlands near the Southern Icecap (southeast sections). When the crystals that made possible the first rayguns were discovered, the mining and manufacturing center that grew nearby was named for the Earth administration that created the need for the rayguns. The rayguns that tamed the planet and later the Alpha Quadrant were made here.

**Labyrinth** – A small settlement within the Noctis Labyrinthus (southwest section). The area was originally named in Antoniadi's map of Mars about 1930.

**Makian Farms** – A medium sized town within the Hellas Basin (southeast section). The domes of this agricultural town control light, heat, air pressure, and localized gravity.

**Margaritifer** – A small settlement within the Margaritifer Sinus (south central section). The name for this region dates to the maps of Antoniadi in 1901. During the time of troubles, “The Hidden Colony” took refuge in this area.

**Marsport** – A large city in the northwest section. One of the original cities and spaceports.

**Mariner** – A small settlement deep in the Candor Chasma portion of Mariner Valley (*Valles Marineris*). This great valley system was only discovered and named in 1971 when the Mariner 9 spacecraft first orbited Mars.

**Melas** – A small settlement in the Melas Chasma portion of Mariner Valley. This is a wide spot in the Valley.

**Meldilorn** – A small settlement in the southeast section. It is on an island at the junction of two canals. The island is also an oasis.

**Mutchville** – A medium sized town in the north central section. This was the landing site of Viking 1. In 1981, the lander was renamed for a mission scientist of NASA's Viking team—Thomas A. Mutch. The town that grew around the tourist site took the name of his memorial.

**Olympus** – A small settlement on the summit of the Olympus Mons volcano (northwest section). Olympus has been observed and named from the earliest days of telescopic observation of Mars. Schiaparelli and earlier astronomers saw this object. Olympus has had various prefixes and/or suffixes as part of its name as theories changed about the nature of the region. During the worst dust storms, Olympus was often the only identifiable feature visible on the surface. Mariner 9 resolved the issue and proved that Olympus was, in fact, an 80,000-foot volcano.

**Pax Grove** – A medium sized town in the north central section. It is also the Mars-based United Nations headquarters. As such, it governs most of Mars as the nations and ultra-rich corporations of Earth demand.

**Port Goddard** – A large city in the north central section. One of the original cities and spaceports. It is named for Robert H. Goddard. He was the United States professor and scientist who is often called “the father of modern rocketry.” Goddard became interested in space travel after reading H. G. Wells’s science fiction classic *The War of the Worlds*. It was a boyhood dream of his to build a rocket capable of ascending to Mars. The city founders took his name as a tribute to this pioneer of rocket research.

**Port Lowell** – A large city just south of the Equator in the south central section. One of the original cities and spaceports. In 1906, Percival Lowell wrote, “That Mars is inhabited by beings of some sort or other we may consider as certain as it is uncertain what those beings may be.” He observed Mars for many years from his observatory in Flagstaff, Arizona. From there, he was certain that the canals of Mars existed. He convinced many others of this fact. It was natural that one of the biggest cities on Mars is named for him. Ironically, this large city is the only one not located on a canal.

**Port Schiaparelli** – A large city in the northeast section. One of the original cities and spaceports. During the favorable opposition of 1877, Giovanni Virginio Schiaparelli carefully observed Mars with an 8.75-inch refracting telescope. He reported seeing very fine, dark, regular lines running across the reddish-ochre deserts. Their lengths varied from 300 miles to many thousands of miles. Their widths varied from 20 miles to 180 miles for the biggest. Sometimes these lines crossed each other; sometimes two were parallel. At times, many intersected at a common location. Schiaparelli reported these channels using the Italian word, “canali.” Thus, the story of the Martian canals began.

**Pyramid Mines** – A small mining settlement high on the flanks of the Elysium Mons volcano (northeast sector).

**Shining Canyon** – A remote mining camp in the foothills of Syrtis Major Planum (north central sector).

**Skyhook** – A medium sized town at the summit of Pavonis Mons. This 50,000 foot high volcano is located only 0.8 degrees north of the Equator. This makes it an ideal location for the lower terminus for the Pavonis Space Elevator, a.k.a., Skyhook. This space elevator reaches 17,000 kilometers to Areostationary orbit. It is the cheapest, easiest way to move people and goods to and from orbit. The idea for space elevators in general can be traced to the Russian scientist Konstatin Tsiolkovsky in 1895. Various engineers have worked on the problem since that time. Arthur C. Clarke popularized the idea in 1978 in his *The Fountains of Paradise* novel. The town of Skyhook grew during the construction of the elevator. It now serves as a transfer point, base of operations, and service center for the elevator.

**Solis Lacus** – A small settlement in the southwest sector. This area was a prominent feature on Mars and one of the first named. By 1867, the area appeared on early maps. Schiaparelli was the first to name in Solis Lacus, i.e., The Lake of the Sun. Due to its oval shape, the area was also called the Eye of Mars.

**Syrtis Major** – A small settlement in the northeast sector. This feature is the most prominent on Mars. It is visible from Earth through even a small telescope. The feature for which the settlement is named appeared on the earliest maps. However, Schiaparelli, on his maps, was the first to give it this name.

**The Face** – A small settlement located in the north central sector. Its full name is The Face on Mars in Cydonia. Photographs taken by the Viking 1 Orbiter in the Cydonia region of Mars disclosed The Face in 1976. NASA and the United States government tried to hush up this discovery. When this attempt failed, they tried to doctor the photos and belittle the people who reported The Face. When humans reached Mars, this was one of the first locations to be explored. Now we know; The Face is real. It was carved by aliens to gain the attention of the people of Atlantis. The settlement grew around the monument, first as a place for scientific study and later as a tourist attraction.

**U-Gor** – A small settlement in the Noachis Desert (south central section). This was an abandoned city taken over by the ancient Green Martians. With the coming of the Terrans, the population of Green

Martians has markedly decreased until they are only found in significant numbers in or near U-Gor.

**Utopia** – A medium sized town in the region known as Utopia Planitia (northeast section). Viking 2 landed near the present town of Utopia and the town grew around this site. Years later, Starfleet built the planetary portion of their space docks here. The town grew rapidly after that.

**Wingrad Domes** – A small farming community in the southeast section. The settlement was named for the first human to land on Mars.

**Xanthe** – A small settlement named for the classical albedo feature (northwest section). The name means “Golden-Yellow Land.”

**Ylla** – A medium sized town in the Memnonia area (southwest section). The town was named for the Martian woman who greeted the first human expedition to Mars. The stories say that she had premonitions of the coming spaceships even before they were seen in the skies over Mars.

## EVENTS

**139 The Terrans Cometh!** – The hungry refugees from Earth need to be fed. Sam Parkhill, CEO of Sam’s Hotdogs will pay for the first delivery of Bachelor Chow and Soylent Red to the corporate headquarters in Hinkston Creek.

**140 Starfleet Relief Mission!** – There is a critical food shortage on the planet, Kasei IV. Starfleet will pay for the first delivery of Quintitriticale and Roddenberries to their planetside headquarters in Utopia.

**141 Lake of the Sun!** – The Mars government is stocking the Tamoioz Reservoirs. The government will pay for the delivery of Fish to any one of the blue, triangular reservoirs. The delivery must be made to one of the three mileposts closest to a reservoir. After delivery, the train may reverse direction.

**142 Mars Needs Women!** – Almost all the Martian babies hatched are males. Additionally, since conditions on this frontier world are harsh, the human males vastly outnumber the females. Peaceful means are being attempted to lure human females to Mars.

**143 Sabotage in Space!** – The greed of the corpor-nationals on Mars and Earth lead to a quality of life plunge in the Martian towns. The situation results in a violent revolution. During these troubles, the space elevator is sabotaged. The falling cable destroys all track immediately north of the Equator. With the elevator gone, no commodities are available at Skyhook for the remainder of the game. Deliveries, to maintain the population and rebuild the elevator, continue.

**144 Rebels of the Red Planet!** – Periodically, the Red and/or Green Martians revolt against the harsh Earthman’s rule. In their anger, they ravage most train loads that they seize. The rebels are subdued after the drawing player’s next turn. Trains that are warned will stay out of the dangerous area. The natives will cross Impassable Terrain on a Repelatron Railway Bridge.

**145 War of the Worlds!** – The Martians are preparing for war. They will pay for the first delivery of Rayguns and either Red Martians or Green Martians to the interplanetary cannons at Syrtis Major.

**146 Mars Fever!** – An outbreak of Mars fever has transmitted fear throughout the land. To halt the spread of the plague, the government prohibits movement to or from the jungles and to Small or Medium Cities. No track laying crews may enter these areas.

**147 White Mars – South!** – Southern Winter. It is difficult to move trains through the deep snows of a Martian winter. It is impossible to lay track in these conditions.

**148 White Mars – North!** – Northern Winter. It is difficult to move trains through the deep snows of a Martian winter. It is impossible to lay track in these conditions.

**149 Blue Mars – Canals!** – Canal Improvements. As money and political ambitions allow, the government rebuilds some of the ancient Martian canals that have fallen into disrepair. Once repaired, these canals are treated as blue canals for the remainder of the game.

**150 Green Mars – South!** – Spring comes suddenly to the Southern hemisphere. Due to the eccentricity of the orbit of Mars, the Southern hemisphere is much hotter in summer and colder in winter versus the Northern hemisphere. The Southern Ice Cap is partly water ice and partly frozen carbon dioxide. When it begins to melt, the floods often overflow the canal system and destroy all canal structures and bridges in their paths.





**151 Green Mars – North!** – Spring in the Northern hemisphere is not as extreme as Spring in the Southern hemisphere. However, the Northern Ice Cap is mostly water ice. Therefore, when it begins to melt, the floods often overflow the canal system and destroy all canal structures and bridges in their paths.

**152 Red Dust!** – Southern dust storm. When the Sun heats the Martian atmosphere, it causes strong hemispheric winds. The intense heating stirs the atmosphere and picks up huge amounts of dust and sand. Mars is closest to the Sun during the Southern summer. Therefore, the dust storms often begin in the Noachis and Thaumasia Deserts. The storms can easily destroy a train caught in the sudden winds.

**153 Sands of Mars!** – Planetary sand storm. When the Sun heats the Martian atmosphere, it causes strong winds. The winds pick up huge amounts of dust and sand. These storms can spread across the entire planet. To survive, trains and track crews in all deserts must limit operations.

**154 Earthlings, Go Home!** – There is a continuing political struggle between the Old Earth government and the frontier-minded people of Mars. Whenever the upstarts begin to show too much independence, Earth tightens the strings. One very effective means is to embargo goods to and from Mars. Tourists often get caught in the economic crossfire.

**155 Modulator Shortage!** – Illudium PU-36 Space Modulators drive the Level V, Viking, locomotives. They also are used to power the offensive weapons needed to protect the cities of Mars. Since Modulators are always scarce, the Martian government reserves the right to confiscate the power units in times of trouble.

**156 The Wizard of Mars!** – Science and technology are encouraged and supported by the Martian government. However, in the wide open areas of Mars, sometimes research goes bad. Often the innocent train crews are the first victims of this misguided experimentation. Afterwards, discard the demand card that determines the Wizard's location.

**157 Earth Attacks!** – The free-minded Martian people have become too independent for the likes of the Earth government. An armada from Earth is en route to Mars to rectify this situation. Word of this attack has reached Mars and preparations are being made.

**158 Secret of Sinharat!** – Rumors of ancient, lost cities abound on Mars. The planet has a huge, largely unexplored surface. Ancient civilizations lived there. Supposedly these races mastered space and time, matter and energy, nature and chaos to an extent humans have yet to learn. Sometimes they left records of their wisdom.

**159 Bug-eyed Monster!** – In the vastness of the Martian wastelands, vicious creatures still roam. When they encounter human outposts, the clashes are often grim—for the Earthmen. The stories and, especially, the movies from Old Earth often used this generic name to describe these beasts.

**160 Brain Stealers of Mars!** – Evil powers still hold sway over the remote regions of Mars. These entities can manipulate the weak minds of men. The results are always unpleasant. Afterwards, discard the two demand cards that determines the Brain Stealer's locations.

**161 Repelatron Bridge!** – In the scientific freedom of a frontier community, technological advances are swift. New materials, new manufacturing techniques, and new ways of approaching old problems lead to new solutions. One such wondrous new invention is the Repelatron Beam. This repulsor beam can support a railroad bridge capable of spanning the Mariner Valley!

**162 Rail Tax!** – Regardless of the locale, humans create governments and governments create taxes. Both are ubiquitous.

## RAILROADING ON MARS

BY M. ROBERT STRIBULA

The venerable astronomer had signed up for a shift on the ancient telescope. Serious work was no longer done at the Lowell Observatory telescopes. The real observing was done at a computer screen after the raw data was transmitted from the Hubble II satellite. Other deep space images were made at the Moon's Farside Observatory. Still, many of the scientists lived and worked in Flagstaff, Arizona on Earth. Once again, Earth-based telescopes were pointed at Mars. Just like in the old days, a human eye can see amazing detail during fleeting glimpses of good seeing. Of course, better live pictures from the Mars weather satellites or from the Deimos Dome were available on the InterPlanetaryNet. Tonight, Mars was at opposition. This was the Red Planet's closest approach to Earth in over fifteen years. It seemed appropriate that the Senior Astronomer was behind an eyepiece and sketching Mars. The seeing was excellent. Percival Lowell had chosen a good

site. Tonight, it almost seemed possible that there really were canals on Mars. Lowell had certainly thought so. During his lifetime, other astronomers had begun to question his theories about the canals. Primitive spectroscopes showed that Mars's atmosphere didn't contain much water. Even now, with terraforming underway almost 100 years, water was too precious to hazard in open canals. In Lowell's time, the days of Earth's canal building were already over. A much better means of moving people and goods had replaced them. Lowell never considered that fact. Look! The shimmering disk of Mars snapped into momentary sharp focus. There appeared to be a spider web of lines running across the planet's surface. But, they weren't canals. The new Martians were too advanced for that outdated technology. These Martian markings were railroads!

### ❖ ❖ ❖ Interlude ❖ ❖ ❖

Mankind had taken a long time coming to Mars. When men finally left the confines of their home world, the Moon was the obvious first step. However, Luna could never be another Earth. It was a dead place. The Moon was a way stop—a place to learn. It was a place to try new techniques; a stepping stone. The romance of building a new frontier on the Moon was short-lived. An ambitious race had to look outward. The next closest object was the planet Venus. Unfortunately, Venus was a hellhole. Metals would flow on its surface. Water, even as superheated steam, was unknown. The crushing carbon dioxide atmosphere "rained" sulfuric acid. Looking in the other direction, the next closest planet was Mars. Mars had always been considered a probable second home. Mars had inspired dreams and, sometimes, nightmares. When humans finally gained a foothold on the planet, they immediately started to modify Mars. Just like on Earth, man changes his environment. And, just like on Earth, slowly the environment changes man. Most visitors to Mars still thought of themselves as Earthmen. However, some few settlers already considered themselves Martians. It was these Martians that began to solve the problems of their adapted planet. One big problem was how to move about their home. Serious minds realized that a solution from Earth's past would help with Mars's future. Railroads provided the economical, energy-efficient means of moving men and material.

Mars has always been the planet of mystery. For centuries, early man watched the bright points of light in the night sky. Most of the lights were unchanging, at least during a man's lifetime. These were the fixed stars. Some lights seemed to move slightly every night—the wanderers. Most of the lights were white. Some had a faint color. One of the wanderers was a brilliant red—blood red. Red was a bad omen. It meant sickness and death or worse: war. The five wandering objects were collectively called the planets. The ancients attributed great powers to the planets. Perhaps they were the home of gods. Perhaps they were the gods. The Greeks named the red planet after their god of war—Ares. The Romans used the name of their god of war—Mars. The early fiction pertaining to Mars, later to be known as science fiction, paralleled the scientific discoveries about the planet. The earliest beliefs were that the heavens were more perfect than anything here on Earth. The planets existed in heaven, so their inhabitants must be perfect creatures. Godlike or at least angelic, the early fictional Martians were often used in a moralistic allegory.

From early times, men kept records of the skies. Usually, the planets behaved in regular, predictable patterns. Each night they moved a little against the fixed stars. Mars behaved differently. When it was brightest, it abruptly reversed direction. It moved retrograde for a while; then it reversed direction again. Afterward, it behaved normally for the rest of that passage across the skies. What was this mystery? Early mathematicians tried to describe these motions. They were hampered by their Earth-centered models. From the time of the ancient Greeks, it was believed that the planets traveled in perfect circles about the Earth. As better measurements were made, the circles became more complex. Eventually, it required multiple circles, cycles, and epicycles to describe the observed motions. In the 1500s, the Danish astronomer Tycho Brahe observed Mars. Without a telescope, he measured the positions of the planets—especially Mars—with unprecedented accuracy. Johannes Kepler came to Copenhagen to study with Tycho. After ten years of calculations, he discovered an elementary but fundamental truth of nature. The planets travel in elliptical orbits; the Sun is one of the foci. Kepler worked with data from Mars because it had the most enigmatic path through the skies. No other naked-eye planet has an orbit approaching the eccentricity of Mars. The mystery of Mars's orbit directly led to these discoveries.

The eccentricity of Mars's orbit means that sometimes it is much closer to the Sun and the Earth than at other times. An opposition is defined as the moment when the Sun, the Earth, and an outer planet lie in a straight line. At that time, the planet is opposite the Sun, as seen from Earth. It is well placed for observing all night. Approximately every 25.5 Earth-months, the orbits of Earth and Mars bring them into opposition. The two planets can be fairly distant during some oppositions. The best occur when Mars is at perihelion—closest to the Sun. During one of every 7 or 8 oppositions, the planets approach to within 56 million kilometers. During the close opposition of 1877, Asaph Hall was conducting research with the newest 26-inch telescope at the U. S. Naval Observatory. He discovered two Martian moons. These two objects—Deimos and Phobos—are only seen under the best conditions using 21st century equipment. Nevertheless, Hall merely confirmed the writing of Jonathan Swift from 1726. In *Gulliver's Travels*, Swift proclaimed that Mars had two moons. How was this possible? No telescope from that era could see the tiny, irregular moons. Wait. Don't call for Scully and Mulder yet. It is thought that the logic of the time was Swift's rationale. Mercury and Venus had no moons. Earth had one. Jupiter had four visible moons. Since Mars lies between Earth and Jupiter and since the heavens are ordered, Mars must have two moons. Of course, an alternative and often believed explanation is that the moons really are ancient, alien spacecraft. Perhaps Swift was abducted and taken to Mars!

Giovanni Schiaparelli turned his telescopes toward Mars during the same favorable opposition of 1877. Using an 8-inch telescope, Schiaparelli observed Mars night after night as it was overtaken and passed by the Earth. He saw channels or natural grooves in the dark markings on the planet. The Italian word for channel is *canali*. This quickly transformed into the English "canals," meaning a manmade water course. Percival Lowell, the scion of a rich Boston industrialist, became intrigued. He established a private observatory to perform his own observations of Mars. By 1905, Lowell and his staff had mapped even more canals than Schiaparelli claimed. An expert at public relations, Lowell made periodic announcements of new discoveries about the Red Planet. Soon, the public was convinced that the Martians were in a desperate struggle to save their dying planet. On the basis of these pronouncements, H. G. Wells wrote his classic story that the

Martians invaded Earth to improve their plight. Of course, their solution would have worsened our situation significantly. Edgar Rice Burroughs also began his renowned fiction series about this time. His fictional Mars was populated by the noble savage. This paralleled how the Europeans thought of the native Americans. Older, wiser Martians had overcome the baser emotions and motivations. Theirs was a harsh world. Time and nature had worn out the planet. Water was scarce. The land was barely habitable but there was a desolate beauty to the terrain. Brave warriors and comely princesses ruled the lands. A Martian never went back on his word. He fought side-by-side with a friend until victory or death. Ancient technology and high minded ethics helped them in their unending struggles with nature. Sun-bronzed Earthmen, clad only in leather harnesses, battled alongside the native Martians. The science (and PR) of Lowell and the fiction of Burroughs and his imitators would reverberate in the Martian collective conscience for over 70 years.

Better equipment and patient work slowly added to the knowledge about Mars. Spectroscopes put upper limits to the amount of oxygen and water in the Martian atmosphere. Albedo measurements and energy balance equations refined the probable surface temperatures. By the 1950s, it was realized that Mars was a very cold high-altitude desert, at best. The science fiction of the day reflected these visions. Fictional explorers wore thermal cloaks and breathed with the aid of respirators or supplemental oxygen. In 1964, the *Mariner 4* spacecraft zoomed past Mars and took two dozen blurry photographs of a very small region of the Martian southern hemisphere. It showed a cratered landscape looking more like the Moon than the Earth. The romantic images of Mars took a hard blow. In 1968, *Mariner 6* and *7* added 200 photographs to our collection as they also raced beyond Mars. These photographs showed a surface covered with craters. They also showed vast, featureless plains. Near the poles, carbon dioxide ice was detected. "Fog" was seen within some craters. The desired water ice didn't materialize. Unfortunately, not a single canal was seen. Certainly, no Barsoomian cities and absolutely no roaming thot herds were photographed. It looked as if Mars was not a very friendly place for humans. But, like life itself, the expectations for life die hard. Maybe low shrubs or burrowing animals could exist there. Mars had more mysteries to stage. *Mariner 8* was lost on launch. Six different Soviet / Russian Mars probes became frustrating failures. One became the first object to hard-land (a.k.a., crash) on the planet. One satellite performed flawlessly until it was time to enter orbit. Then all communication was lost. The spacecraft was never heard from again. A Russian mission to soft-land a probe was ruined when the site selection photos were obscured by a planet-wide dust storm. That was another mystery Mars had in its bag of tricks. Skeptics even speculated that something around Mars didn't want humans there. Finally *Mariner 9* broke the string of bad luck. In 1971, this spacecraft entered orbit around Mars. It waited out the same planet-enveloping dust storm that claimed the Russian lander. Slowly the dust settled. First to emerge were the peaks of four mountains. One, Olympus Mons is 27 kilometers high. It is the tallest shield volcano in the entire Solar System. *Mariner 9* revealed its namesake canyon system, the 5,000 kilometers long Valles Marineris. It disclosed varied terrain from high plateaus to deep canyons and basins. It showed cratered and chaotic land. Again, no water or life was detected. It was obvious that the air was thin—much thinner than thought earlier. Now hopes were downgraded to the possibility of hardy moss or lichens. The science fiction reflected the changed scientific opinions. Fictional travelers needed pressure suits like 1960's era jet fighter pilots.

The year 1976 was a particularly exciting time for Mars exploration. *Viking 1* and *2* entered orbit and successfully placed landers on the planet. The two orbiters took thousands of high resolution photos and radioed telemetry back to Earth for years. Again, no water was observed on the planet. However, it was clear from the photos that vast floods had surged across the surface in the not too distant past. Another mystery; where had the water gone? The landers carried rudimentary weather stations and biological detectors! No less an authority than Carl Sagan, part of the *Viking* design team, said that Edgar Rice Burroughs affected the real science that went to Mars. The *Viking* engineers grew up reading John Carter of Mars. They knew that life would be found there. Unfortunately, the results were not that spectacular. The experiments' explanations were ambiguous. Later, the disappointing results were duplicated by non-biological means. Super-oxides, created when the sterile soils had been irradiated by harsh ultraviolet light, gave off similar chemical signatures. Apparently, the thin atmosphere of Mars and the lack of a magnetic field allow deadly solar wavelengths to reach the planet's surface. Even surface vegetation was being ruled out. The post-*Viking* fiction required that men wear full space suits. Only in underground structures would men be safe. Mars was no more habitable than was the Moon. The fiction turned bitter and grim. Often Mars was depicted as a prison world or a gulag camp. Botany Bay became a typical name for a fictional settlement written about post-*Viking* Mars.

Mars saw no robotic explorers from the third planet for over twenty years. Extensive analysis of the wondrous *Viking* photographs revealed additional mysteries. In the northern wastes of Cydonia, scientists discovered a giant face looking out into space. Photo enhancement revealed that this face was carved from solid rock. It was a prehuman face, similar to that of the apes that roamed the African savannas thousands of years ago—when the face was presumably created. Was this a signal to us? Richard C. Hoagland thought so. Mathematical analysis of the surrounding terrain found other interesting "monuments" built by the ancient Martians. Science fiction authors worked this revelation into new stories.

In the late 1990s, exploration resumed. *Mars Pathfinder* and the *Sojourner* rover repeated *Viking's* negative biological finding. The *Mars Global Surveyor* debunked the "Face on Mars" theory. It was just another wind-worn mesa. Martian fiction didn't stay gloomy for long. It turned to realistic portrayals of the first manned missions and the later colonization. Ecological disasters at home, nanotechnology and cyberpunk, bioengineering of man, terraforming of the planet, interplanetary diseases, and the ever present politics of man became dominant issues. The epic Mars trilogy by Kim Stanley Robinson covered all these topics starting with the second expedition to Mars through the independence of the world. After modifying the planet, man was again able to live in a shirtsleeves' environment on the surface of Mars. The stories had come full circle.

Themes run through the Mars fiction of the last 100 years. Compared to the total length of human existence, the explosion of knowledge during these years is extraordinary. The technical details included in the fiction have changed just as rapidly. However, the mythology of Mars is fairly constant. It is a planet of ideals and mystery. It is an

ancient world. Worn down by time and nature, the natives and the terrain reflect the age. Long ago, a great technological empire ruled Mars. Over the eons, most of this knowledge was lost. Remnants of the greatness resurface in various artifacts. The natives have regressed and can neither explain nor duplicate these devices. Legends claim that somewhere a lost city of the ancients exists. The natives are fierce, brave, loyal, moral, and combative. Their planet is dying. Mars is cold, desolate, dry, windswept, lonely, and barren. Even the mountains are worn down. Once, like Earth, seas covered much of the planet. The vast, empty plains are the ancient sea bottoms. The canals were dug by the Old Ones while they still possessed the necessary technology. The channels are used to bring water from the poles to the dry, dusty equatorial regions. The atmosphere is thin but breathable. A strong Earth man, or one enhanced by implants or altered microbiology, can survive. Earth is a vile, overcrowded, toxic wasteland running short of space, resources, ideas, and time to save itself. Humans come to Mars to exploit the natives and the minerals. Earth technology quickly overwhelms the natives. Only Earthmen's greed and duplicity prevent them from completely subjugating the planet. Yet there are always altruistic humans willing to assist the Martians with their fight for their planet. Sometimes, a depressing, melancholic, pessimistic aura hangs over Mars. It can be overcome. An enterprising, self-sufficient, ambitious person can succeed on Mars. Men journey to Mars seeking independence and freedom. Eventually, the human settlements on Mars will revolt from the authoritarian bureaucracy of Earth.

### ❖ ❖ ❖ Resume Story ❖ ❖ ❖

Mars has made another fifty orbits around the Sun since the Senior Astronomer observed Mars from the Lowell Observatory. On Mars, the additional years of terraforming have shown progress. Orbiting solar mirrors incrementally raised the ambient temperatures. Ice from the poles sublimed. Underground permafrost melted. Redirected comets from the Oort cloud burned up in the atmosphere, releasing more water. Specially engineered fluorocarbons, discharged into the upper atmosphere, increased the global warming. The additional water vapor contributed to a greenhouse effect. Eventually the atmosphere reached saturation. Then the rains began. During the colony's early years, railroad track was laid directly on the Martian regolith. Little maintenance was necessary. After the precipitation started, more construction was required. The right-of-way needed to be graded differently. Drainage needed to be improved. Ditches were dug to carry the run-off away. The bioengineered vegetation found a home in the new drainage ditches. Slowly the growth adapted and spread outward from the tracks. Now, the color of the land changed with each season. From space, the railroad track had been too slender to see. Nonetheless the expanding vegetation's color changes were more obvious. Occasionally, the glint of sunlight from the parallel waterways was observed. In a sense, the canals of Mars had finally arrived.

Years ago, the Tharsis Limited raised a red cloud of dust as it sped across the ochre desert. Today, the level tangent track still reaches for the too close horizon. The right-of-way lies on a carpet of blue-green growth. Twin mini-channels of liquid water parallel the steel rails. As usual, this evening the Express is on time. Its cab signal shows "clear." As the train races toward Elysium, a mist of water is left suspended in its wake. The setting Sun refracts that mist into a rainbow—a Martian rainbow.

### ❖ ❖ ❖ Martian Rails ❖ ❖ ❖

Will this future happen? Six Large Cities with integral spaceports highlight the map of Mars. You have 60 million and inspiration. Add to that a brand new Tweel locomotive and a demand for transportation services. Can you turn that into a fortune and a better tomorrow for Mars?!

## ACKNOWLEDGMENTS

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— Bob Stribula

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# MARTIAN RAILS

## THE START:

Starting Cash: ..... 60 million  
 Number of Building Turns: ..... 2  
 Switchback Start:.....Yes

## THE FINISH:

Ending Cash: ..... 250 million  
 Number of Major Cities Connected:.. 5  
 Equal Turns: ..... Yes

### Milepost Type or Terrain Cost

Clear (●) .....1M

Desert (○) .....1M

Forest (🌳) .....2M

Mountain (▲) .....2M

Jungle (🌴) .....3M

Marshland (🌿) .....3M

Volcano (△) .....5M

Wrap-Letter (⊖) .....0M

w/ Half Milepost (⊖) ..0.5M

### Milepost Type or Terrain Cost

Canals:

Underground (▨) .....+0M

Dry (▨) .....+1M

Wet (▨) .....+2M

Lake (☁) .....+3M

Small City (●★) .....3M

Medium City (■★) .....3M

Major City: incl. Adjacent Spoke Tips (★) ....5M

Impassable (▨) ..not allowed

Train Upgrade (🚂) .....10M

