



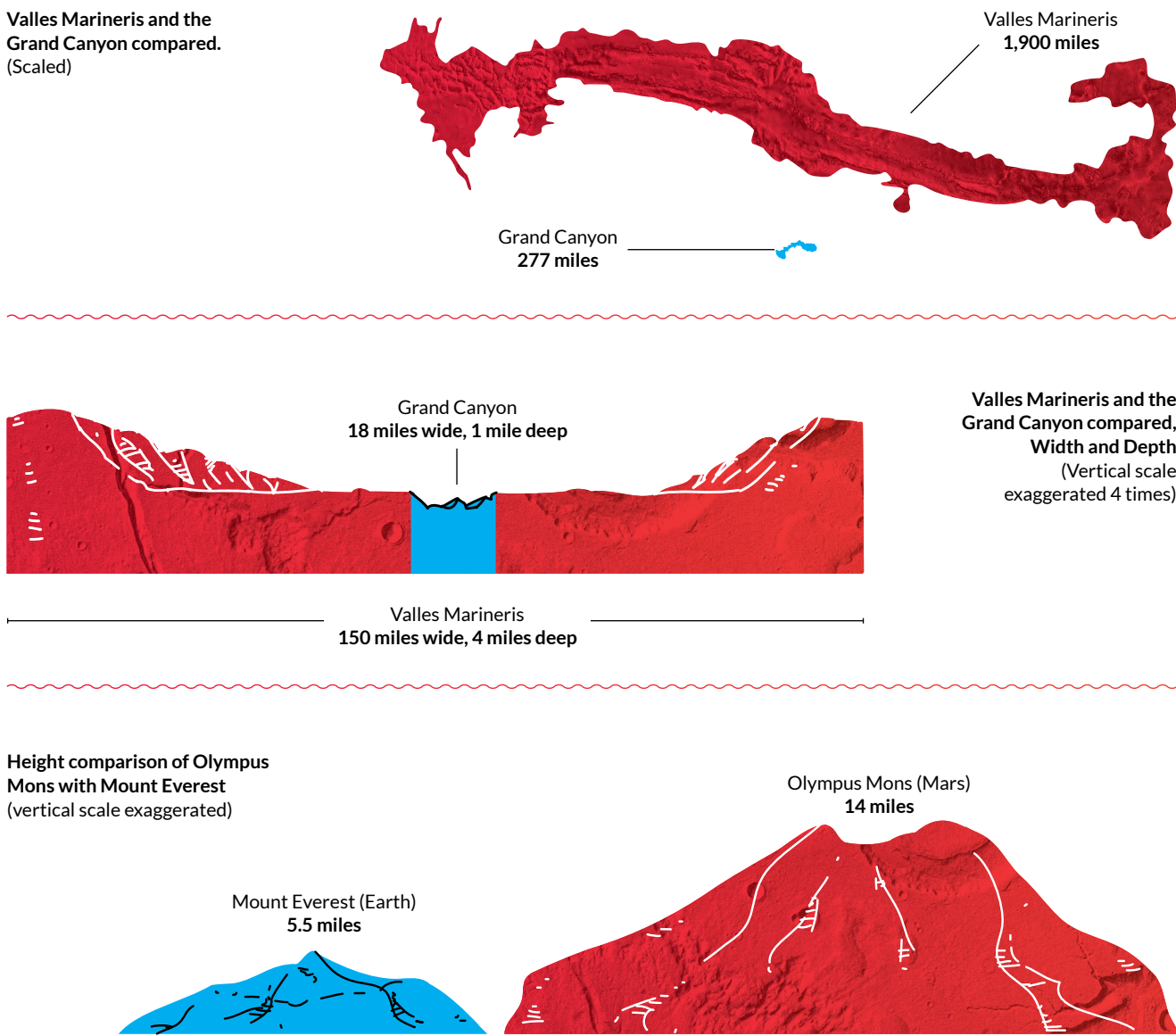
THE
GREATEST
JOURNEY OF THEIR LIVES
WILL NOT ONLY BE TO MARS
BUT TO THE INTERIOR OF THEIR MINDS

—

RED EARTH

A FEATURE FILM BY CARLOS VIOLADÉ

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ON SITE

Mars is a telluric planet, which means that it has a rocky surface like the earth's. It has a slightly ellipsoid form with an equatorial diameter of 4,200 miles and a polar diameter of 4,190 miles. It is smaller than the Earth, but has oceans cover about 70% of the Earth's surface and Mars has no seas, both have a similar amount of solid surface.

This surface has a reddish pigmentation because of the predominance of volcanic basalt and high doses of iron oxide in its composition, which is one of the most distinctive features of the planet. It also has morphological characteristics that can be found on the Earth and the Moon: impact craters, lava fields, volcanoes, dry riverbeds and sand dunes.

Deserts spread over the most extensive areas of Mars, covering three quarters of the planet's total surface, being also responsible for that peculiar reddish tone. The deserts there are not made from sand like the ones on the Earth, but of rocky ground covered with stones.

Mars's areography presents a pronounced division. A colossal scar near the equator called Valles Marineris, (a system of can-

ions of more than 1,900 miles that makes Colorado Canyon look small), divides the planet in two clearly distinguishable areas. The northern area is flat, young and deep, while the southern area is high, old, and steep, and it has craters similar to those found on the moon. In this area, we can find Tharsis volcanic complex, containing the biggest volcano in the whole solar system: Olympus Mons is 14 miles high, more than twice the height of Everest, on a planet much smaller than ours.

Mars's landscape has even more similarities to the Earth's. We've used to the wind to sculpt our environment, smoothing the surface of the rocks or raising dunes. Martian winds can reach speeds of up to 62 miles per hour, and have eroded the surface of the red planet for millions of years, creating long meandering valleys like Arabia Terra or Amazonis Planitia. But the most striking feature of Mars's surface is that it preserves real hydrographic networks, evidently dry nowadays, but pointing to the fact that in the past the planet might have had different environmental conditions and water. NASA scientists even declared that 4,500 million years ago Mars contained enough water to cover the whole planet.



What and how many clothes do Astronauts pack for space missions?

- A. One work shirt for every 10 days.
- B. One T-shirt for every 3 days of exercise.
- C. One pair of exercise shorts for every 3 days of exercise.
- D. One pair of underwear for every 2 days.
- E. One pair work pants / shorts for every 10 days.
- F. Two sweaters.
- G. One pair socks for every 2 days.
- H. One pair of shoes for the treadmill.
- I. One pair of shoes for the bike.
- J. Two pairs overalls.

SHOULD WE START PACKING?

One of the main aims on the space race calendar is the possibility of inhabiting Mars. But it is not just a strictly scientific matter. Stephen Hawking already stated in 2010: "humankind should colonize other planets to ensure the future of the species". But if we want to start packing our bags, there are certain things we need to take into account for our trip.

Mars is the second planet closest to the Earth after Venus. The distance between both planets is constantly changing as they travel around the Sun. So space engineers must calculate the best orbit to send a spaceship from Earth to Mars, and the most important element: they must calculate where the red planet will be when the spaceship arrives, which is not the same position it would have had when it took off from our planet.

On 22nd May 2018 at 12:00 noon the closest distance between the orbits of Mars and the Earth will take place. They will only be 57,293,270 miles away. The launch date for the first manned mission to Mars should take advantage of this position to cover the least possible distance in its trajectory. Once there, and after six and a half months travelling, the astronauts have to wait

for the orbits to come close again for the return journey. The date for the return: 27th July 2018.

But once there, What will humans find on a planet like Mars? The red planet is in the line of fire of high energy particles from the sun, known as solar wind. Mars's atmosphere is really thin and extremely cold. On Earth, we are protected from the solar wind by a strong magnetic field that doesn't exist on Mars. There is no liquid water, the atmospheric pressure is almost nonexistent, the radiation levels are very high and temperature changes wildly. The American astronaut Stan Love stated that a trip to the worst imaginable conditions in the Antarctic was like a picnic compared to a trip to Mars.

Humans must overcome many obstacles during their stay on Mars: the effects of cosmic radiation, ionizing radiation, low gravity and low luminosity. Getting used to life with only a third of our weight because of the low density, surviving with no water, fighting extreme temperatures with an average of -86° F (-62° Celsius), continual dust storms and winds blowing over 60 miles per hour... But above all, human beings have to confront themselves And live in utter isolation away from Earth.

REDEARTH A SPACE GUIDE TO MARS

55,742,106 SQUARE MILES
TO DISCOVER

REDEARTH A FEATURE FILM BY CARLOS VIOLADÉ

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CONSEJERÍA DE CULTURA



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FIVE ASTRONAUTS. ONE SPACECRAFT. OUTER SPACE. BUT THE GREATEST JOURNEY OF THEIR LIVES WILL NOT ONLY BE TO MARS BUT TO THE INTERIOR OF THEIR MINDS.

The project of RED EARTH first took off in October 2013 after an invitation from The Sundance Institute, founded by Robert Redford to encourage independent international cinema. The institute showed an interest in Carlos Violadé's work after his short film "Not Funny" received an award at the Palm Springs Short Film Festival in 2013.

In February 2014 RED EARTH was the only European project to participate in the scriptwriting workshop in Oaxaca, Mexico, founded in 1994 by Bertha Navarro (producer of Guillermo del Toro's "Pan's Labyrinth") and The Sundance Institute. Laura Esquivel ("Like Water for Chocolate"), Jeremy Pisker ("Bulworth"), Beatriz Navarro ("Danzón") and Lawrence Konner ("The Sopranos", "Planet of the Apes" and "Star Trek 6") all advised on the script. In September 2014 Zachary Sklar co-writer of "JFK" with Oliver Stone) joined the project as script-doctor.

RED EARTH directed by Carlos Violadé and produced by Labalanza has a prestigious technical crew with Goya awards, and a team of recognized experts in various fields of science; all interested in the story's potential, its capacity to spread popular science, and the originality of the script.

A number of well known experts have joined the project: Psychologist Gabriel González de la Torre (collaborator with the ESA (European Space Agency)), Felipe Gómez, expert on biodiversity in extreme environments, is currently working on projects that use the information collected by the CURIOSITY robot (NASA) from the surface of Mars; the astronaut Eduardo Luruena, currently preparing to be the second Spanish man to travel into space; and Keith M. Wright, space systems engineer with a remarkable participation in the NASA Apollo program.

Although the action takes place in space, the film doesn't fall into the sci-fi genre. The interest of the film centres chiefly on the psychological factors involved in making such a journey and the personal relationships between the spacecraft's crew-members. It is unknown to scientists how human-beings will behave or how their minds will react on such a long voyage once the visual reference of the Earth is lost. The incidents which arise during the voyage

make the viewer reflect on what it means for mankind to set foot on Mars; the environmental dangers threatening our own planet, and the potentials and limits of the human condition.

The project of RED EARTH has opted for an independent international coproduction model and intends to participate in all the principal film festivals (Berlin, Toronto, San Sebastián, Cannes, Sundance...). It will be filmed in English with an international cast from several countries. It is expected that this, as well as the story itself (the race to Mars), will attract the attention of a culturally diverse audience and will help it to be more widely distributed.

This intriguing and disturbing film is full of suspense, action and psychological tension. When it reaches breaking-point, a totally unforeseen and unexpected outcome is revealed making us question the experience of our own reality from different points of view.

In RED EARTH the astronauts undergo for the first time in human history the experience of losing visual contact with Earth. The concept of solitude takes on a new meaning. The real challenge they face is within their own minds: the greatest journey of discovery takes place within themselves.

SYNOPSIS

The crew chosen for the first manned voyage to Mars, must live together in close proximity over a long period of time within the confines of a small spacecraft. Five people from different nationalities and cultures take on the challenge of this heroic feat. The astronauts, after passing the halfway point, lose visual contact with the Earth.

It becomes a rapidly receding pinpoint in space as they move closer to the red planet.

Although they maintain periodic communications with Ground Control, the astronauts know that they are on their own. The only possibility of returning to Earth is in reaching Mars. They are unaware that the real challenge they face is within their own minds; the greatest journey of discovery is taking place within them.

The tensions between them increase over time until they reach breaking point. What happens next is unexpected... nothing is what it seems... no one will ever be the same again.

LABALANZA, THE PRODUCTION COMPANY

LABALANZA is an independent film production company founded in 2006 in Seville (Andalusia, Spain). Its principal objective is in making cinematographic works that, for their subject matter, originality and technical quality, aspire to spread universal or cultural values from different European territories to the rest of the world.

LABALANZA has the support of an internationally recognized technical and artistic team that foment the incorporation of new ideas in emerging cinema. Their projects, supported by regional and national film funds, have obtained international acclaim in prestigious film festivals around the world; have been shown in universities, museums and academic

institutions for their educational value and on important public and private television channels as well as different digital platforms. In our view, to make cinema implies an enormous social responsibility and for this reason we only select projects of depth, quality and originality, as a signature stamp of our business.



SPACE SUITS

NASA is in an advanced stage of developing the astronaut spacesuit for Mars. The company ILC is in charge of the design. It will be more flexible and instead of being divided in two parts as is usual, the astronauts will get into it from the back.

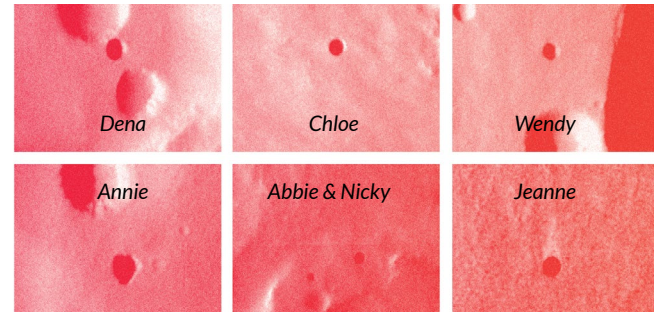


RÍO TINTO, A MARTIAN LANDSCAPE

The mining area in Río Tinto, Huelva (Spain), is considered by many scientists as the most similar environment to Mars on Earth. In fact, the European Space Agency (ESA) and NASA have carried out different investigations in the area and developed projects that will be carried out in the future on the red planet. There is enough evidence suggesting the presence of chemical and biological underground reactors supplied by microorganisms that do not need oxygen to survive. This means that a completely unknown system of life, with the capacity to survive the acidity of the soil that holds it, is developing in the ground.

MARTIAN POLES

Contrary to what is believed, there is water on Mars, but it is frozen. The poles of the red planet are very similar to the poles on Earth, although the temperatures are much more pronounced and can even reach -238°F. This is not the only difference: the ice caps are made of a superficial thin layer of carbon dioxide ice, usually known as "dry ice", but in the south pole it is thought that there is water ice.

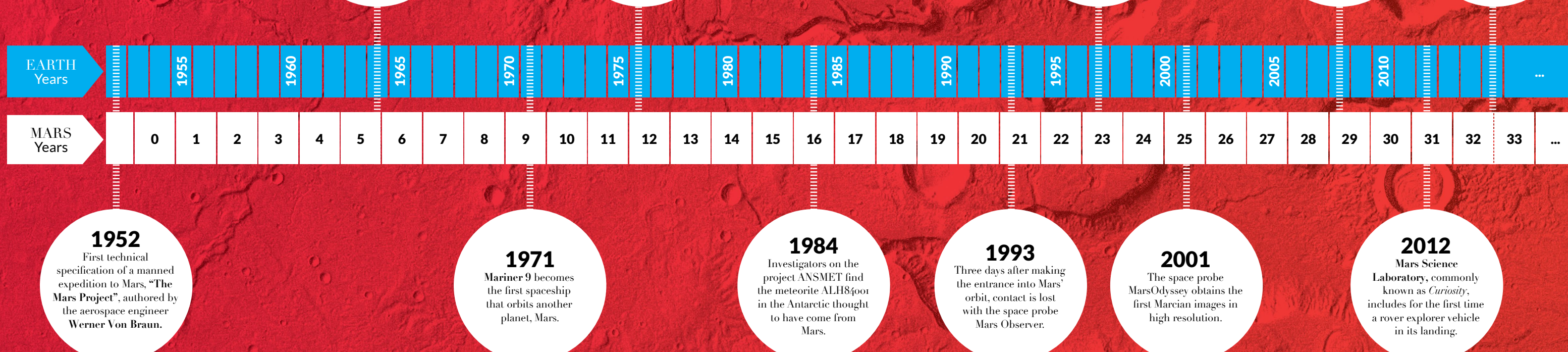


SEVEN SISTERS

In September 2007, Mars Odyssey orbiter discovered 7 caves, these are between 110 and 275 yards diameter and are known as the 7 sisters.

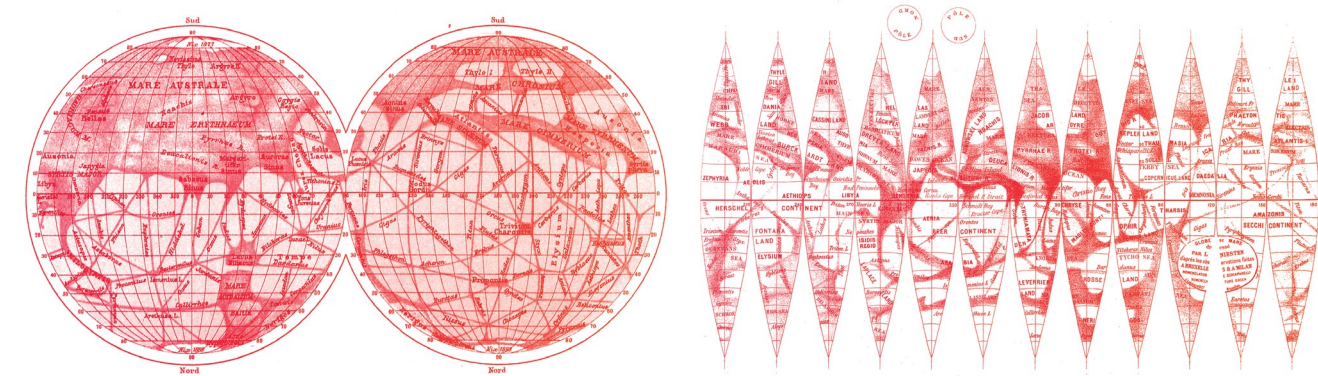
MARTIAN CHRONICLES

A timeline along the recent History of Mars.



1. Map of Mars designed by the German astronomers Johann Heinrich Mädler and Wilhelm Beer, 1840.

2. A Chart of Mars by Richard Anthony Proctor, 1867.



3. Map of Mars by Giovanni Schiaparelli, compiled between 1877 and 1886.

4. Atlas of Mars by the Belgian astronomer Louis Niesten, 1892.

HISTORY OF A MAP

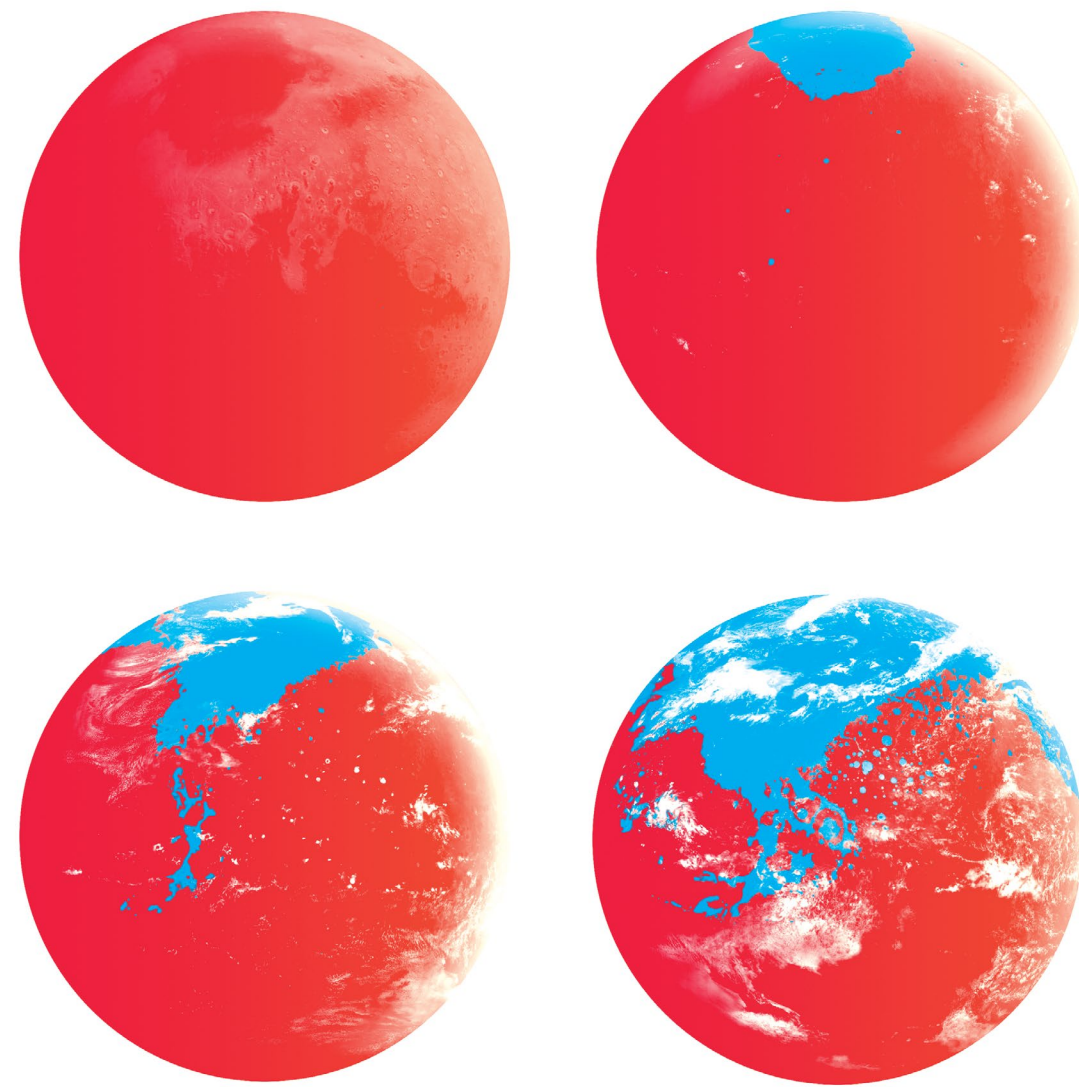
The first sketches of a map of Mars were traced by the astronomers Johann Heinrich Mädler and Wilhelm Beer in 1830. There is a striking detail about it, after ten years of observation, instead of giving names to the landforms they simply assigned letters to it.

The first detailed map of Mars was made by the Italian astronomer Giovanni Schiaparelli and was published in September 1877. Precisely, on the 3th of September of that year the perihelic opposition took place; the name given to the moment when the red planet comes closest to Earth. A phenomenon that takes place every 16 years.

Schiaparelli and his British colleague Richard Anthony Proctor assigned the first proper names to the landforms found on the map of Mars. While Schiaparelli decided to name them using Latin terms, the Proctor chose to pay tribute to the different astronomers that had studied the red planet so far, assigning their names.

Nowadays, the Areography - name given to the delineation and characterization of the geographical areas of Mars -, makes use of a nomenclature from various sources. Some of these areas still have the names used by Proctor, some have changed, and in other cases some rules have been established. For example, all the big craters take the names of great scientists or science fiction writers, and the small ones take the names of different cities on Earth.

The first global geological maps of Mars, also the first ones devoted to a surface other than the earth's or the Moon's, were consequence of the missions Mariner 9 in 1978 and Viking Orbiter in 1986. The most recent and detailed global geological map of Mars was published by the U.S Geological Survey in July 2015. This map gathers the observations and scientific results accumulated by 17 different spacecrafts orbiting around Mars for more than 40 years, like the optical and infrared images taken by THEMIS, the thermal emission imaging system used by Mars Odyssey orbiter.



Artist's conception of the process of terraforming Mars. Author: Dain Ballard.

TERRAFORMING: THE POSSIBILITY OF INHABITING MARS

Can we convert Mars in an inhabitable planet? Can we make a new Earth of it? To achieve that, scientists all over the world have become accustomed to using a new word: Terraformation. This term appeared for the first time in a science fiction story written by Jack Williamson in 1932. Barely 20 years later, Carl Sagan adopted the concept and applied it to Mars instead of Venus, as it was initially planned. In 1971, only three years after the publication of the visionary article "Planetary Engineering on Mars" by this famous astronomer from New York, NASA assumed officially the planetary engineering task, although back then they used the term "Ecosynthesis" or "Planetary Transformation".

In 1982 the scholar Christopher McKay published the pioneer article "Terraforming Mars", which discussed the possibilities of a self regulated Martian biosphere, coining since then the new term "terraformation" as an essential element in any

project with the aim of colonizing the red planet. Terraformation is a process conceived to modify the weather, the surface or the environmental conditions of Mars in order to make it inhabitable for humans or other terrestrial life forms.

One of the most consistent points proposed for the Terraformation of the red planet is to increase the Martian atmosphere. This will improve without any kind of doubt its role as a shield for radiations -like the feared solar radiations- and meteors. At the same time it will strengthen the so needed greenhouse effect to heat the planet and expand the stability field for liquid water. He as it may, and completely contrary to what is needed on Earth, the solution for terraforming Mars is global warming and the much hated greenhouse effect.

A paradox in our relationship to the planet Mars that maybe destined to become our new home.